

BEEF

QUESTIONS & ANSWERS

Beef's new target audience

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



Welcome to the 8th year of Beef: Questions & Answers!

Brought to you by Extension specialists at Montana State University and the Montana Beef Council, this publication will keep you updated throughout the winter on the latest news in nutrition, reproduction, food safety, forages and other beef-related topics. In addition, you will learn more about how your Beef Checkoff Dollars are used for consumer education, promotion and research.

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Right after the New Year, beef producers across America will begin seeing the industry's new television advertising. The new ads are the culmination of an industry-wide research and planning process to determine if a new consumer target is warranted and to gain insights into what advertising message would be most effective with that target.

For the last few years, the target for the beef industry's consumer advertising has been women aged 25 to 54 with children. Data from the most recent U.S. Census indicates that less than one third of all U.S. households are actually family households with children. By targeting only women with children, the industry was missing out on the volume potential from the millions of consumers in single-person or married-couple households. Furthermore, consumer research on consumption of beef and other proteins has shown that both men and women play a role in meal decisions and both love the taste of beef. The research also showed that almost 75% of U.S. households have a real passion for beef and have the capacity, based on current consumption patterns, to eat more and pay more for beef.

Thus, both adult men and women age 25 to 54 who have a passion for our product are the new target for Beef's advertising program. The goal of the campaign is to fuel these consumers' passion for beef and convince them to add at least one more beef meal to their diets every week. Beyond the immediate advertising target,

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Rancher Profile: Jim and Beth Granger Ranch, Eden

by Wade Crouch, Cascade County Extension Agent



Describe the operation.

This first generation family- owned cattle operation is located on the north edge of the Little Belt mountains, about 30 miles south of Great Falls. It is owned and run by Jim and Beth Granger, who purchased the property in 1980. Jim was raised in Fort Benton, and started working on his grandfather's ranch as a youngster. Beth, daughter of Don and Alma Roehm, was raised on her family ranch in the Smith River country. The Grangers have two children: Forrest, a freshman at MSU, and Rachel, a 6th grader at Centerville.

Their mid-sized Black Angus herd runs entirely on deeded land, with some additional hay acres leased. The land runs down off Cameron (baldy) Butte, across Rocky Coulee, and through the rolling hills of Boston Coulee Creek, so flat spots for haying and calving are few and far between. This excellent grass country will run a cow on just over 12 acres per year. Approximately half of the cows in this modern beef herd are registered, with the rest commercial purebred. Jim and Beth market their production as commercial bull calves, bred heifers, stock cows, steers and meat on the rail. The quality of the cow herd is constantly improved with the use of AI and embryo transfer. A few bull calves go to Midland Bull test and Treasure test each year. Because of the AI and ET programs in place, the Grangers feed later in the spring than they would if they were just turning out with the bulls.

How does the ranch differ from others in the area?

While most area ranches are operated by third and fourth generations or were purchased by out-of-state money, Jim and Beth purchased their place outright, and are the first Grangers in the community. It is a "local folks make good" story. With little level ground, farming is out of the question, so this is strictly a cow outfit. Jim and Beth separate their herd by age and condition, and feed four or five groups during the winter to meet each cow's nutritional needs as closely as possible.

Perhaps the biggest difference and one that greatly affects all aspects of their operation is how they market their cattle. Steers are not their primary product! Bulls, bred heifers, heifers and stock cows all take priority over the steers. In addition, many of the steers are marketed on the rail rather than as calves or fats. Because of the varied marketing objectives, and the AI/ET program, breeding and weaning times are much busier and more spread out. Jim has fed as much as 10 months a year. The Grangers also participate in the Beefability program, facilitated by the MSU Extension Service. This gives them an opportunity to closely watch their feeder cattle in a local lot, and find out how they perform in the lot and on the rail. This program has also stimulated their interest in niche markets for their beef.

What has been your most effective management strategy in recent times?

Three keys to success for this fledgling operation have been water management and improvements, flexibility, and marketing. Water is a big deal in this area, and distribution of cows on summer pastures was greatly affected by the last four, dry years. The Grangers have done "tons" of water improvement projects and cross-fencing to help utilize what grass was available. They feel that the ability to move fast and be flexible has helped through the drought. Pasture, water, and hay management decisions all had to be made quickly to stay ahead of potential problems. And last but not least, having a variety of

higher value markets has allowed them to put more resources into improving the ranch.

What is your biggest challenge?

"Like everyone else in our area, the drought has created lots of stress and problems, but because of a historically conservative stocking rate, our grass has held up fairly well," said the Grangers. "The recovery time for grass



Flat spots for haying and calving are few and far between at the Granger Ranch near Eden.

