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## Montana Beef Council pledges \$200,000 to MSU animal bioscience project



### Funds return support to home state beef industry research

*by Charlene Schuster, Executive Director, Montana Beef Council*

Montana—longtime home to cowboys and cattle ranches, and a good place to eat a steak. Here, in a state where our historical, cultural and economic foundations are based in beef production, it is only appropriate that money from this industry is returned to invest in its future.

With that philosophy driving their decision, the Montana Beef Council recently announced a pledge of \$200,000 toward the establishment of the Montana State University Animal BioSciences research project.

The money will come from the \$.25 Fund, which, prior to the establishment of the national beef check-off, collected funds from Montana cattle producers through the original Montana Beef Research and Marketing Act. Funds were designated for use in scientific research, education, advertising, promotion and publicity of the beef industry.

The Montana Beef Council wants to emphasize the distinction between funds from the original check-off, and today's national \$1/head check-off program. People may well recognize projects of the \$1/head beef check-off: programs such as a national partnership with Quizno's promoting steak sandwiches and research that has developed new ready-to-eat beef entrees. However, funds from the original \$.25 Fund are designed to stay solely in Montana, to benefit our producers and our industry here.

This led to the decision to support Montana State University's new biosciences research project, a cutting edge facility with equipment and faculty to lead the industry in beef research.

Mac White, a cattle producer and cattle feeder from Two Dot, serves as vice chair of the Montana Beef Council and also chairs the Montana Research Committee, which oversees the Montana-specific fund. The producers who make the decisions about these dollars felt it was appropriate to join other beef industry groups in supporting this outstanding Montana project. As chair of the Montana Research Committee, he felt that if Montana was going to be a player

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# Producer Profile: The Open Cross Ranch and The Skaw Gang

A phone call to the Open Cross Ranch, just south of Hall, Montana, will often result in listening to Gayla Skaw on the answering machine detail the current exploits of the Skaw Gang (pronounced like cow with an “S” in front). Lee and Gayla Skaw are the ringleaders for the Skaw Gang, and depending on the time of year, the answering machine may indicate that the gang is feeding, calving, branding, haying, spraying weeds, weaning or logging, but you can bet they are busy on the ranch.

## The Gang

Gayla is the third generation Anderson to call the Open Cross Ranch, which was started by her grandfather Charlie Anderson, her home. In 1895, at the age of 17, Charlie came to America from Sweden with his father and uncle. Initially, they were involved in freighting supplies to the mines in the Philipsburg area. Charlie mined and had prospect holes in various parts of Granite County. Agriculture became the family’s life in 1908 when he started the Open Cross Ranch with a homestead on the north end of what is now the Big Meadow.

In three years the Open Cross will celebrate its centennial as a family ranch. Gayla says, “By the time several generations have lived on the same place, ranching becomes more than what you do for a living, it’s who you are.”

Over four decades, Charlie purchased adjacent properties to complete the Open Cross at its current size. Gayla’s father was born in the homestead house on the ranch, and Gayla was raised on the ranch. Her husband, Lee, hales from Ovando, and has enjoyed working in the woods throughout his life, as well as running the Open Cross. The family name is Danish in origin, from Schou, meaning wood or forest. Lee and Gayla have effectively integrated the timber and livestock on the ranch to put together a total resource production unit.

Lee and Gayla have two children. David and his wife Amanda live on the ranch and David works full time for Parke Logging of Drummond. As Gayla tells it “David has pitch and diesel fuel in his veins, just like his dad and his grandfather before him.” He is most at home at the controls of a piece of equipment, but he is a good hand on the ranch and helps out when things get busy. Amanda makes the 120-mile round trip daily to work as a cosmetologist in Missoula.

Jolene and husband Levi Parsons, live in Drummond, and hope at some point to pursue their love of the ranching life. Jolene studied Agricultural Business Technology, at Dawson Community College and puts in a lot of hours on the ranch. Levi is most at home in the saddle, but run-



ning equipment in the woods revs his engine too. Levi and Jolene will be adding the fifth generation to the gang in the near future.

The Skaw gang embodies the family ranch in Montana, and they are working together to meet the challenges of running the Open Cross in the 21<sup>st</sup> century.

## The Open Cross

The Open Cross lies near the center of the Lower Flint Creek Valley of Granite County. It’s about 5,600 acres of native range, improved grass range, hay meadows and timber. Elevations on the ranch run from about 4,300 feet to over 7,000 feet on their Forest Service allotment. The ranch produces enough hay to fill the needs of winter feed for the cow herd and the “Brumby Bunch” as Gayla puts it, leaving some for sale.

The ranch ran about 350 mother cows and 50 yearlings under the management of Gayla’s dad, but Lee and Gayla reduced the herd to about 275 head. Gayla says, “People forget that in the old days we had 1,000 lb cows and weaned 450 lb calves. We now run 1,350 lb cows and wean 650 lb. steer calves. The stocking level of the ranch has to reflect that change.”

Last year Lee and Gayla reduced the herd to about 60 head of cows to capitalize on a favorable bred cow market, reduce the impact of a possible BSE induced crash in the livestock market, pay the ranch portion of installing a cost-share gravity flow pivot irrigation system and eliminate debt. The herd reduction provided an opportunity to develop goals for pasture and timber resources, develop plans to meet those goals and provide finances to implement changes. The ranch uses the services of MSU/Granite County Extension Service and the local

*continued, next page*

# An Old Tool for an Old Problem:

## Livestock Grazing to Control Invasive Plants


by Tracy Brewer, Research Assistant Professor of Range Science, Joe Skeen Institute for Rangeland Restoration, Dept. of Animal and Range Sciences, Montana State University



Invasive plants are not a new problem in Montana. In 2004, noxious weeds infested 8.2 million acres in Montana (about 9% of the state's total land acreage) and they continue to degrade the productivity and biological diversity of Montana's rangelands. Every Montana county reported the presence of at least one noxious weed species and other invasive plants that are not deemed "noxious", such as cheatgrass, in 2004.

