Down to Business

Four universities pooled resources to provide one of the most useful cowboy gatherings of the year. API put the information online and provides a sampling in this special section.

by ***Shauna Rose Hermel***

An estimated 880 cattlemen braved a snowstorm to attend the Range Beef Cow Symposium XVIII Dec. 9-11, 2003, at the Scotts Bluff County Events Center, Mitchell, Neb. The 2½-day symposium featured a number of speakers presenting information on topics of interest to cow-calf producers. Presentations covered many aspects of production, including nutrition, health, reproduction, genetics and forages. Speakers also addressed issues facing the cattle industry, including environmental challenges and country-of-origin labeling (sometimes referred to as COL or COOL).

The symposium, conducted every other year, is co-sponsored by the departments of animal science and the Cooperative Extension Services of the University of Nebraska (NU), University of Wyoming (UW), South Dakota State University (SDSU) and Colorado State University (CSU). The site for the meeting rotates among the four cooperating states.

The universities pool resources to make this one of the nation's premier symposiums, says Ivan Rush, beef specialist at NU's Panhandle Research and Extension Center in Scottsbluff. It's a valuable roundup of the most current information available for the cattle industry.

►Producers can log on to *www.rangebeefcow.com* to view real-time coverage of the Range Beef Cow Symposium XVIII conference.

You can still attend

The Angus Productions Inc. (API) staff was on hand to provide real-time coverage of the event, thanks to the sponsorship of Boehringer Ingelheim Vetmedica, Inc. Producers can log on to *www.rangebeefcow.com* to view synopses and photos from the event and to download audio recordings and PowerPoint® presentations.

"We are excited to provide coverage of another industry event to those producers who could not get away from home," says Angie Stump Denton, director of Web marketing for API. "Even those who attended the Range Beef Cow Symposium can review the information given and review speakers' presentations from their own computers."

In this special section of the *Angus Journal,* you can get a glimpse of that coverage. What follows is a compilation of some of the synopses of the presentations. While these summaries are fairly short, you can access more detailed coverage by going to *www.rangebeefcow.com* and clicking on the News:Papers:Audio link.

From the News:Papers:Audio page, click on the name of the speaker for whom you'd like more details. This will access a page showing the speaker's picture and a summary of his or her presentation. At the bottom of the summary you'll find links to the author's proceedings paper, the audio recording of the presentation and the speaker's PowerPoint presentation if available. We've also provided links to pertinent API stories that are available online.

Slow Web connection?

The API Web Marketing Department can, for a reasonable fee, provide customized CDs containing the presentations in which you are interested. If you would like more information, contact Denton at (816) 383-5211.

The API team is committed to presenting practical, useful information to seedstock and commercial cattlemen while keeping an eye on the cutting edge. API is a wholly owned subsidiary of the American Angus Association and produces the *Angus Journal* and *Angus Beef Bulletin.*

Other real-time sites

Angus Productions Inc. (API), publisher of the *Angus Journal* and the *Angus Beef Bulletin,* provides real-time coverage of several informative industry events.

- **►Visit *www.4cattlemen.com* for coverage of the 2004 Cattle Industry Convention and Trade Show.**
- **►Visit *www.BIFconference.com* for coverage of the 2003 Beef Improvement Federation (BIF) annual meeting.**
- **►Visit *www.angusjournal.com/nationalconference* for coverage of the 2003 National Angus Conference.**

All three sites are brought to you courtesy of site sponsor Boehringer Ingelheim Vetmedica, Inc.

Drought Recovery

Develop a plan for what you'll do when rain falls short.

by ***Corinne Patterson***

Drought may be a difficult reality of raising cattle, and being able to recover from it is essential to remaining in the beef industry, Roger Gates told attendees at the 2003 Range Beef Cow Symposium. "A realistic understanding of drought is essential for appropriate planning and response when rainfall is short."

The South Dakota State University (SDSU) Extension range specialist described how average rainfall is calculated, explaining that it includes rainfall from years when it is above normal and more years when it is below normal.