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The need for copper and zinc supplementation in Montana



by John Paterson, MSU Extension Beef Specialist

Q: Why should I be concerned about trace minerals for my cow herd?

Supplementing minerals to beef cattle has been shown to have positive effects on reproduction, immune status, disease resistance and feed intake. Trace minerals are needed for vitamin synthesis, hormone production, enzyme activity, collagen formation, tissue synthesis, oxygen transport, energy production, and other physiological processes related to growth, reproduction and health. The requirement for trace minerals is often based upon the ability of the animal to maintain a desired level of performance. Table 1 shows the trace mineral requirements for growing and finishing cattle, and cows.

Table 1. Trace mineral requirements for beef cattle

Mineral	mg of mineral required per kg of dry matter consumed	
	Growing/Finishing Cattle	Cows
Cobalt	0.1	0.1
Copper	10	10
Iodine	0.5	0.5
Iron	50	50
Manganese	20	30
Selenium	0.1	0.1
Zinc	30	30

Q: What are the symptoms of a copper or zinc deficiency?

Table 2 summarizes the potential effects of a copper and/or zinc deficiency in both cows and bulls. The main effects of copper and zinc deficiencies are a reduction in reproductive efficiency; delayed estrus, decreased conception rates and increased dystocia. In my opinion, I also believe that much of the footrot I

see in Montana is related to trace mineral deficiencies because zinc and iodine supplementation appears to cure the problem.

Table 2. Symptoms of a copper or zinc deficiency in beef cattle

Mineral	Cow	Bull
Copper	<ul style="list-style-type: none"> • Delayed estrus • Embryonic death • Decreased conception • Delayed puberty • Decreased ovulation • Immunity 	<ul style="list-style-type: none"> • Decreased libido • Decreased spermatogenesis
Zinc	<ul style="list-style-type: none"> • Increased dystocia • Abnormal estrus • Immunity 	<ul style="list-style-type: none"> • Impaired growth • Delayed puberty • Decreased testicular size • Decreased libido


Q: Are there trace minerals that can reduce the utilization of copper and zinc?

Yes, it has been shown that an excess of sulfur, molybdenum and iron in the diet can interfere with the utilization of copper and may result in deficiency symptoms even though the levels of copper in the diet are adequate. This is one reason why nutritionists try to maintain a copper to molybdenum ratio of at least 4 to 1 when formulating diets or supplements.

The following table summarizes results of a survey conducted in Montana several years ago. This survey indicated that copper and zinc were deficient in most of the forages sampled (Table 3). Results with the grasses also indicated that there could be a secondary deficiency caused by a ratio of copper to molybdenum that was less than 4.

cont. on next page

New target audiences, from page 1

another 16% of U.S. households are already very heavy consumers of beef. While they have a real passion for beef, they are already consuming beef at nearly all of their lunch and dinner meals and do not represent new volume potential for the industry. This latter group, dubbed the “protect target,” will be carefully protected by the industry to assure that their loyalty to beef remains high. 

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

Table 3. Mineral Concentration of grasses, forage-mixes and legumes for Montana

Forage Type	No. Samples	Copper, mg/kg	Moly, mg/kg	Cu:Mo Ratio	Zinc, mg/kg
Grasses	151	5.2	1.4	3.6	18.2
Grass-legume	163	7.0	.81	8.6	19.2
Legumes	58	8.8	1.5	7.7	21.4
Requirement		10		More than 4	30

Low forage levels of copper coupled with the antagonistic effects of molybdenum requires careful supplementation if you are experiencing any of the symptoms described in Table 2.

Q: What about sampling water?

The following figure shows the results of a ranch survey conducted in the northeastern part of the state. As a general rule, I start to worry about copper utilization when the amount of sulfate in the water exceeds 500 parts per million. This figure suggests that four of the ranches had sulfate levels higher than 500 ppm and trace mineral supplementation needs to be considered. Having livestock water analyzed can tell you much about the potential for causing health problems in your cowherd.

Figure 1. Sulfate concentration of water samples from northeast Montana ranches

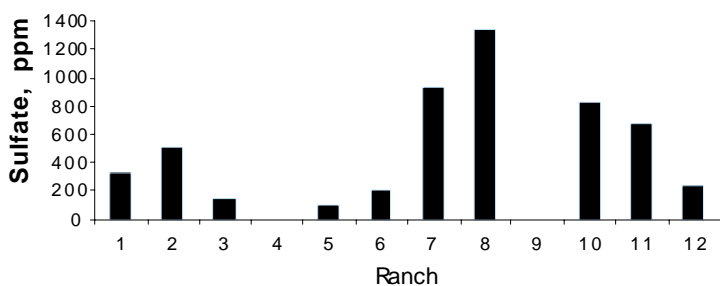


Table 4 gives an example analysis of a water sample collected from a central Montana ranch.