Current methods used to control invasive plants include herbicides, mechanical treatments, prescribed fire, biological control, and livestock grazing. Because of the vast expanses of weed infestations in Montana and the ever-increasing costs to control them, the relative cost and benefits of the various control methods must be continually reevaluated. More and more, resource managers and landowners are shifting their mindsets regarding invasive plants and, wherever eradication is not feasible, beginning to explore ways to turn weeds into a usable resource. An example of this is the use of livestock grazing for weed control. The benefits of using livestock grazing to control invasive species are two-fold: the invasive plant provides a source of forage for livestock and the livestock provide a source of weed control.

Livestock grazing for weed control is not a new idea. Although this tool has not received widespread use,

some Montana ranchers have used livestock grazing to control weeds for the past 60 years. One reason for its limited application is that people who have used this tool successfully have had to develop their own grazing prescriptions through trial and error over many years. In response, Montana State University scientists have recently increased their research focus on using livestock, primarily sheep and goats, for vegetation management and weed control. Through the Montana Sustainable Rangeland Livestock Task Force, several new research and demonstration projects are currently targeting spotted knapweed, leafy spurge, dalmation toadflax, and ponderosa pine encroachment. The objective of these projects is to develop and refine appropriate livestock grazing prescriptions for controlling weeds and sustaining Montana's rangeland resources. The Task Force is the MSU contribution to a new collaborative effort between MSU, New Mexico State University, and Texas A&M University called the Joe Skeen Institute for Rangeland Restoration. 

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### Rancher profile, cont.

Department of Natural Resources and Conservation for technical and financial assistance.

One of the goals for the livestock portion of the ranch is to build back to about 300 mother cows, using black and black baldy cows bred to terminal sire Charolais bulls. Cattle for this ranch need the ability to use mountain pastures where slopes prevail over level ground. However, the ranch has the resources to complete herd breeding in the lower pastures where the terrain is less challenging. Summer grass and cooler summer temperatures are the strong point for the ranch, and calves grow well on the summer range. March calving of the cow herd yields 600 to 650 lb calves come November. Marketing has included video sales, and local calf buyers.

In the mean time, the Skaws are leasing pasture to neighbors, and reducing their herd has provided the flexibility to graze pastures at levels designed to meet range resource objectives and provide rest for two pastures that are part of a range improvement program.

Timber resources have long been a part of the picture for the Open Cross. However, their role has changed over time. Gayla's father, like many other ranchers of his generation in Granite County, considered trees somewhat of a nuisance, taking up space and resources that could be growing grass to feed cattle. From that point of view, the only good tree was the one that was loaded on the truck.

Lee and Gayla have implemented a timber management program that provides income to the ranch and achieves resource management goals. Each year their timber harvest has two aims: to generate revenue (by harvesting 15 – 20 truckloads of logs); and to selectively harvest timber stands, so that the remaining trees increase in growth and accelerate the generation of future timber revenue. By opening the canopy of timber stands, additional sunlight reaches the soil, increasing grass growth for grazing. In this manner ranch timber resources have become an integral part of resource management on the Open Cross.


*continued on p. 6*



## ASK JOHN A NUTRITION QUESTION:

### Are nutritional benefits of processed corn worth the cost?

Over the past few weeks, one of the recurring questions has been, “Should I pay to process whole corn?” Steve Loerch from Ohio State University recently published an interesting paper in which he measured the effects of 1) cattle age, 2) forage level in the diet (18% vs. 5% corn silage) and 3) processing of corn (whole or cracked) on steer performance. The cattle ages compared were weaned calves ( 660 lbs) vs. yearlings (1052 lbs). Results of their three studies suggested that:

- Cattle age and corn processing did not affect the digestibility of dry matter, starch, crude protein or organic matter.
- Results of a feedlot trial showed that steers fed diets containing 18% corn silage and cracked corn had 7% greater dry matter intakes than steers fed whole corn. However, when steers were fed diets with 5.2% corn silage, grain processing did not affect dry matter intake.
- Total daily gains, feed conversions and the percentage of carcasses grading choice were not affected by corn processing method.
- Forage level and corn processing did not affect diet digestibility of dry matter, starch, crude protein or fiber.
- In summary, corn processing did not provide additional benefits to feedlot cattle performance. 

Source: *J. Animal. Sci.* 2005. 83:705.

### Comment from last month’s column on feeding wheat:

JP,

I think it would be a good idea to issue a warning about creep feeding wheat in the next issue of Beef: Questions and Answers. Following are my thoughts concerning the statement “Conservatively, beef cow supplements and creep feeds can contain 30 to 50 percent wheat.”

Beef cow supplements and creep feeds that contain 30 to 50 percent wheat would not, in my estimation, contribute to forage digestibility, and depending on the forage would likely be detrimental to fiber digestibility. Of even more concern would be the likelihood of acidosis and bloat in calves that are consuming free-choice creep feed containing wheat. Perhaps the original author meant Wheat Middlings, to which I would totally agree with his statement. Wheat middlings are high in soluble fiber and contain very little wheat starch, making them much safer.

Thanks,  
Kim Hager, MS, PAS  
Beef Nutritionist  
CHS Nutrition  
(406) 860-5949  
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### Beef Council Pledge, from p. 1

in the cattle business, what better way to support the product than by establishing a top notch cattle and beef research facility in their own state.