"We think easily about average precipitation; but, in fact, that is not a good index," he said. "[Average precipitation] is higher than the actual precipitation that we are going to get most years."

Gates pointed out that the 1990s formed one of the wettest periods since precipitation has been recorded. Management and stocking decisions may have been different during that time, and now producers are having to recover from those decisions.

"Exceptionally dry years should not be unexpected. Cyclic drought is characteristic of arid and semiarid areas of the world," Gates stated. "Viewing drought as unusual or as a crisis is not realistic.

PHOTOS BY KIM SCHMIDT

►As a society, we need to think hard about how we approach drought assistance, range specialist Roger Gates said. The temptation to accept feed subsidies provides incentive for poor management or overstocking. "We need to find incentives that are not based on current inventory," he said.

"One of the best indicators of seasonal production is the precipitation in April, May and June," Gates said. If rangeland managers can look at this as an indicator and don't wait until September to recognize a drought, they can de-stock early to preserve range condition.

"At high-range condition, you can produce as much forage as you do from low-range condition in wet years," Gates added.

To manage for high-range condition, producers can take important steps in developing a plan for recovery. Gates summarized components of a drought-recovery plan, advising rangeland managers to:

1) anticipate below-normal rainfall,
2) de-stock promptly,
3) be willing to exchange short-term losses for long-term gains, and
4) restock gradually.

Gates pointed out the widely stated "take half, leave half" principle. Soil cover, wind barriers, nutrient pools, snow capture and feed reserves are all reasons for leaving forage.

Establishing a feed "budget" may be the single most important key in recovery, Gates said. Inventorying range and other feed sources and projecting animal inventory are elements of a feed budget. It's vital to match supply with demand.

"Careful management of the range resource is only one of the attributes necessary for a successful range cow enterprise," Gates said, "but it is foundational."

Management practices, Gates said, that promote recovery and avoid defoliation are: resting the range for an entire year, using winter grazing only, using the range only early in the grazing season, deferring use until target species have mature seed, and using rangeland in late spring (if growth is abundant) and removing animals before the boot stage.

The key message, Gates said, is not to forget to keep an eye on your final destination. Looking at the complete ranch picture is important to manage for high-range condition.

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

The Skinny on Fat

Tips for supplementing fat to the cow herd.

by ***Kindra Gordon***

Nutrition plays an important role in both reproductive efficiency of the cow and a calf's ability to survive, the University of Wyoming's (UW's) Brett Hess told attendees at the 2003 Range Beef Cow Symposium. Hess, a nutritionist, has conducted numerous studies on the impact supplementing fat to cow herds has on these factors.

"The beef industry loses up to $500 million annually due to failure of the nation's cow herd to reproduce a calf every year," he reported, adding that research indicates fat supplementation may be beneficial in improving reproductive efficiencies.

"When we consider supplementing fat to the cow herd, it is typically suited to the last 60 days of pregnancy and 40 days postpartum," Hess said. "I refer to this as the critical 100 days because the cow's nutritional requirements are greatest."

In review of research showing the impact of supplementing fat during this time, Hess reported that supplementing fat to cows prepartum does not appear to affect the postpartum interval, nor does it impact first-service conception rates. But there does appear to be an increase in overall conception rates if linoleic fat sources, such as safflower seed, are used.

Additionally, calves from cows fed a fat

Water Needs

Water quality can affect cattle performance.

by ***Corinne Patterson***

Developing nutrition and grazing strategies can easily allow beef producers to take for granted the importance of a good, quality water source, said Trey Patterson, South Dakota State University (SDSU) Extension beef specialist. He noted much of the water available in South Dakota is probably not sufficient in quality to sustain performance and health of cattle — a problem common throughout much of the United States.

If water quality is poor, cattle may consume less, which in turn results in reduced dry matter (DM) consumption, Patterson pointed out during the second day of the 2003 Range Beef Cow Symposium. High levels of salts in surface and subsurface sources may lead to problems for livestock.

Patterson advised producers to check for salts in water by evaluating total dissolved solids (TDS). Sodium sulfate is a primary cause of elevated TDS in South Dakota waters, he said. Sulfates may decrease intake and performance more than other salts.

