Management Tips

Speakers at Range Beef Cow Symposium XXI share tips for managing the farm or ranch.

Story by
KINDRA GORDON & TROY SMITH

Last month we began our coverage of the 2009 Range Beef Cow Symposium with some of the time-sensitive marketing and outlook material. This month we continue our coverage with some of the herd management sessions.

The symposium was hosted by the Cooperative Extension Service and animal science departments of the universities of Wyoming and Nebraska, and South Dakota State and Colorado State universities. The biennial symposium features real-world, workable solutions on subjects of nutrition, marketing, health, reproduction, consumer demand and industry issues.

Angus Productions Inc. (API) provides online coverage of Range Beef Cow Symposium XXI, available in the newsroom at *www.rangebeefcow.com.* Posted to the web site are synopses of the presentations, as well as PowerPoints, proceedings and supporting materials as provided by the speakers. While not yet posted at press time, audio files will be added as well.

The University of Nebraska will make available for ordering video coverage of each session. Each presentation is on its own DVD. Cost is $10 for the first DVD and $5 for subsequent DVDs. To request information on ordering, call 402-472-3035.

Managing Heifers After AI

How heifers are managed after they are artificially inseminated (AI'ed) can have a significant effect on pregnancy success, reported George Perry, a beef reproduction specialist at South Dakota State University (SDSU).

Nutrition following AI is critically important for heifers.

"Any sudden change in diet following insemination can negatively affect pregnancy success," Perry said, noting research indicates that if nutrition decreases even by as little as 15% after AI, it can affect embryo quality.

Perry and his colleagues at SDSU studied heifers developed in feedlot and pasture situations and found that the heifers developed in a feedlot had a higher percentage cycling prior to breeding, but the heifers developed on grass actually had a higher pregnancy success. Perry attributed this to a negative energy crash experienced by the feedlot-developed heifers after the transition from the feedlot to grass immediately following breeding.

PHOTOS BY TROY SMITH

Heifer development shouldn't be viewed as just the time from weaning to breeding, SDSU's George Perry emphasized. "Heifer development is what goes on after breeding, too."

"When cattle are introduced to a novel environment," he explained, "they try new feedstuffs a little at a time and then increase intake. This period of adjustment can result in a negative gain on heifers, which is what happened to the feedlot-developed heifers when they were put out on pasture for the first time after breeding."

To minimize this period of negative energy gain, Perry suggested producers adapt heifers to grass for up to a month before breeding. The heifers can then be drylotted and supplemented for 10 days while AIing, but when they are turned out to grass post-AI, they should not go through the negative gain period.

Heifer development shouldn't be viewed as just the time from weaning to breeding, Perry emphasized. "Heifer development is what goes on after breeding, too."

He concluded, "We want to manage heifers to stay in the herd and have a long, productive life." His research shows that one of the keys to achieving that is to keep nutrition consistent before and after AI.

— by Kindra Gordon

Profitable Cow, Heifer Pregnancy Rates

Fertility and pregnancy rates are the paycheck that builds the foundation for profitability for cow-calf producers, Colorado State University (CSU) professor and Extension Beef Specialist Jack Whittier reminded attendees.

There is a teeter-totter effect in achieving a profitable pregnancy rate, which means finding a balance between costs and pregnancy rates, he said, noting a difference between maximum and optimum. "If costs go up, you expect pregnancy rates to go up. But can you afford that?"

To that end, Whittier told producers, "The balance between inputs and outputs can be achieved with management."

Balance between inputs and outputs must be considered.

Whittier made some comparisons to 40 years ago — when the first Range Beef Cow Symposium was conducted — and today. He noted that pregnancy rates are still influenced by many of the same things — nutrition, genetics, management.

But there have also been many changes in the industry, he noted. Namely, the U.S. cow herd has fewer cows, but is producing more beef than ever before. Also, the industry today is operating with new breeds, composites and biological types of cattle; the industry is facing new cost and income structures with higher cow costs than ever before; and new tools exist, such as economically relevant indicator traits.