Table 4. Livestock water quality recommendations and an example of a water sample from central Montana collected during Summer of 2002

Item	Recommendation of desired upper limit	Water Sample from Central Montana	Comments
Nitrate (NO3), ppm	0-44	0	Safe
Cadmium, ppm	100	353	Interferes with absorption of liver minerals
Magnesium, ppm	50	157	May cause diarrhea
Sulfate (SO4), ppm	300	4049	May interfere with Cu, can cause polio

The nitrate level was considered safe, but the sulfate level was at least eight times higher than recommended for cattle.

Q: What about sampling the liver to determine copper status?

The liver is probably the best organ in the body to give an indication of the copper status of the beef animal. The following table shows results from a survey of eight states conducted a couple of years ago.

Table 5. Percentage of cattle that were classified at deficient or adequate in liver copper

State	No. Cattle	% of cow which were deficient, <30 ppm	% of cow which were adequate, >90 ppm
Colorado	329	30	30
Kansas	257	16	51
Missouri	32	6	63
Montana	182	.2	61
Nebraska	78	55	12
North Dakota	113	92	0
South Dakota	162	65	27
Texas	60	10	62

What these results show is that in Montana, 61% of the cows sampled were considered to have an adequate amount of copper in the liver (>90 ppm) and less than 1% were considered to be severely deficient. The rest of the cows were between 30 and 90 ppm copper. One caution with these results, the cows sampled were from SW Montana and probably do not represent eastern Montana. Based on this survey, eastern Montana cows may have values more similar to western North Dakota and South Dakota. Cows from these two states appear to have a high percentage which would be considered deficient.

Take home message:

- Trace minerals can improve reproductive efficiency if cows are deficient.
- Many of the forages in Montana can be deficient in copper and zinc.
- Copper utilization is reduced with high levels of the antagonistic minerals molybdenum (in forage) and sulfate (in water).
- Liver biopsy results show that 62% of the cows sampled in Montana had adequate liver copper. 🐄

Montana Beef Network Update

by Lisa Duffey, MBN Project Coordinator

As a collaborative effort between Montana State University, the Montana Stockgrowers Association and Frontier Beef, the Montana Beef Network has three goals: 1) Beef Quality Assurance Certification (BQA), 2) Feeder Calf Certification, and 3) Return of feedlot and carcass data to producers.

Beef Quality Assurance training continues to be a vital element to the program with 588 producers certified in Montana's program. BQA is intended to help producers document that they have provided a quality, consistent and safe product for the consumer. Recent evidence shows that BQA certified calves bring a higher price at sale auctions and are in demand at feedlots. Please make sure that your BQA certification is up-to-date. If you need to certify your ranch for the first time or recertify, it is easy to do.

1. Contact your local Extension agent to review the new BQA materials and complete the short test.
2. Request a BQA book and CD-ROM, review the material enclosed, take the short test and return it to the BQA office.
3. Log on-line to <http://animalrangeextension.montana.edu/BQA/Onlinecourse.htm> to review the materials and take the test on-line.

Certification costs \$20 (re-certification is \$10), is valid for 2 years, and is as simple as reviewing the new BQA materials and taking a short test. Do it today!

The MBN has had a very busy fall. Forty-four producers tagged over 6800 head. To date, 5044 animals were also weighed when they were tagged. The average, minimum and maximum weight data from the 44 participating ranches is presented in the following table.

	<u>Average Weight</u>	<u>Min. Weight</u>	<u>Max. Weight</u>
<i>Heifers</i>	521	206	806
<i>Steers</i>	552	206	918
Average	536	206	862

We are very optimistic about collecting feedlot and carcass data on the animals enrolled in the Network this year. One of the most crucial steps to the success of this stage of the process is communication. It is extremely vital that the producer communicate with the buyer and feedlot about the desire to receive data, and with



Brian Rainey and Marc King certify calves for rancher Dean Peterson.

Network personnel about the location of the animals.

I encourage you to refer to the MBN website often for information about the beef industry (<http://www.mbn.montana.edu>) or at <http://animalrangeextension.montana.edu>). It has educational information on issues like drought and illness, the nutrient specifications for the MSU weaning supplement, and links to other sites.