Patterson showed results from testing a stock dam from May 2001 through July 2002. Sulfate levels varied from 3,000 parts per million (ppm) to 10,000 ppm. This extreme shows how water sources need to be continually monitored, especially during drought.

Water containing high levels of salt

►Trey Patterson, Extension beef specialist, evaluated different levels of sulfate concentration to see the effect on cattle performance. He told producers they need to know their water quality and to develop a plan to best manage water. "Don't turn your back on water quality," he said.

can compromise performance and health of cattle in three ways, including:

1) reduced water and feed intake,
2) ingestion of toxic levels of sulfur, and
3) induced trace-mineral deficiencies.

While sulfur is required for rumen microorganisms, ingestion of toxic levels can occur if cattle consume water high in sulfates. Ingestion of high levels of sulfur can cause polioencephalomalacia (PEM). Animals with PEM express symptoms that may include lethargy, anorexia, blindness, muscle tremors, gastrointestinal stasis, lack of coordination, staggering, weakness, convulsions and death.

He reported safe and unsafe levels of sulfate with these reactions:

- ► <500 ppm is a safe level.
- ► 500-1,500 ppm is still considered safe, but may have a laxative effect.
- ► 1,500-3,000 ppm is marginal, and may reduce performance and health.
- ► 3,000-4,000 ppm is considered poor and is likely to reduce performance and may cause polio.
- ► >4,000 ppm is dangerous.

Patterson overviewed research indicating that yearling cattle in a drylot situation with poor-quality water will have more sickness, death loss and incidence of PEM. At the cow-calf level, range studies show that sulfates can reduce pounds weaned and can cause other problems.

Patterson said producers have options when poor water is all that's available. Use pastures with poor-quality water early in the summer. Use the water source when temperatures are not elevated and there is less heat stress. Mix poor water with better water, and develop better water sources, he advised.

"Bottom line, know your water quality and develop a plan to best manage water if you are forced to use it," Patterson said. "Don't turn your back on water quality."

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Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

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supplement appeared to have a better ability to handle cold weather, and preliminary data shows their immune response to disease challenges may also be bolstered, according to Hess. At the same time, calves from cows supplemented with fat did not have a difference in birth weight compared to calves from cows that were not supplemented with fat, and, as a result, there were no differences in calving difficulty.

However, Hess cautioned that first-calf heifers fed fat after weaning and through breeding showed a notable decrease in first-service conception rates.

"In this case, supplementing fat may

►Bret Hess, nutritionist, studied supplementing fat to cow herds to increase biological efficiency. He told the audience that dietary fat fed postpartum increased ovarian follicular growth and development, improved pregnancy rates when fed at 60 days before parturition, and did not affect calf birth weight.

increase ovarian follicular growth, but it does not improve reproduction, so as a producer you may not want to supplement fat to this group," he said.

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Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

Target Minerals

Beef specialist shares tips for assessing mineral needs for cost-effective mineral supplementation.

by ***Troy Smith***

►Cody Wright, Extension beef specialist, said it's important to objectively evaluate current herd mineral status, then rule out any other contributing factors, so you can develop a strategic mineral program to reduce expenses.

According to South Dakota State University (SDSU) ruminant nutritionist Cody Wright, there are two certainties associated with mineral supplementation of beef cattle. The first is that cattle do require minerals. The second is that mineral nutrition is very complicated.

At the 2003 Range Beef Cow Symposium, Wright advised producers to take a commonsense approach by remembering that animal requirements change with stage and level of production. In addition, he advised producers to consider differences in forage supply of minerals and adopt methods to supply cost-effective mineral supplements that ensure intake and bioavailability.

Wright said the first step is to be aware of animal requirements. Producers can work with beef cattle nutritionists or consult the *Nutrient Requirements of Beef Cattle* publication for information.

"Assess your current program. Analyze performance and production measures and look for signs of deficiencies," Wright suggested. "Determine what minerals are provided in the diet. Test forages and other feeds to know what minerals they contribute and what must be supplemented."