Because of required input costs, there is a difference between maximum and optimum pregnancy rates, said CSU's Jack Whittier. "If costs go up, you expect pregnancy rates to go up. But can you afford that?"

Nutrition is still one of the major keys to reproduction, Whittier emphasized. "Cows and heifers still need energy intake."

Whittier encouraged the use of structured crossbreeding and composite animals, saying, "Not incorporating breed complementarity and heterosis is not an option."

All of these factors and tools must be utilized by producers to find ways to decrease costs while still maintaining pregnancy rates, Whittier suggested.

— by Kindra Gordon

Bull Management, Nutrition

South Dakota State University (SDSU) Extension beef specialist Julie Walker complimented cattle producers for doing an excellent job of selecting bull genetics for their herds, but she reminded them not to forget about nutrition and management of those bulls once they get them home.

Beef specialist offers management reminders for a successful breeding season.

She offered several management reminders for beef producers to consider to ensure a successful breeding season, including:

Nutrition. Walker said the key is to offer bulls a balanced ration and to not under- or overfeed. She said thin and fat bulls both have reduced reproductive performance. She suggested a body condition score (BCS) of 6 on a 9-point scale is ideal going into the breeding season.

Prebreeding Management. Walker also suggested grouping bulls that will be managed in a pasture together prior to turnout. She said this allows time for them to establish a pecking order and may eliminate fighting at turnout. Also allow bulls ample area for exercise prior to turnout.

Minerals and vitamins. Walker stressed that minerals and vitamins are essential for successful animal growth and breeding performance. She advised offering minerals and

A rule of thumb when using young bulls is to place the same number of cows or heifers with the bull as his age in months, SDSU's Julie Walker said. So, a 15-month-old bull should be turned out with 15 cows or heifers.

vitamins to bulls before, during and after the breeding season.

Watch the weather. Walker reminded that through the winter leading up to breeding season, herd bulls may need some extra protection from the cold to prevent frostbite on the scrotum.

Health. Work with your veterinarian to develop a health protocol for herd bulls, Walker said. Vaccinations, parasite control and a biosecurity plan should be addressed. "Diseases and poor health can impact profitability through reducing the number of calves born," Walker said.

Breeding soundness exam (BSE). A BSE includes a physical examination, measurement of scrotal circumference, and evaluation of semen quality. "Bulls should have a BSE each year because a lot of things can impact fertility," Walker said. She also stressed the importance of paying attention to scrotal circumference as an indicator of bull maturity.

Observation. A BSE does not measure libido or sex drive. Thus, Walker stressed the importance of observing bulls immediately after turnout to determine if they are effectively breeding cows. "Don't wait two weeks to observe bulls; do it in the first day or two, so if there are any problems, the bull can be replaced," she said.

Bull-to-cow ratio. Walker said there are many factors that will determine serving capacity of a bull, including land mass, topography, age of the bull, number of bulls in the pasture and whether a synchronization protocol was used. For young bulls, she said, a rule of thumb is to place the same number of cows or heifers with a young bull as his age in months. So, a 15-month-old bull should be with 15 cows or heifers. Older bulls can serve a cow ratio of up to 1-to-60 with no decrease in conception rates. But if the pasture is large or if synchronization was used, a higher bull-to-cow ratio may be needed.

— by Kindra Gordon

Rumen Physiology for the Rancher

Most people attending the 2009 Range Beef Cow Symposium in Casper, Wyo., probably possessed a basic understanding of the cow's digestive system. Most ranchers know a cow is a ruminant. They know a ruminant chews a cud and is equipped with a four-compartment stomach. And most ranchers know this peculiar digestive system is the reason ruminants can convert forages into high-quality protein — the beef that provides nutritious and enjoyable eating experiences for humans.

In comments delivered during the symposium, University of Nebraska Extension Beef Specialist Emeritus Ivan Rush acknowledged his audience's familiarity with cattle. But it couldn't hurt, he added, to review some general ruminant physiology.