There is a correlation between this research project and improving beef products. This project will include research on functional genomics and studies of gene clusters that control tenderness and disease resistance, all which will contribute to a safer, higher quality, more consistent supply of beef for consumers. All of these objectives that fall in line with the purpose of the \$.25 Fund.

Jim Peterson, Interim Associate Dean for Development and External Relations at the MSU College of Agriculture told the Council that MSU recognized these

beef dollars were intended for research and education and this effort will be a major step in carrying out that mission.

The Montana Beef Council joins other noted beef industry organizations such as Montana Livestock Ag Credit, Inc., the Dan Scott Family Foundation, and Farm Credit Services in support of the new MSU Animal Bio-Sciences facility.

**Beef: Questions & Answers** is a joint project between MSU Extension and the Montana Beef Council. This column informs producers about current consumer education, promotion and research projects funded through the \$1 per head checkoff. For more information, contact the Montana Beef Council at (406) 442-5111 or at [beefcncl@mt.net](mailto:beefcncl@mt.net)

# Characteristics of the Major Beef Breeds

*Dr. Steve Hammack, Professor and Extension Beef Cattle Specialist Emeritus Texas Cooperative Extension*

Beginning in the late 1960s, the USDA Meat Animal Research Center at Clay, Nebraska, has evaluated around 30 breeds of cattle in their Germ Plasm Project. Their latest report (J. Animal Sci. 83:196) compared crossbred steers sired by the seven *Bos taurus* breeds with the largest number of registrations. These included three British breeds: Angus (A), Hereford (H), and Red Angus (R); and four Continentals: Charolais (C), Gelbvieh (G), Limousin (L), and Simmental (S). All of these breeds except R had been evaluated in earlier phases of the project. Sires included a sample from among the top 50 in registrations within the breed as well as young, unproven sires. There were from 20 to 23 sires per breed. Traits were mathematically adjusted to slaughter end-points of the same age (445 days), carcass weight (800 lb), fat thickness (0.43 in.), or marbling (Small35).

This paper and other recent reports by the U. S. Meat Animal Research Center indicate that, compared to some 30 years ago and depending on slaughter end-

**Days on Feed** - There was little difference in days on feed to the same weight, breed-averages ranging from 225 to 246 days. To reach the same fat thickness, days on feed ranged from 206 to 277 and A, H, and R required fewer days. To the same marbling, the range was from 190 to 279 days and Hereford required almost as much feeding time as the four Continentals.

**Live Weight** - At the same age, breed-average live weights ranged from 1282 lb to 1362 lb: L were lighter than all but G and H; G were lighter than A, C, and S; and A, C, L, R, and S did not differ. At the same fat thickness average weight ranged from 1258 lb to 1430 lb: the three British breeds were lightest, Limousin were intermediate, and C, G, and S were heaviest. But at the same marbling (average weight ranging from 1199 lb to 1399 lb), A and R were lightest, H intermediate, and the four Continentals heaviest.

**Fat Thickness** - Slaughtered at the same age or the same weight, the British breeds were fatter, averaging 0.50 in to 0.57 in, while Continentals had 0.30 in to 0.38 in. At the same marbling, the range was from 0.38 in to 0.56 in: all but L were leaner than H; R were leaner than L; and there was no difference within A, C, G, and S.

**Ribeye Area** - Whether the end-point was age, weight, fat thickness, or marbling, the British breeds (12.2 to 12.8 sq in) were smaller in ribeye than the Continentals (13.4 to 14.0 sq in). Within British, A tended to be larger and R smaller. Within Continentals, G tended to be smaller and Limousin larger. However, differences were small within the two types.

**Yield Grade** - Comparisons of Yield Grade varied depending on the slaughter end-point. At the same age or weight, British had numerically higher (3.2 to 3.4), poorer YG, while Continentals were lower (2.3 to 2.7). At the same fat thickness, as might be expected, there were no differences in YG. However, at the same marbling, H were higher (3.5) than all other breeds (which ranged from 2.7 to 3.1).

**Yield Grade Discounts** - Yield grades of 4.0 or higher receive meaningful price discounts. At the same age or weight, British had

point, there is now little if any difference between British and Continental breeds in body size and rate of gain.

However, in this latest work, important differences still existed in body composition. Fed to the same age or weight, Continentals tended to have less fat and—regardless of end-point—larger ribeyes. So, unless fed to the same fat thickness or marbling, Continentals had superior yield grades. While the industry often distinguishes between British and Continentals when characterizing marbling and quality grade, in fact Herefords were similar to Continentals, and Angus/Red Angus were clearly superior in these traits. While there were some statistically significant differences in eating quality, these differences tended to be small and would probably not be of much economic importance if beef was marketed on actual palatability factors.

Traits are discussed in detail below. Where differences or lack of differences are mentioned, they are based on tests of statistical significance in the paper.

more 4.0 or higher (17 % to 21 %) compared to Continentals (1 % to 7 %). But at the same marbling, H (23 %) had more discounts than other breeds and differences within the other six breeds were not significant, but A (9 %) and R (7%) tended to be lower than the Continentals, which ranged from 11 to 15%.

**Marbling** - At the same age, A (Sm84) and R (Sm90) had higher marbling than the other breeds, which ranged from Sm04 to Sm27. At the same weight, the same relationships held with A at Sm66, R at Sm 83, and the other five ranging from Sm03 to Sm24. But at the same fat thickness, there was no difference among A, R, C, G, L and S (Sm25 to Sm66), except that R were higher than L; H (Sm05) were lower than all but L and G.