Wright said research has shown that the mineral content of some forages may be sufficient to meet a significant portion of the cow's needs. However, forages should be sampled and analyzed for mineral concentration periodically throughout the year to facilitate appropriate modifications to the mineral program.

Sources of minerals contained in commercial supplements should be considered. Inorganic mineral sources are generally the most cost-effective, but they vary in bioavailability. Wright said research suggests that organic sources are more bioavailable, but producers must determine if production response to organic minerals justifies their higher cost.

The most expensive mineral to supplement is phosphorus (P), and Wright said he believes that many common commercial mineral formulations contain excessive levels of P. If the cow herd is not under production stresses, supplementation above requirements is costly and generally unproductive. This is especially true for P.

According to Wright, options for reducing costs of mineral supplementation include strategic supplementation and custom mineral mixes. Strategic supplementation involves providing mineral supplements only during periods when nutritional needs are greatest. Customized mineral formulations can be tailor-made to meet a producer's needs and may prove to be more cost-effective than commercial mineral supplements.

"Any changes to a producer's current mineral program that involve additional cost should result in increased production or performance to offset the added expense," Wright advised. AJ

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

Feed Strategically

Consider protein and energy needs during winter to manage cow condition.

by ***Troy Smith***

If spring-calving cows are thin going into winter, they are likely to be thin when calving season begins. According to University of Nebraska (NU) beef nutritionist Don Adams, a key time in the yearlong management of spring-calving cows is late summer. That's when producers should consider taking steps to ensure cows have sufficient body condition for the winter.

During late summer and fall, nutrient content and digestibility of range forages decline rapidly. By fall, crude protein (CP) content of 5% is common, and digestibility may drop to almost 50%. Mature and dormant forages consumed by cows pass through the digestive tract at a slower rate, so the digestive system contains a large volume of undigested feed. This generally results in reduced consumption of forage.

"A cow consuming a forage containing 5% to 6% crude protein is not likely to consume enough forage to meet protein requirements during lactation or late gestation," Adams warned, while speaking to producers at the 2003 Range Beef Cow Symposium.

However, Adams said weaning of calves, grazing complementary forages or a combination of both practices can be used to prevent loss of cow body

Byproducts

Beef specialist considers value and use in the cow herd.

by ***Barb Baylor Anderson***

Corn byproducts, particularly those obtained from ethanol production processes, can be effectively used to supplement protein or energy for backgrounding cattle or in heifer and cow diets, according to Rick Rasby, University of Nebraska-Lincoln (UNL) beef specialist. But, considerable differences exist between corn gluten feed byproducts obtained from wet milling and distillers' grains obtained from dry milling in terms of nutritional value, he warned attendees of the 2003 Range Beef Cow Symposium.

"A number of factors can impact the nutrient profile of distillers' grains, such as moisture content, grain selection, ratio of grains and distillers' solubles included in the product, continuous versus batch fermentation, as well as drying temperature and duration," he said. "Moisture variation may pose the biggest challenge in managing wet byproducts. Producers should get a feed analysis that includes moisture content and other nutrients."

"Moisture variation may pose the biggest challenge in managing wet byproducts. Producers should get a feed analysis that includes moisture content and other nutrients."

—Rick Rasby

In general terms, Rasby said both corn gluten feed and distillers' grains are good sources of protein. Distillers grains are high in UIP (undegraded intake protein) and make an excellent feed for young, growing cattle and lactating cows. Corn gluten, as a protein source, is high in DIP (degradable intake protein) and nitrogen for rumen microbes.

Both products also can supply energy. Extra energy may be required by cows through the winter and during early spring following calving, or by replacement heifers. When forage quality is poor or quantity is limited by drought, byproducts may have an ideal fit. Both byproducts work well in cornstalk grazing situations, while dry distillers' grains may be an attractive grazing supplement when forage prices are high or forage is limited.

"The energy value of wet distillers' grains is 125% or more the energy value of (commodity) corn," Rasby told producers. "Wet corn gluten feed varies from equal to or slightly higher energy than corn, depending on the amount of steep liquor. When corn gluten feed is dried, the energy value of the feed is reduced."