"When I first enrolled in an animal nutrition course, I felt this area was unnecessary. All I wanted to learn was does the cow need one or two pounds of a supplement. I didn't want to worry about the theory of digestion in the rumen," Rush admitted. "Over the years, it became obvious that the better we understand how the rumen functions in breaking down

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or digesting feeds, the better nutrition decisions we can make when feeding cattle."

Rush offered the audience a brief review of rumen anatomy and physiology. He discussed the roles of different microbes present in the rumen for breaking down dietary fiber or starch to be utilized for energy. Rush went on to discuss factors that can enhance or hinder rumen function, the digestive process and its effect on animal performance.

"Ultimately," Rush said, "these factors affect the economics of cattle production."

The level of starch (from grain) in ruminant diets affects the rumen microbial population. According to Rush, small amounts of starch have little effect on digestion, but higher levels of starch will increase rumen acidity — a condition less favorable to microbes, which specialize in fiber digestion.

Interestingly, adding a relatively small amount of grain to the diet will actually stimulate fiber digestion. However, when the level of grain surpasses 5% of the diet, the shift in rumen microbe population begins and forage digestibility starts to decrease.

When the level of grain surpasses 5% of the diet, the shift in rumen microbe population begins and forage digestibility starts to decrease, Ivan Rush explained.

"This does not mean we should not feed a mixture of grains and forages," Rush stated. "Economics of the ration should determine the level of concentrates, such as grains, to be included in the diet."

Beef specialist discusses factors that enhance, hinder rumen function, the digestive process and its effect on animal performance.

Rush explained that rumen organisms require a source of nitrogen, which is provided through dietary protein. Providing supplementary protein to cattle can enhance rumen microbe activity and thus increase digestion of low-quality forages.

Not all protein supplements are the same. Rush noted how byproduct feeds, such as those derived from the processing of corn ethanol or sugar beets, can be good sources of supplemental protein. Additionally, they are good sources of energy in the form of highly digestible cellulose and can have a complementary effect on forage diets. Starch, which has a negative effect on forage-friendly microbes, is removed from byproduct feeds.

Rush said feed additives containing ionophores (Rumensin® and Bovatec®) can also enhance digestion among ruminants. These feed additives increase the level of propionic acid relative to other volatile fatty acids in the rumen. Propionic acid, according to Rush, is more efficiently converted to blood glucose for efficient energy utilization.

Rush also discussed direct-fed microbial products, sometimes referred to as "probiotics," saying they have little if any effect on fermentation in normal, healthy functioning rumens. He added,

however, that data show direct-fed microbials (beneficial bacteria) are of limited benefit for improving rumen function in stressed cattle. Similarly, Rush said, enzymes probably have limited value in diets of cattle with functioning rumens, but they may be beneficial to baby calves or stressed animals.

— by Troy Smith

Calf Management Affects Quality Grade

Beef quality grade is important. That's a matter of fact, said University of Wyoming (UW) Animal Scientist Scott Lake.

The National Beef Quality Audit (NBQA) reported that a leading concern among beef packers and merchandisers is insufficient marbling to achieve a desirable quality grade, Lake noted. Premiums are paid on the basis of carcass quality. And management and marketing practices have been developed around the Choice-Select spread.

"It is possible to feed high-energy diets to beef cattle during strategic periods of time [to] produce carcasses with quality comparable to those of early-weaning systems, as well as take advantage of lower-input feeding periods," said Scott Lake, UW animal scientist.

"Developing a means to improve the efficiency of production and profitability of high-quality beef carcasses is essential to increase beef quality and the economic viability of producers," Lake said. Strategic management of nutrition for early-weaned calves could be a viable alternative to traditional ways of feeding cattle.

Feeding strategy to maximize grain intake during key periods reduces feeding costs while seeking carcass weight and quality.

Extensive research during the last decade suggests that early weaning of calves (at 100 to 150 days of age) is a viable option to improve carcass quality, Lake said. It is now known that marbling development begins early in a calf's life and can be enhanced by weaning calves early and placing them on diets containing higher levels of energy (grain). However, early weaning generally means more total days on feed, higher total feed costs and the calves usually produce lighter carcasses.