**Percent Choice** - At the same age or weight A and R had higher percent Choice (81% to 90%, depending on end-point) than H, C, G, L, and S (which ranged from 57% to 66%). There was no difference among the latter five breeds. But at the same fat thickness, there was no difference among A, R, C, G, L, and S, except that R (79%) had more than L (65%); H (57%) had less than A, R, C, and S (which ranged from 68% to 74%).

**Shear Force** - At the same age, A, H, and R had less shear force (greater tenderness) than G. At the same weight, R was lower than the four Continentals and A and H were lower than G. At the same fat, A, H, and R were lower than the Continentals. At the same marbling, A and R were lower than the other five breeds, and H were lower than G.

**Taste Panel** - At the same age, A and R were more tender than G. At the same weight, A, H, R, and S were more tender than G. At the same fat, A, H, and R were more tender than C and G. At the same marbling, A and R were more tender than C, G, and L. At the same age and weight, A and R were juicier than C and G. But at the same fat or marbling there were no differences among any of the breeds in juiciness. And there were no differences among the breeds in flavor intensity regardless of slaughter end-point.





## Montana Beef Network: A Refresher

Lisa Duffey, Project Coordinator

The Montana Beef Network (MBN) was created in 1999 as a cooperative project between Montana State University Extension Service and the Montana Stockgrowers Association. Its purpose: to find ways to add value to Montana's beef industry. Through a special USDA grant secured by Senator Conrad Burns, the Network educates producers about beef quality assurance issues and certifies and tags feeder calves that have met defined health management protocols. It also runs a source and process verification tracking system to follow calves through various production schemes and return harvest data to the original producer.

Beef Quality Assurance (BQA) certification is the first step to becoming involved in MBN. Certification requires a review of BQA information and a short quiz on the concepts. There are three options for certifying: 1.) Contact your local MSU Extension agent to review the BQA materials and take the quiz; 2.) Request a BQA book and CD-ROM, review the material enclosed, take the quiz and return it to the BQA office; or 3.) Log on-line to <http://animalrangeextension.montana.edu/BQA/Onlinecourse.htm> to review the materials and take the quiz on-line. Certification is free through October 2005 and is valid for three years.

The MBN uses an electronic identification device (EID) to tag feeder calves, track them through the production cycle and collect carcass data to be used for breeding and health management. Producers decide which animals they would like to tag and track. While we typically



tag and track feeder calves, some producers are looking to the MBN and the EID tags to collect and manage cow herd records for premise origin identification. Network staff are available to assist in tagging and data collection with a Silencer hydraulic squeeze chute and scale. Prescanned tags and worksheets for data collection are available if staff are not available or if producers prefer to do the tagging on their own.

Data typically collected at the producer level is a visual tag number,

gender, weight (if available), breed, hide color, owner name and location, production phase, birth dates (if available), and vaccinations given. Complete carcass data is requested on all the calves tracked to the packing plant, including quality grade, yield grade, carcass weight, marbling score, ribeye area and backfat.

MBN is currently using eMerge Interactive for data management and storage ([www.emergeinteractive.com](http://www.emergeinteractive.com)). The eMerge data is accessible through a secure database via the Internet for producers to review and download. MBN staff can help review the data and any potential management changes with the producer.

The cost to the producer for these services is \$2/head for the tag. The MBN grant covers all other associated expenses, including but not limited to, a data management fee, feeder communication and carcass data collection.

— See the MBN Calendar on back page —

*If you'd like more information about the Montana Beef Network, you can access our web site at [www.mbn.montana.edu](http://www.mbn.montana.edu)*

*or contact the Project Coordinator, Lisa Duffey, at 406-994-4323 or [lduffey@montana.edu](mailto:lduffey@montana.edu).*

### Rancher profile, cont.

#### Challenges for the Open Cross

Lee and Gayla have worked the past 25 years on the ranch, with Lee spending some of nearly every winter working in the woods, quite often off the ranch. Gayla says that they haven't lived "high off the hog," but they have always been quite comfortable. Now they are facing the same challenges that most other Montana ranchers face at some point – passing the ranch to the next generation. This will require designing a ranch plan that generates enough income to support another family, while providing a retirement income for Lee and Gayla.

To that end, the family is in the process of evaluating ranch resources and options to optimize a sustainable income from them. It will be a combination of livestock

and timber enterprises, but is a difficult undertaking and requires considerable creativity.

One of the tasks centers on comparing current productivity and potential productivity for each unit of the ranch. Then, if a unit is not meeting production potential, they examine what precisely can be done to bring it up to potential, and what resources will be required to achieve that goal. This undertaking is a work in progress. In the meantime, some family members are going to have to continue to earn some income from outside sources. The family definitely supports legislation in the works to permanently eliminate the death tax and other measures to make inheritance less a burden to the next generation.

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# Montana Beef Network Carcass Data

## Summary of 2003-04 Carcass Data for Montana Calves Collected Through the MBN

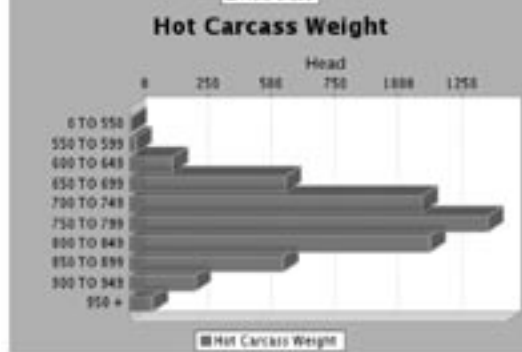
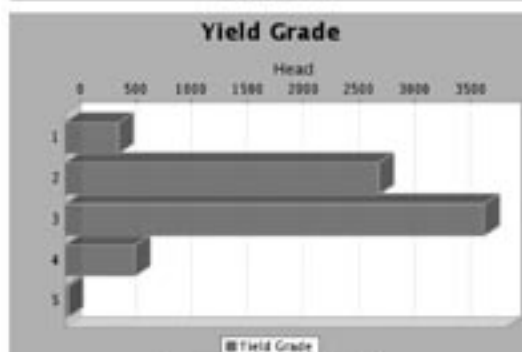
Lisa Duffey, MBN Project Coordinator