When direct comparisons are made, the energy value of wet products is superior, with little difference in protein quality, he added. Both byproducts may supply DIP and UIP; reduce or eliminate negative associative effects; alleviate acidosis; or have positive, related effects that complicate comparisons to traditional energy and protein sources.

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

►Because corn-milling product supplies will increase with growth in the ethanol industry, beef specialist Rick Rasby encouraged producers to use more byproducts when priced competitively.

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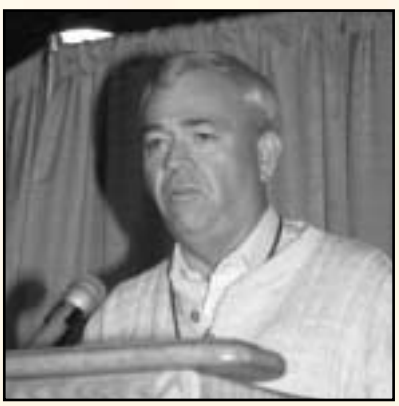
condition during late-summer and fall grazing periods.

Weaning the calf stops lactation and lowers the cow's nutrient requirements, so a dry cow can more easily maintain body condition on lower-quality forages. Adams suggested that producers consider weaning in August or early September. By September, he says, a cow loses approximately one-tenth of a body condition score (BCS) for every two weeks that weaning is delayed.

Protein supplements improve the nutritional status of cows by increasing digestibility and intake of low-quality forages, and by helping increase nutrient flow of protein through the cow's digestive system. Adams warned that feeding supplemental energy (such as corn) to cows receiving forage-based winter diets may further reduce digestibility and intake of forage unless protein requirements are met.

Feeding protein supplements during winter grazing has generally increased cow body weight and body condition at calving. Adams cautioned producers to remember that protein supplements are not a substitute for forage when forage is lacking.

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.



►Don Adams, beef nutritionist, told attendees that strategic weaning and supplementation can have significant effects on net returns during the winter.

Irrigated Pastures

Consider economics and management goals before establishing irrigated pastures.

by ***Kindra Gordon***

►Dick Clark, ag economist, talked about the economical considerations for irrigated pasture — cost for pasture establishment, annual operating costs and opportunity costs.

It's obvious that irrigated pastures can help boost the amount of beef produced per acre. But at what cost? That was the topic tackled by University of Nebraska (NU) ag specialists Jerry Volesky and Dick Clark at the 2003 Range Beef Cow Symposium.

Clark, an ag economist, said producers need to consider three factors in weighing the economics of making irrigated pastures pay, including:

1) cost for pasture establishment,
2) annual operating costs for grazing and maintaining the pasture, and
3) the opportunity cost of alternative uses on that land, including the effect on farm-program payments.

While first-year establishment costs can run about $175 per acre, Clark said that, when looking at the big picture, that is possibly worthwhile. "When properly managed, some of these pastures can last 25 years. So if you spread that cost out, you may only be looking at a cost of about $12 per acre over that time period."

He added that often the extra pounds of beef produced can also be profitable, despite the expense.

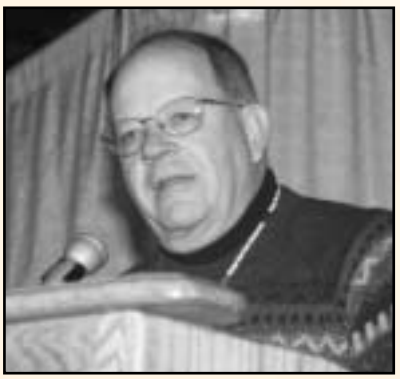
But economics is not the only factor to consider when deciding if irrigated pastures fit your operation. Volesky, a range and forage specialist, said management and how you intend to utilize your irrigated pastures also need to be evaluated. "You must have an understanding of irrigation, fertilization and grazing management as well as the types of forages you intend to plant, grow and graze," he said. Volesky offered the following factors to consider.