The first MBN Internet Premium Calf Sale was held on Oct. 4, (the second sale was Dec. 6, after the publishing deadline for this newsletter) with Frontier Stockyards (<http://www.frontierstockyards.com>). These sales are aimed at helping producers capture the added value of preconditioned calves. The cattle feeding industry has told us they want preconditioned—backgrounded cattle, and these sales are one method of highlighting these higher value calves.

We are planning numerous educational programs for the spring through Montana Beef University (see calendar, back page). Your MSU Extension agent can tell you what is planned as they become available. 🐄

Rancher Profile, continued from p. 2

regrowth is a concern during both the dry years and the first few years coming out of the dry spell. A growing problem on our ranch is underutilization of some pastures due to predator pressure. While the healthy bear population doesn't seem to bother the cows, the lions and increasing wolf population make them unwilling to graze key areas of the summer pasture."

What do you think are the biggest challenges to the livestock industry?

Our major challenge is the direction of the US beef industry in general; packer concentration, captive supply and increasing imports. While our costs of production and living keep going up, (especially insurance and taxes), how do we compete with low cost production in other countries? The other concern is the effort by "environmentalists" to direct how the producer raises cattle, and how the industry as a whole operates. 🐄

Supplementing Winter Rations with Grain: Good or Bad Nutritional Strategy?

by Erasmus Okine, Department of Animal Science, University of Alberta, Edmonton

Maintaining our cows through the various stages of pregnancy, especially through the winter months, has some unique challenges, especially when feeding low quality forages.

A forage is considered low in quality when it has digestible energy of less than 1 Mcal/lb and less than 7% crude protein. Examples would be late cut weathered hay or straw.

Feeding straw when the weather is very cold

A 1213-lb mature cow, six months pregnant needs about 30 Megacalories of digestible energy per day. Even if the weather is not cold, the cow can eat a maximum of about 18 pounds of straw on a dry matter basis (about 21 pounds as-fed). The amount of digestible protein needed by the bugs in the rumen to digest the straw is about 0.65 lb, of which only 62% is supplied from the 18.7 pounds of straw. This cow will lose half a body condition score in about 33 days.

At -13°F, the amount of energy required to maintain the cow goes up to approximately 41 Megacalories per day. The cow will attempt to increase straw intake by about 20% and may get impacted. Even at the increased intake of 22 pounds of dry matter the amount of digestible protein supplied is only 39% of what is required. The cow will lose half a body condition score in about 20 days.

Energy and protein supplements

All nutritionists agree that the most important consideration to get a cow through the winter is the provision of adequate energy and protein. Cows can not survive harsh winters and be productive on straw alone. However, in recent times there have been reports suggesting that feeding barley grain as an energy supplement is not a good idea.

Those against feeding grain say that feeding cows grain could actually serve to reduce energy intake through a decrease in the digestibility of straw. On the other hand the recommendation usually given is that feeding a protein supplement is the way to go. Let us illustrate the basis of this recommendation with numbers in Table 1 (next page).

The first basis for recommending against barley grain is the so-called substitution effect. Most nutritionists have assumed that for each pound of grain fed, there is an equal amount of forage that is

not eaten. Using that assumption feeding three pounds of grain would mean a reduction of the intake of straw from 20 to 17 pounds per day. Consequently, the digestible energy intake from 17 pounds of straw becomes 15.3 Megacalories per day. When the digestible energy from grain is added to the energy intake from the 17 pounds of straw the total digestible energy intake would equal 20.28 Megacalories per day.

On the other hand, the assumption is that feeding one pound of a protein supplement increases straw intake by about three pounds. Using those assumptions, the digestible energy intake from adding grain is about 20.28 versus 22.26 Megacalories per day from adding the protein supplement. The conclusion drawn is that feeding grain with straw may not be a good nutritional management in winter when the animal is cold stressed.

What are the facts?

Fact Number 1: In a cold stress situation the cow does not use the digestible energy system! She will use what is called the metabolizable energy system. Feedstuffs that cause less wastage of energy (less methane production and energy loss in urine) become extremely useful to the cow. For example, straw loses about 18% of its energy value as methane and urine. Barley grain loses about 13% or even less. A protein supplement such as the range pellet loses about 16% as methane and urine energy. When you take these wastage factors into consideration, you move from the digestible energy into the metabolizable energy system. The metabolizable energy system measures the total amount of energy actually available to the cow.