The Montana Beef Network tracked 8,913 feeder calves through the production cycle in 2003-2004 to collect data for 50 enrolled producers. Data was collected on 6392 calves (72%) for 44 producers (88% return rate). Challenges in collecting and returning carcass data continue to include uncooperative feeders who cut the tags out or forget to call the Beef Network when the calves are sold and shipped to the slaughter facilities; packing plants who decline to release the data; and data collectors who resist using the RFID technology.

The carcass data collected in 2004 on the 03-04 calves allowed us to continue to refine our understanding of the carcass characteristics of Montana feeder calves. This snapshot indicates that Montana calves continue to meet the industry's standards for high quality feeder cattle (70% Choice quality grade). Sixty-eight percent of the calves graded Choice quality or better while 32% were graded Select or Standard. Ninety percent of the calves had a yield grade of 3 or lower. The 10% of calves scoring a yield grade of 4 or more continues to concern us.

The fall of 2004 was very busy for the Montana Beef Network. We tagged over 24,000 head of cattle and will be tracking most of them for production and carcass data. Sale results suggested that these source and process verified calves were worth between \$9 and \$30 more than non tagged calves. We are currently working with 87 producers and more than 90 feeders. We are optimistic that our data return will continue to improve as more producers and feeders become aware of the discussion of a national animal identification system. We are also encouraged by recent talks to reopen the Japanese export

market. Most of the MBN cattle tagged have birth dates recorded, which would make them eligible for export to Japan through age verification. We are also finding that including this information in the data record helps feeders when selling to packing plants to avoid the 30 month mouthing process.



Grade	Head	% of Total
PRIME	110	1.3
CHOICE	5518	66.5
SELECT	2591	31.2
NO ROLL	4	.0
STANDARD +	54	.7
BULLOCK	4	.0
CONDEMNED	3	.0
CUTTER	1	.0
DARK CUTTER	5	.1
STANDARD -	12	.1

Grade	Head	% of Total
1	483	6.2
2	2821	36.5
3	3768	48.8
4	629	8.1
5	28	.4

Weight Group	Head	Percent of Total
0 TO 550	9	.2
550 TO 599	30	.5
600 TO 649	172	3.1
650 TO 699	615	11.1
700 TO 749	1156	20.9
750 TO 799	1413	25.5
800 TO 849	1187	21.4
850 TO 899	608	11.0
900 TO 949	260	4.7
950 +	92	1.7

### Example of a Montana Beef Network Carcass Summary, between 3/01/2004 and 2/16/2005



# Calf Scours: Causes, Prevention and Treatment

Don Hudson, D.V.M., R. Gene White, D.V.M, University of Nebraska

Calf scours or calf diarrhea causes more financial loss to cow-calf producers than any other disease-related problem they encounter.

Calf scours is not a disease--it is a clinical sign of a disease which can have many causes.

In diarrheas, the intestine fails to absorb fluids and/or secretion into the intestine is increased.

A calf is approximately 70 percent water at birth. Loss of body fluids through diarrhea can produce rapid dehydration. Dehydration and the loss of certain body salts (electrolytes) produce a change in body chemistry and severe depression in the calf. Although infectious agents may be the cause of primary damage to the intestine, death from scours is usually due to loss of electrolytes, changes in body chemistry, dehydration, and change in acid-base balance rather than by invasion of an infectious agent. The infectious agent that causes scours is important, however, from the standpoint of prevention.

The age of the calf when scours begins is an important consideration in its survival. The younger the calf, the greater the chance of death.

Recent research has indicated that many scour cases can be directly related to colostrum intake by the newborn calf. A calf that is well mothered and consumes 1 to 2 quarts of colostrum in the first few hours after birth absorbs a higher level of antibodies. This calf is far less susceptible to scours and other calfhood diseases.

## Viral Scours

**Rotavirus Scours.** A reo-like virus can cause scours in calves within 24 hours of birth. However, when the infection is first introduced into the herd, it can affect calves up to 30 days of age or older. Infected calves are severely depressed. There may be a drooling of saliva and profuse watery diarrhea. The feces will vary in color from yellow to green. Calves lose their appetite and the death rate may be as high as 50 percent, depending on the secondary bacteria present.

Diagnosis depends on an accurate history, clinical signs, and proper specimen collection and submission to a laboratory. The reo-like virus infection alone causes no diagnostic gross lesions in the intestine, but there is an increased volume of fluid in both the small and large intestine.

**Coronavirus Scours.** Scours caused by coronavirus occurs in calves that are over 5 days of age. When the infection first starts in a herd, calves up to 6 weeks of age may scour. These calves are not as depressed as those infected



with rotavirus. Initially, the fecal material may have the same appearance as that caused by rotavirus. As the calf continues to scour for several hours, however, the fecal material may contain clear mucus that resembles the white of an egg. Diarrhea may continue for several days. Mortality from coronavirus scours ranges from 1 to 25 percent.

Gross lesions are not significant.

The intestine is often full of liquid feces. If lesions are observed in the intestine, they are the result of secondary bacterial infection.

Treatment for coronavirus scours is the same as that for rotavirus scours. Many herds have been found to be infected with both the rota- and coronaviruses.