1) Consider the type of forages you plant. Volesky reported that cool-season perennials are typically the most popular in irrigated grazing programs. He said it is most common to find irrigated

pastures that are a mix of orchard grass, smooth brome, meadow brome, creeping foxtail and alfalfa. But, he added, "Annuals can be successful, too, especially if used in a double-cropping system." As an example, he said, a cool-season annual such as wheat, rye or oats would be planted first, followed by a warm-season annual such as forage sorghum or sudangrass.

2) Do a good job in establishing the pasture. "Pay attention to planting dates, seedbed preparation, planting depth, etc. It's important to get the job done right the first time," he said.

3) Manage your irrigation. "Irrigation done at higher frequency and lesser amount is typically best, because cool-season grasses have a shallow root system," Volesky said. He suggested irrigating every six to seven days and three-quarters of an inch at a time. Obviously in a dry year, watering needs will increase.



►Jerry Volesky, range and forage specialist, talked about how irrigated pastures can result in higher animal production per acre.

4) Manage your grazing. "Some type of rotational grazing with these systems is important. We've found five to six paddocks with a rest of 25 to 30 days works well," Volesky said. But, he added, flexibility and paying attention to stubble height are important in deciding when to move animals.

"Too many pastures are grazed too short, like within 2 to 3 inches (in.) of the ground," he said. A stubble height of 6 to 9 in. is a better level to leave.

Lastly, Volesky said there are a lot of possibilities in utilizing irrigated pastures suited to cow-calf pairs and/or stockers. "You just need to use your imagination," he said. Possible examples include:

- ►grazing pairs from April through July and then moving them to native pastures, stockpiling the irrigated forage and returning to those pastures in the fall;
- ►grazing stockers ahead of pairs in the irrigated system; or
- ►running pairs on the irrigated pastures from May to August, weaning the calves and putting them back on the irrigated pastures and moving the cows to native range.

Editor's Note: *For more on these presentations, visit* www.rangebeefcow.com.

Winter on Grain

Feeding and managing cows on high-grain diets offers opportunity to lower winter feed costs.

*by **Kindra Gordon***

Limit-fed, high-grain diets offer viable opportunities to reduce winter feeding costs among beef cows, according to University of Wyoming (UW) Extension beef specialist Steve Paisley. "Many producers have been forced to look at limit-fed diets for their herds in the past year due to high hay prices and low availability. There are some challenges to this type of management, but overall there have been many successes," Paisley reported at the 2003 Range Beef Cow Symposium.

Limit-feeding should be part of a producer's overall management plan, Paisley told producers. It may not be necessary every year, but it can be a good management tool in drought years.

To evaluate if a limit-fed program is economical, Paisley suggested looking at several types of feed and the prices and availability of each. He cautioned that the feed ration needs to provide both energy and protein.

"If you strictly compare hay and corn, you are missing the protein. You need to add something like soybean meal as a protein source, and consider the cost of that," he advised.

And, when calculating costs, consider the amount to be fed. Corn, for example, has a higher energy value than hay, so it will take much less of it, which can make it cost-effective.

Paisley also emphasized that producers should think beyond corn. "There are several energy and protein sources available," he said, suggesting dried distillers' grains, dry corn gluten, wheat midds and even beet pulp as examples. "Another way to reduce costs is to evaluate other forages when the price of hay or alfalfa is high. Look at cornstalks, ammoniated straw, sorghum, etc."

►Producers should consider limiting feed during times of high hay prices to reduce winter-feeding costs, Steve Paisley, Extension beef specialist, said. When using a limit-feeding program, expect behavior changes in the animals and variation in weight gain and loss.

Citing several research studies in Ohio, Illinois and Wyoming, Paisley reported that limit-feeding high-grain diets to cows has been shown to slightly increase birth weights of calves. However, the studies found that there were no differences in calving difficulty between limit-fed cows and cows fed free-choice hay. Also, the studies indicated no effect on subsequent rebreeding of limit-fed cows. "We can manage cows easily on limit-fed diets and get those cows rebred," he said.