While premiums are paid for higher quality, carcass weight remains the major economic driver of carcass value, accounting for approximately 70% of total revenue from finished animals, Lake said. With the recent dramatic increase in feed costs came incentives to manage calves for slower growth rates and decreased inputs. Cattle feeders want to minimize the length of time cattle are in the feedlot and many have returned to sourcing yearlings for placement rather than calves.

"Given our understanding of muscle growth and fat accretion, it is possible to

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feed high-energy diets to beef cattle during strategic periods of time [to] produce carcasses with quality comparable to those of early-weaning systems, as well as take advantage of lower-input feeding periods, allowing for similar skeletal growth seen in yearling cattle, thus producing heavier carcasses," Lake said.

Preliminary data suggest early-weaned calves can be fed a high-concentrate diet for about 100 days, followed by a period when calves are treated more like a yearling. After this period of time on a slow plane of nutrition, they are returned to the feedlot and a high-concentrate finishing diet. The desired results are carcasses of higher quality grade and weights similar to those of traditionally fed cattle.

"The objective is to maximize grain intake strategically, during key periods of time, to keep total feeding costs lower and still achieve heavier carcasses of high quality."

— by Troy Smith

"Livestock gains were much more responsive to stocking rate than to grazing system," noted ARS rangeland management specialist Justin Derner.

Stocking Rates and Grazing Systems

Justin Derner shared with attendees results from the longest known grazing system and stocking rate study in North America. The study was conducted from 1982 through 2006 at the High Plains Grasslands Research Station near Cheyenne, Wyo.

A rangeland scientist with the Agricultural Research Service (ARS) in Cheyenne, Wyo., Derner reported results from the final 16 years of the study, comparing season-long and short-duration rotational grazing at moderate and heavy stocking rates and their effects on yearling beef weight gains and vegetation production.

- Heavy stocking rates consistently reduced average daily gains by 12% compared to moderate stocking rates. For the study, moderate stocking was 7.5 acres per steer and heavy stocking was 5.5 acres per steer.
- Gains were reduced slightly (6%) with short-duration rotation grazing compared to season-long grazing during the study period.
- Neither stocking rate nor grazing system affected vegetation production for this portion of the study. Derner noted that additional research at this study site has shown that vegetation production is 23%-29% greater with light stocking rates (12.4 acres per steer) compared to moderate and heavy stocking rates.
- Beef production increased with increasing spring precipitation for all stocking rates and grazing system combinations. And, as one would expect, vegetation production increased with increasing spring precipitation for all stocking rate and grazing system combinations.

In closing, Derner noted, "Livestock gains were much more responsive to stocking rate than to grazing system." He added that research is continuing to try and develop forecast models that will better aid beef production decision making and risk assessments with regard to stocking rate and grazing systems.

— by Kindra Gordon

Monitor the Range

The fixed costs of operating grazing land are, well, fixed. According to SDSU Range Management Specialist Roger Gates, that's why it's important for range managers to maintain or increase production per unit, look for incentives awarded for good range stewardship and ensure land tenure security for rented private grazing land or public land.

Range monitoring is useful to measure and document the results of good management practices, Gates told symposium attendees.

He recommended five steps to implementing range monitoring, starting with inventory assessment, which is simply taking stock of available range resources. Next, a manager must decide on his or her vision of what range management objectives are. Thirdly, the manager develops a strategy for a long-term approach to management.

Range management specialist shares five steps to implement a range monitoring program.

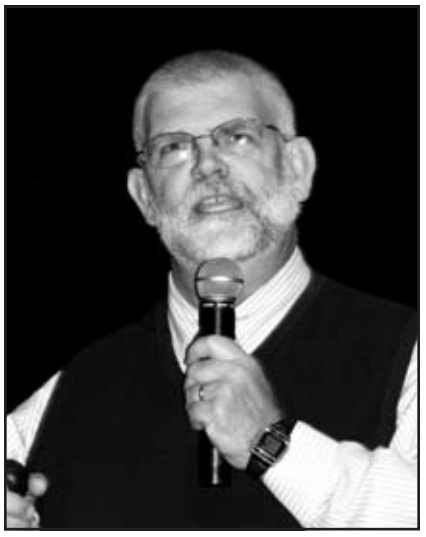
While implementing the plan, the manager should keep records. Document the steps taken in implementing the plan and any modifications made. Then monitor the results, asking whether the plan is working and you are accomplishing the stated objectives.