Fact Number 2: More recent research data indicates that the so-called substitution effect is not one-to-one. The substitution rate is actually only 43% instead of 100% when you supplement low quality forage with grain. What this means is that when you add three pounds of grain to straw, only 1.3 pounds of straw will not be eaten out of the 20 pounds offered. In other words 18.7 pounds of straw will be consumed.

When these two facts are added together, the total metabolizable energy intake from feeding straw only, straw and protein, and straw and grain becomes

14.76, 18.28 and 18.11 Megacalories per day, respectively. Note that the difference between supplementing with protein and grain is about 0.17 Megacalories per day and that is nothing to write home about.


The take home message is that when it is cold, the cow needs better quality feedstuffs, such as good-quality hay. If you do not have good-quality hay, your choices are supplementing your straw with either grain or a protein supplement or both.

My recommendation is that when it is very cold,

	No Supplement	1 lb. Protein Supplement (20% range pellet)	3 lb. Energy Supplement (barley grain)
Forage intake (dry matter)	20 lb.	23 lb.	18.7 lb
Digestible energy intake from forage	18 megacalories	20.7 megacalories	16.8 megacalories
Digestible energy from supplement	0 megacalories	1.56 megacalories	4.98 megacalories
Total digestible energy intake	18 megacalories	22.3 megacalories	21.8 megacalories
Metabolizable energy intake from forage (82% of DE)	14.76 megacalories	16.97 megacalories	13.78 megacalories
Metabolizable energy intake from supplement	0 megacalories	1.31 megacalories	4.33 megacalories
Total metabolizable energy intake	14.76 megacalories	18.28 megacalories	18.22 megacalories

Data adapted from Beef Today: January 20, 1999.

feed some grain. It is a faster and often cheaper method of increasing the energy intake of your cows.

For more information contact Erasmus Okine at (403) 782-8029. 

MSU Judging Team completes first season

by Marc King, Livestock Judging Coach and Sweet Grass County Extension Agent

The MSU Livestock Judging Team has completed its first full season of competition. There were many highlights during the year and just a few disappointments. The team competed at six contests: the Arizona National Stock Show in Phoenix, the National Western Stock Show in Denver, Houston Stock Show and Rodeo, the World Beef Expo in Milwaukee, the Grand National Stock Show in San Francisco and the North American International Livestock Exposition in Louisville. Team members traveling during the 2002 season were Travis Standley from Cascade, RaeLynn Miller from Spring Creek, Nev., Shawn Miller from Buffalo, Wyo., Tami Arlian from Big Timber, and Ryan Fisher from Kalispell.

The MSU team represented Montana very well during the year, and put together an awfully good record for a rookie team. MSU hadn't fielded a livestock judging since 1991. In Phoenix the team placed 4th in Beef, 5th in

Sheep, 5th in Reasons and 6th Overall.

In Denver, Ryan placed 4th high individual in beef, Travis was 9th high individual in beef, Tami was 10th high in sheep, RaeLynn had one of the high sets of beef reasons and the team finished 11th overall.

In Milwaukee the team finished 9th overall. In San Francisco the team placed 3rd in Beef, 1st in Swine, 3rd in Sheep, 4th in Reasons and 3rd Overall. In Louisville

the team had a rough day and ended up finishing 20th overall. A great deal of the team's early success is due to the help of Brian Rainey who has been assisting in coaching the team.

The new team will begin traveling in December and will compete first at the Arizona National Stock Show. Team members for the 2003 team are Jon Redland from Hysham, Katy Hines from Colstrip, Kim Skinner from Hall, Brian Mauws from Judith Gap, Pete Maron from Modesto, Calif. and Lori Dodge from Stevensville.




L to R: Asst Coach Brian Rainey, Shawn Miller, RaeLynn Miller, Coach Marc King, Travis Standley, Tami Arlian and Ryan Fisher.



BEEF Q&A

Beef: Questions & Answers is published every winter through the Montana State University Extension Service. To subscribe, change your address, suggest article ideas, or for more information, call (406) 994-3414.




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Upcoming events

Winter Feeding Programs: Dec. 17 in Roundup, Dec. 18 in Lewistown and Grass Range, Jan. 15 in Great Falls, northeast Montana communities the week of Jan. 20 and western Montana communities the week of Jan. 29.

January Thaw: Billings, Jan 2

Capital Beef Days: Miles City, Jan 4

Western Ag Conference and Expo: Dillon, Jan. 9-10

Video conferences on animal breeding concepts and marketing calves: Dates TBA in February

The programs of the MSU Extension Service are available to all people regardless of race, creed, color, sex, disability or national origin. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, David A. Bryant, Vice Provost and Director, Extension Service, Montana State University, Bozeman, MT 59717.

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