Paisley cautioned that limit-feeding could increase aggressive behavior among cows, especially at the bunk. And it can lead to variation in weight gain and loss between boss cows, who get more feed, and timid cows, who may not get enough. "It is important to get the feed spread out so all animals have access (24-36 inches of bunk space per cow is recommended).

Another management option is to sort young cows and thin cows into a separate group so they can be managed better. "These cows can still be limit-fed, but you can just monitor them better," Paisley noted.

If implementing a limit-fed diet, Paisley said it takes about six weeks for animals to adapt. He suggested feeding 1 pound (lb.) of grain per day and working up to the maximum level of grain, then reducing the amount of hay fed.

"Feeding an ionophore is also an important management tool to use to increase the safety of the ration," he said. Feeding whole corn instead of cracked corn and being consistent with the amount of feed and time of feeding each day also seem to cause fewer problems with acidosis.

Paisley said it is important to watch the cattle closely, monitor their condition and adjust accordingly. "Some cows may refuse to eat grain," he said. Calcium (Ca), magnesium (Mg) and vitamin A may also need to be supplemented with high-grain diets.

Paisley has spreadsheets available to help calculate whether feeds are competitively priced for a limit-feeding program. Contact him at spaisley@uwyo.edu.

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com

What Matters Most

Pay attention to heifer development, breeding season, nutrition and bull fertility.

by ***Troy Smith***

The most important component of a profitable beef operation is reproductive performance. Traits associated with reproduction are estimated to have five to 10 times more economic value to commercial beef cattle production than traits associated with calf growth or milking ability of the cow. Gordon Niswender, reproductive physiologist at Colorado State University (CSU), told attendees of the 2003 Range Beef Cow Symposium that a small investment in improving reproductive performance is likely to provide a higher rate of return than any other aspect of the beef production process.

Since genetics account for less than 10% of the variation in reproductive performance, Niswender said producers have far greater opportunity to improve reproductive efficiency through changes in management and the environment. He recommended paying particular attention to replacement heifer development, breeding season, cow herd nutrition and bull fertility.

Niswender suggested that heifers expected to deliver their first calves as 2-year-olds should be ready to conceive by approximately 14 months of age. Development programs should target breeding age weights equal to about 65% of mature weight. To return to estrus and be on schedule with mature cows, first-calf heifers should achieve 80% to 85% of their mature weights and body condition scores (BCSs) of at least 6.5 by calving time.

►Gordon Niswender, reproductive physiologist, said the future of the beef industry is sexed semen. Using this technology, beef producers will be able to use first-calf heifers to produce replacement heifers to achieve more rapid genetic improvement.

Nutritional requirements are greatest in the first 45-60 days of lactation.

"Matching this nutritional demand with the time when the environment will be providing the most nutritional opportunities will result in less condition

loss in the cow, faster gain in the calves, and [will] increase the likelihood of getting the cow bred back in a fixed breeding season," Niswender explained.

The BCS system is one of the best tools for assessing the nutritional status of the cow. Niswender called the cow's BCS at calving a good predictor of subsequent pregnancy rate. Cows with a BCS of 5 or greater stand a better chance of exhibiting estrus during the breeding season. Adequate BCS at calving time means pregnancy rates are increased, cows become pregnant earlier in the breeding season and fewer services per conception are required. Feeding additional supplement to thin cows (less than BCS 5) at calving can improve pregnancy rates. However, Niswender warned that, typically, pregnancy rates will still be lower than rates for cows in better condition.

A small investment in improving reproductive performance is likely to provide a higher rate of return than any other aspect of the beef production process.

Niswender said he fears too many cattlemen pay too little attention to bull fertility. Cows mated to bulls that have passed a breeding soundness examination (sometimes referred to as a BSE) are more likely to become pregnant at first service. Typically, Niswender said, pregnancy rates can be increased by 6%-10% by using bulls that pass a breeding soundness examination, compared to bulls of questionable or unknown classification.

"It has been estimated," Niswender told attendees, "that for every dollar invested in bull breeding soundness examinations, producers will reap as much as $17."