A vaccine that is specific for the rota- and coronaviruses is available. It can be administered in one of two ways: orally to the calf soon after birth; or as a vaccination to the pregnant cow. The first year that a vaccination program is started in the beef cow herd, the cow receives two vaccinations--the first at 6 to 12 weeks before calving, and the second as close to calving as possible. The next year, the cows are given a booster vaccination just before calving. In herds where the calving period extends over more than 6 to 8 weeks, cows that have not calved at the end of a 6-week period should receive a second booster vaccination. Following this procedure insures that the calf receives a high level of rota- and coronavirus antibodies in the colostrum. However, the calf must receive adequate colostrum, preferably within the first 4 hours after birth as the antibodies cannot be absorbed later than 24 hours after birth. This cow vaccination program fits well into a beef cow herd health program and helps prevent virus build-up in the herd.

**Diagnosis of Rota- and Coronavirus Scours.** Accurate diagnosis of viral scours can be made only by laboratory tests. Your veterinarian knows what material to submit for examination.

**Bovine Virus Diarrhea.** The virus of bovine virus diarrhea can cause diarrhea and death in young calves. Diarrhea begins 2 to 3 days after exposure and may persist for quite a long time. Ulcers on the tongue, lips, and in the mouth are the usual lesions that can be found in the live calf. These lesions are similar to those found in yearlings and adult animals affected with bovine virus diarrhea.

Diagnosis is by history, lesions, and diagnostic laboratory assistance. Treatment is similar to that used for other viral scours. Bovine virus diarrhea is controlled by vaccinating all replacement heifers 1 to 2 months before breed-

ing. *Caution: do not vaccinate pregnant heifers or cows with modified live virus.* Consult your veterinarian before starting a bovine virus diarrhea vaccination program.

## Bacterial Scours

***Escherichia coli (Colibacillosis).*** *Escherichia coli (E. coli)* has been incriminated as a major cause of scours. Many times this is the only organism identified following routine bacteriologic culturing. Certain *E. coli* can cause diarrhea. Many different serotypes (kinds) of *E. coli* have been identified; some cause scours while others do not. *E. coli* is always present in the intestinal tract and is usually the agent that causes a secondary infection following viral agents or other intestinal irritants.

*E. coli* scours is characterized by diarrhea and progressive dehydration. Death may occur in a few hours before diarrhea develops. The color and consistency of the feces are of little value in making a diagnosis of any type of diarrhea. The course varies from 2 to 4 days, and severity depends on age of the calf when scours starts and on the particular serotype of *E. coli*.

Upon postmortem examination, lesions are nonspecific. However, the small intestine may be filled with fluid and the large intestine may contain yellowish feces.

Diagnosis depends on an accurate history, clinical signs, and culture of internal organs for bacteria and serotyping of the organism. The location at which the culture from the intestine was taken is also important. Control of *E. coli* scours can be difficult in a severe herd outbreak. All calves should receive colostrum as soon after birth as possible. This helps the calf resist *E. coli* infection. Early isolation and treatment of scours helps to prevent new cases. There are new *E. coli* cow vaccines now on the market. These vaccines contain the K99 antigen which should give immunity to many types of *E. coli*. The vaccine is administered 6 weeks and 3 weeks prior to calving. The new *E. coli* vaccine is also available in combination with the rota- and coronavirus vaccine. This vaccination builds high antibody levels in the colostrum, but the calf must get colostrum in the first few hours of life for the vaccine to be effective.

***Salmonella.*** There are more than 1000 types of salmonella, all of which are potential disease producers. Salmonella produces a potent endotoxin (poison) within its own cells. Animals may be more severely depressed following treatment with antibiotics as treatment causes the salmonella organisms to release the endotoxin, producing shock. Therefore, treatment should be designed to combat endotoxic shock.

Calves are usually affected at 6 days of age or older. This age corresponds very closely to the age of the coronavirus infection. The source of salmonella infection in a herd can be from other cattle, birds, cats, rodents, the water supply, or a human carrier.

Clinical signs associated with salmonella infection include diarrhea, blood and fibrin in the feces, depression, and elevated temperature. The disease is more severe in young or debilitated calves. Finding a membrane-like coating in the intestine on necropsy is strong presumptive

evidence that salmonella might be involved. Salmonella isolations should be checked by a bacteriologic sensitivity test to determine the antibiotics of choice.

***Enterotoxemia.*** Enterotoxemia can be highly fatal to young calves. It is caused by toxins produced by *Clostridium perfringens* organisms. There are 6 types of *Clostridium perfringens* that can produce toxins, of which types B, C, and D appear to be the most important in calves.

The disease has a sudden onset. Affected calves become listless, display uneasiness, and strain or kick at their abdomen. Bloody diarrhea may or may not occur. It is usually associated with a change in weather, a change in feed of the cows, or management practices that cause the calf to not nurse for a longer period of time than usual. The hungry calf may over-consume milk which establishes a media in the gut that is conducive to the growth and production of toxins by the clostridial organisms. In many cases, calves may die without clinical signs being observed.

Postmortem lesions may be a hemorrhagic intestinal tract; thus, the common name, "purple gut." In the small intestine, there may be large hemorrhagic or bloody, purplish areas where the tissue looks dead. This is usually attributed to type C. Types B and D may produce diarrhea without the usual postmortem lesions. Diagnosis of these toxins is by finding the toxin in the small intestine by laboratory methods. This toxin breaks down rather rapidly so the contents of the intestinal tract must be collected very soon after death and preserved by freezing. Finding lesions of hemorrhagic enteritis at postmortem in a calf that has died suddenly is basis for a tentative diagnosis.