"You don't have to be a botanist to monitor successfully," Gates stated. "In most cases, the range biomass is 75% to 85% grasses. Most sites are dominated by a half-dozen grass species, and you probably know what they are, or you can find out."

Monitoring tools that will be helpful include a GPS for tracking specific patches on selected sites the manager wants to return to repeatedly for observations. Gates called photographs particularly helpful in documenting response to management practices and their effect on cover, plant density and species frequency. He also advised managers to develop a scoring system for grassland.

"Most producers are familiar with the body condition score system for cattle," Gates said. "A scoring system similar to that can be used to evaluate the range and help you determine if you're 'getting there'."

— by Troy Smith



"You don't have to be a botanist to monitor successfully," said SDSU's Roger Gates.

Managing Annual Bromes

Research trials conducted by ARS scientists at the Fort Keogh Livestock and Range Research Lab in Miles City, Mont., indicate that timely herbicide applications, grazing and fire are each effective tools in managing Japanese and downy brome.

ARS range ecologist Lance Vermeire told producers that managing annual bromes is important because these species can affect forage quality on rangelands and compete with more preferred perennial grasses.

"Control of annual bromes requires reduction of the seed bank over time,"

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Vermeire said. "If we don't manage the seed bank, it will snap back quickly."

Vermeire discussed the following three strategies for control:

1) Chemicals. He noted that traditional herbicide applications, such as Roundup®, can be challenging because they are very sensitive to timing and can reduce desired forage species if applied at the wrong time. Thus, ARS researchers instead have conducted trials applying herbicides more traditionally used for broadleaf weed control — such as 2,4-D, picloram (Tordon® and Grazon®) and dicamba (Banvel™ and Brush Buster™) — to see the impact on annual bromes.

Vermeire explained that these herbicides have been shown to cause seed sterility in cereal crops if applied during seed development. And, similarly, the researchers found that dicamba and picloram both gave reductions in viable seed when applied to brome plants. The 2,4-D had no effect.

"Control of annual bromes requires reduction of the seed bank over time," ARS Range Ecologist Lance Vermeire said. "If we don't manage the seed bank, it will snap back quickly."

In a field-trial setting, the broadleaf-applied herbicide was effective at reducing seed viability by as much as 95%. Vermeire said that it was effective if applied at the internode, boot or heading stage, which allows producers some flexibility for application timing.

2) Grazing. From the ARS trials, Vermeire shared that close grazing of brome — to about a 3-inch height — reduced productivity of plants by 50%. Grazing brome in June seemed to be the most effective timing.

He suggested producers graze brome-infested areas in mid-spring. "That is when forage quality is highest on the brome plants so there is some forage value," he said, "and that is when the plants are most susceptible to seed reduction."

He did caution that repeated heavy spring grazing can increase brome, so he also warned, "There is a delicate balance between intensity and timing."

3) Burning. Research using fire as a control tool is also offering encouraging results. "Fire provides direct consumption of all of the seed that is above the soil," Vermeire said, and shared study results in which fire reduced the amount of seed by 90%.

Burning in the summer, fall and spring were all effective timings, he noted. Fire promotes a positive response from desirable perennial grasses and forbs in addition to reducing the annual brome population and seed bank. He cited one study where the population of western wheatgrass doubled just two years after a burn.

Vermeire noted that future research will look at timing brome control strategies to make them even more effective and long-lasting. As an example, he said, "If we have a wet fall, we know that is when cheatgrass germinates, and we can prepare to follow grazing or fire treatments in the spring with chemical treatments to give a one-two punch to significantly reduce the annual brome seed bank on rangelands."

— by Kindra Gordon