Niswender called artificial insemination (AI) a powerful tool for making genetic improvement and listed three primary benefits of estrus synchronization.

- ►Hormone therapy to synchronize estrus in the breeding group increases the percentage of cows that conceive early in the next breeding season.
- ►A shortened calving season allows more time for cows to recover from calving and return to estrus.
- ►Pregnancy rates of cows that calved late are increased.

Niswender said the future holds promise for improved reproductive efficiency through AI with sexed semen. The ability to sort sperm, by X or Y chromosome, allows for predetermination of calf gender. When routinely available for commercial application, it will be possible to breed select females with X-bearing semen to produce tailor-made, replacement-quality heifer calves.

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.

Creating Demand

New beef products have helped increase demand for beef.

by ***Crystal Albers***

►Sallie Atkins, executive director of the Nebraska Beef Council, said, "The No. 1 reason people eat beef is because they enjoy it." She shared with attendees ways that the Beef Council is researching and developing new products to better use underutilized beef cuts to enhance the convenience, nutrition and enjoyment of beef.

As industry programs have begun to focus on new product development and on consumers' changing needs, demand for beef has increased 10%, Sallie Atkins, executive director of the Nebraska Beef Council, told attendees of the 2003 Range Beef Cow Symposium. The industry has moved from carcass merchandising and fabrication to boxed beef, closely trimmed muscle cuts, case-ready beef and the introduction of thousands of new products — while improving market prices for underutilized cuts.

"We needed to do a better job with our competition; they were really out in front," Atkins said. So beef industry experts identified a huge challenge — increasing the value of the chuck and the round, creating a convenient, flavorful product. To do so, Atkins said, the industry stepped up its research and development efforts to jump-start new product development and improve market prices for undervalued beef.

The University of Nebraska (NU) and the University of Florida (UF) partnered in 1999 to conduct "The Muscle Profiling Study," a checkoff-funded project created in the hopes of developing new meat cuts that remained tender and desirable to consumers.

Researchers analyzed more than 5,600 muscles from the chuck and round for palatability and functionality, Atkins said, as well as some individual muscles known for their flavor and quality — cuts that fall within the top 10 tender beef cuts. Cuts like the flat-iron steak, tender medallions and ranch-cut steak have led the demand for new products on supermarket shelves and in

restaurants nationwide.

"In just less than four short years, we really have made amazing strides in how we fabricate that carcass to add value," she said. And, Atkins said, the timing couldn't be better.

"I think all of us know, with the current market situation and with the whining that we're hearing from foodservice and retail about high beef prices, that the timing has been excellent to incorporate these underutilized cuts onto menus and into retail."

Atkins said beef value cuts take a commanding lead over other convenience products in retail meat departments. Advancements in packaging and consumer acceptance of ready-to-eat beef products have made "heat and serve" a common household term.

"When we started just a few years ago, we just had a handful of heat-and-serve items, and now there are over 1,200 of these new products in the marketplace," she said.

Although research has significantly increased the value of cuts from the chuck and the round, Atkins said the creation of new cuts has only just begun. She said there is room for growth in breakfast and snack-food categories — with the beef industry comprising only 4% of breakfast and snack-food products.

Other trends in the beef industry, including the development of branded products, such as *Certified Angus Beef*® (CAB®) and partnerships with national food chains, have helped increase beef consumption. By using checkoff dollars to partner with companies like Taco Bell, Arby's, Quizno's Bistro and Domino's, the beef industry has seen amazing increases in sales, Atkins said. She said many items that were once intended as trial promotions have become permanent menu items.

"The No. 1 reason why people eat beef is because they enjoy it," she said. "It's the one way we can differentiate ourselves out there in the marketplace."

But while consumers enjoy beef, Atkins said, producers must remember their responsibilities. "We have a responsibility as producers, and that responsibility is to continue to focus on satisfying consumers," she said. "Consumer confidence is paramount if we're going to continue to increase demand. We must keep them choosing beef; we must be able to ensure food safety, and new products are helping us establish that."

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—Sallie Atkins

Editor's Note: *For more on this presentation, visit* www.rangebeefcow.com.