This disease is best controlled by vaccinating the cows with *Clostridium perfringens* toxoid 60 and 30 days before calving. A single booster dose of toxoid should be given annually thereafter before calving. If this problem is diagnosed in calves from nonimmunized cows, antitoxin can be given to the calf. Administration of antitoxin and oral antibiotics is the only treatment that is effective.

## Other Causes of Scours

***Coccidiosis.*** Coccidiosis is caused by one-celled parasites that invade the intestinal tract of animals. There are many species of coccidia. Two, *Eimeria zurnii* and *Eimeria bovis*, are usually associated with clinical infections in cattle. Coccidiosis has been observed in calves 3 weeks of age and older, usually following stress, poor sanitation, overcrowding or sudden changes of feed. It often occurs in calves 7 to 14 days after they are moved from the calving lots onto pasture.

Clinical coccidiosis is diagnosed by finding significant numbers of parasites in the feces. The results of the fecal examination must be related to the clinical signs and intestinal lesions. Occasionally, clinical coccidiosis will be present with bleeding and very few parasites in the fecal material.

Laboratory examination of sections of the intestine may be required for diagnosis. A typical sign of coccidiosis in young calves is diarrhea with fecal material smeared

*continued on p. 10*

over the rump as far around as the tail will reach. This may or may not contain blood. Death may occur during the acute period or later from secondary complications.

Sulfonamides have been the treatment of choice for coccidiosis for many years. If treatment is given before signs appear, the disease can largely be prevented. Amporolium has been cleared for use in calves as a preventative. This should be supplied at the rate of 5 mg/kg of body weight for a period of 21 days to cover the time period during which this disease is anticipated. Good feeding practices, management, and sanitation are the control methods of choice.

**Cryptosporidium.** Cryptosporidium is a protozoan parasite that is much smaller than coccidia. It has the ability to adhere to the cells that line the small intestine and to damage the microvilli. Several reports from researchers and diagnosticians have associated cryptosporidium with outbreaks of calf scours. As a rule, cryptosporidium is detected in combination with coronavirus, rotavirus, and/or *E. coli*. Calves infected by cryptosporidium have ranged from 1 to 3 weeks in age.

### **Nutritional Scours**

Under range conditions, a calf adapts a pattern of nursing that fills his needs. Nutritional scours can be caused by anything that disrupts this normal habit. A storm, strong wind, or the mother going off hunting for new grass disrupts the normal nursing pattern. When the hungry calf does get an opportunity to nurse, the cow's udder may contain more milk than normal and the calf may overeat resulting in a nutritional scours. Erratic nursing patterns may also be conducive to enterotoxemia. Nutritional scours is usually white scours caused by undigested milk passing through the intestinal tract.

This type of scours usually presents little problem in treatment. If the affected calves are still active and alert, no treatment is required. If the calf becomes depressed or fails to nurse, it should be treated. Oral antibiotics can be used as a treatment.

### **Treatment of Calf Scours**

Treatment for scours is very similar regardless of the cause. It should be directed toward correcting the dehydration, acidosis, and electrolyte loss. Antibiotic treatment can be given simultaneously with the treatment for dehydration. Dehydration can be overcome with simple fluids given by mouth early in the course of the disease. If dehydration is allowed to continue, intravenous fluid treatment becomes necessary.

The clinical signs of dehydration first occur when the fluid loss reaches 5 to 6 percent of the body weight. Ten percent loss of fluid results in depression, sunken eyes, dry skin, and the calf will probably be unable to stand. A 15 percent loss of fluids usually results in death. Oral fluids used early in the scouring process have been quite successful. Consult your veterinarian for electrolytes to be

given orally. There are dry electrolyte powders available that can be mixed with water for oral administration.

If electrolyte powders are not available, there are three solutions for oral administration that can be prepared on the ranch:


1. Combine 1 can beef consommé, 1 package fruit pectin (Sure-Jell or Pen-Jel), 2 teaspoons low sodium salt (Morton Lite Salt), 2 teaspoons baking soda, and add enough warm water to total 2 quarts.
2. Combine 1 can beef consommé, 3 cans warm water, and 1 heaping tablespoon baking soda.
3. Combine 1 tablespoon baking soda, 1 teaspoon salt, and 250 cc (8 ounces) 50% dextrose or 8 ounces light Karo syrup, and add enough warm water to total 1 gallon.

Do not overfeed! Administer up to 1 quart of any of these three solutions every 3 to 4 hours, depending upon the degree of dehydration and fluid loss. These solutions can be used as the only source of nutrients for a period of 24 to 48 hours. Do not use milk or milk replacers during this period, as milk in the intestinal tract makes an ideal medium for bacteria such as *E. coli* to grow. Return the calf to the cow, which has been previously milked out, as soon as the calf is able to follow its mother.

Giving electrolytes orally is always a problem unless the calf will nurse from a bottle. There is an esophageal probe available which works very well for administering oral fluids to calves. This device, or a stomach tube, should be used when giving calves large amounts of fluids. If using a stomach tube, do not go into the stomach with the tube as this puts the material in the nondeveloped rumen rather than into the true stomach where it should be administered. To avoid the rumen, insert only 18 inches of the stomach tube into the calf's mouth.

Antibiotics should be used both orally and by injection whenever treating calves for diarrhea. In acute salmonellosis outbreaks, antibiotics may cause the release of excess endotoxins; therefore, consideration should be given to using fluid therapy only.

Ear tag treated calves for identification and keep a daily record on the treatment administered. This aids in evaluating the treatment and utilizing follow-up treatments as necessary. Valuable information can be obtained by having the cows identified and identifying each calf at birth. If an outbreak of scours occurs, persistent treatment and records are essential for doing a good job.

Scour problems are an ever-existing threat to baby calves. A good program of adequate nutrition, sanitation, management and a good herd health program are necessary to minimize the incidence and losses. Early diagnosis and treatment will reduce the threat of a herd outbreak. The correct diagnosis is also very important when considering vaccinations and other procedures for the cow herd the next calving season. 

*References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by Nebraska Cooperative Extension is implied.*

## Producer Profile, from p. 6

Another challenge facing the ranch can be summed up as environmental issues. Noxious weeds are a formidable challenge not unique to the Open Cross. Weed management is expensive and time consuming. Spotted knapweed is of greatest concern for the ranch, and its management is an annual effort.

The Open Cross is part of the Silver King Weed District that has successfully secured Noxious Weed Trust Fund monies to assist in managing noxious weeds on the ranch. Grant funding has provided an opportunity to make real headway on managing spotted knapweed on the ranch, and the desire is to establish healthy rangelands that will reduce the likelihood of infestation by weedy species.

Additional environmental challenges come in the form of increased governmental regulations related to water quality and endangered species. The Open Cross is in wolf country, and concerns are as high about governmental regulation as they are about the efficiency of this reintroduced predator.

While considering money-making options, the Skaw gang ran into another challenge that will require thought to address. Ranchers are often encouraged to consider recreational opportunities for income diversification, such as cabin rentals, hunting access and horseback riding. However, those opportunities expose the ranch to increased liability and the insurance cost is prohibitive. Any options for income diversity will require careful consideration before being pursued.

## Industry Challenges as Seen by the Skaw Gang

The greatest challenge the Skaws see facing the livestock industry is instability and complexity of marketing. The relationship between BSE (or other issues), consumer confidence, and the price of calves received by ranchers is very complex. As Gayla says “You never know what will come up next that will impact calf prices.” Consumers must remain confident that beef is a safe and wholesome part of the food supply for the nation.

Related to that instability of markets within the United States is the impact of international policy and international marketing. Gayla said that, “COOL is a good thing, we should be able to identify meat as grown and produced in the United States.” That is one way to assure that consumers remain confident of the safety of beef. NAFTA and trade impacts on livestock producers is huge. Gayla added, “We grow enough livestock in the United States to feed the whole country, why are we importing beef at all?”

Environmental issues are also recognized as important to the industry as whole, not just the Open Cross. AFO/CAFO regulations, water quality regulations, endangered species, water law, noxious weeds, and wildlife numbers are among issues that the industry needs to address as a whole. Those issues have the potential to have far reaching impacts for everyone in the livestock industry.

The following poem penned recently by Gayla pretty well tells the story of what the Montana ranch and the western livestock industry faces as we get into the 21<sup>st</sup> century. 

## Times Has Changed

*By Gayla Skaw*

You sold your cattle. The heck you say!  
Why did ya go an' do that?  
Cattle prices are better than they've ever been  
Well you see, I must be getting' old cuz I can say times has changed.  
Why I can remember comin' in to my dad as a youngster with  
a bunch of little lavender flowers in my hand and sayin, “Dad! What are these?”  
And he didn't know cuz acourse we didn't recognize spotted knapweed  
30 years ago.  
And it was only the first!  
Add at least 10 more noxious weeds to the list we spray for regularly  
now.  
Used to be if a cow wanted a drink she went to the crick and got one.  
If she happened to take a crap while she was there,  
maybe browse a bit on the willows – nobody cared.  
Cut throat were an easy catch in that crick for a kid like me.  
(Still are, I might add)  
If ya had a problem with a predator – a lion, wolf, coyote or such,  
ya dealt with it.  
There was no such thing as “Shoot, Shovel and Shut-up”.  
Elk on the ranch were few and far between,  
rather than the 2 or 3 hundred head we pasture now, pretty much year  
'round.  
Don't get me wrong. We love to watch them, but they cost us money.  
The weather was about the only thing you couldn't really count on for  
sure.

But if the Midwest got decent weather for a good corn crop,  
you knew that calf prices come fall would be pretty good.  
If Mother Nature didn't cooperate and corn was in short supply,  
you knew calf prices would be off a bit.  
At branding time, used to be, you vaccinated for black-leg.  
Maybe red-water if you pastured in some swampy ground.  
You dipped 'em for lice every fall. Had the vet give the heifers Bangs,  
if you thought ya might ever want to ship them out of state.  
Now you give them all that plus Bovashield 4, Pasturella, Somnus,  
TriVib 5L & Trich,  
And ya worry about a whole bunch of other diseases  
that most of us can't even say, much less spell!  
When I was a kid, cow buyers actually knocked on the door and made an  
offer.  
Now the rare one that comes won't say what he'll pay.  
They want you to haul to the ring and take whatever the market will bear  
on that day.  
Or they come out with the video camera to film pregnant cows.  
The footage will run on satellite TV in two weeks, along with others  
from nation wide.  
(How would you like to be on the receiving end of that deal!)  
There's NAFTA, the futures, putts, COOL and a whole bunch of other  
things I don't understand.  
Yup! I must be getting' old cuz times has changed!



MSU Extension's Dennis Cash and Duane Griffith consult with Todd Krenning, Manager of the Deerborn Ranch, on pasture management.

## Montana Beef Network Calendar

### March 10

MBN Interactive Video Conference  
– *WalMart's Viewpoint on Cattle*  
Ken Stettmeier, WalMart  
Bill Donald, MSGA

### March 21

MBN Interactive Video Conference  
– *Getting Ready for Breeding*  
Rick Funston, Nebraska  
Cliff Lamb, Minnesota

### April 19-20

Montana Livestock Forum and Nutrition  
Conference (*National ID, COOL, Canadian  
Border*) — GranTree Inn, Bozeman



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