PURINA Check point®
Management & Nutrition Tips For Beef Producers

Developing the Optimum Beef Cow. It's All About Genetics.

No matter how large or small your cow-calf operation is, you want it to be the best it can be. In order to achieve that goal, you have to have the best cows. But, what exactly does the optimum cow look like? And, how do you develop one?

Dan Moser, Ph.D., associate professor of beef cattle genetics at Kansas State University, says the first attribute of an optimum cow is reproductive efficiency.

FERTILITY, THE NUMBER ONE TRAIT

"The optimum cow breeds back early," Moser said. "We want her to return to pregnancy as soon as possible after calving. That means she has to be fertile as soon as you put the bull out (or inseminate). When she is fertile early, she'll calve early in the calving season."

When all the cows do this, he explained, you compress the amount of time spent calving, which saves labor and gives you a more uniform group of calves—and that pays off at sale time.

Conversely, if fertility is compromised, "You will have late calves and be calving over a longer period of time, making more work for you. Plus, at market the calves vary widely in age, size and weight, which brings a lower sale price," he commented. "Feed yard managers want uniformity to reduce their labor and deliver a more uniform product at slaughter time."

If a cow misses two cycles, her calf will be born about 45 days later than desired and potentially be 60-70 lbs. lighter at market, he explained.

LONGEVITY ALSO DELIVERS PROFIT

After fertility, the second most important attribute to look for is longevity, according to Moser. That's because there are so many upfront costs involved in developing each heifer.

"You have a lot of expense in heifer development in terms of feed, facilities and health programs," he explained. She is basically an expense until she calves; it takes two or three years to recover that expense. So, if you only get three calves out of her, and she's culled for some reason, she is a loss. If she makes it to age seven and is still in the herd, she is probably break-even and anything after that is gravy. Cows that remain fertile and functional 10-12 years will be your most profitable animals."

There are many factors that contribute to a cow's longevity, or useful life in the herd, Moser offered. Among them are functional defects. Those would include lameness issues, which can emanate from hoof issues, or problems with the shoulders, hips, knees or hocks. The geographic size of a producer's operation can put greater stress on cows' anatomies, too, he added, by forcing them to travel greater distances, sometimes through rough terrain, to graze. In addition to lameness, eye and mouth/teeth problems are also common causes for culling.

SIZE AND MILK PRODUCTION, AN EXPENSE—AS WELL AS REVENUE—ISSUE

When it comes to size and milk production, Moser suggests that bigger is not always better. While admitting that feedlots want bigger calves, he warns that sometimes bigger cows come with higher feed costs. And ultimately, that can have a negative impact on the producer's bottom line.

"The higher milking cow comes with higher feed requirements," Moser explained, "And, she is harder to breed back because her body is directing her feed toward milk production, rather than toward the body condition and fat reserve that help her breed back quicker."

Another, perhaps surprising, downside to high milk-producing cows is the negative effect it can have on calves.

Moser said, "Generally, we think of more milk as an advantage, but we are now starting to see, particularly in some breeds, that we are getting more milk than we need, and more than we can afford. If the cow gives more than enough milk to support the calf's health and growth, the calf starts getting fat. And, it takes a lot of calories to make fat. Muscle, on the other hand, is primarily water, so additional muscle comes from water intake, and less from energy. So, muscle is a cheap gain compared to fat."

Moser encourages ranchers to look at the big picture, considering how to make the most of land and forage, rather than focus on individual cows and calves. He suggests the result might be a healthier bottom line with more—but lighter-weight—cows and calves.

"We've had the bigger-is-better mentality—that higher weights deliver more dollars. That's true," he admits, but "selling more head can bring you more money, too. And, in many cases, it may be a better way to maximize profitability than making them as big as possible, which can sometimes make production costs skyrocket."

He says several better questions to ask than "how big is she?" are:

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Proper Nutrition is Key to Developing Productive Heifers

Reproductive performance is critical to the profit potential of any cow-calf operation. And, developing heifers is one of the most important—and challenging—components for the operator. These young, growing animals are at a pivotal point in their lives. We are asking them to not only reach as much as two-thirds of their expected mature weight and develop all their bodily systems, but also to prepare to reproduce at approximately 14 months of age—and lactate at approximately two years of age.

So, once you've selected heifers with a promising genetic makeup and sound confirmation and health profiles, it's crucial to create a comprehensive nutritional program to ensure their continued success.

The first step is establishing a benchmark for your heifers, according to Jane Parish, Ph.D., Associate Professor, Extension Beef Cattle Specialist at Mississippi State University.

"As a starting point, you need to know where you are with your heifers," she explained. "That includes getting a weight on each animal and looking at their body conditions at weaning, or even before."

Parish pointed out that calves should be in good but not excessive condition at weaning lest they be too thin and put at added risk for health problems and late reproductive development. One way to give them a head start during weaning is through creep feeding.

"With input prices being high, it's hard to convince people to do things like creep feeding," Parish explained. "But, by offering even a small amount of time with creep, you are giving the animal a start with a few extra pounds. Plus, you are getting them used to being fed, so you don't have that added stress at weaning."

Energy and protein are the kingpins of any ruminant nutrition program. Energy and protein requirements change throughout the heifer's production cycle; nutrient needs increase in late gestation and even more so during lactation. The availability of these components in forage can also vary significantly, though. That's why evaluating your grasses and legumes can help by providing an accurate picture of available nutrients. Parish says many people don't want to take the time for forage testing—or think they know their forage content. She points out, however, that professional testing often costs as little as $10 and provides a firm foundation for a solid nutritional program.

Minerals are an equally important third leg of the nutritional stool.

"Even with great pasture and supplemental feed, you will end up with mineral deficiencies," Parish said. "I tell people to use a mineral supplement appropriate for the time of year. In the spring

(Continued from Cover)

- "What cow is the most profitable?"
- "What did it cost to feed her versus what she produced?"
- "If I replaced 10 of her with 11 of a smaller cow, would that increase my profit?"

CROSSBREEDING IS IMPERATIVE

The first thing Moser says producers need to do in order to create the optimum cow is cross-breeding.

"There's no question about it, scientifically. Lots of research starting in the 1940s shows that crossbred cattle are more fertile, have better longevity and are inherently more efficient," he stated. "Commercial producers selling weaned calves are leaving a significant amount of money on the table in terms of conception rates if they aren't crossbreeding."

"The crossbred cow will give a little more milk, and her calves will have a little more growth; but where she really shines is in reproductive efficiency. Moser clarified. "She also has better longevity, immunity, feet and teeth."

SOUND GENETICS

Whether the breeding program is natural or artificial insemination, Moser says it all boils down to one thing: the optimum cow is out of a really good bull, and her mother is out of a really good bull. And, he reiterated the importance of using different breeds.

"If you use a bull for four years and get 20 calves a year, and half are heifers, he will have a significant impact on your herd for several years, influencing milk production, size and conformation," Moser explained. "But there's not a lot we can do in terms of selecting for fertility."

"There's no EPD for most breeds," he added. "Some have a heifer pregnancy EPD, but largely it's age of puberty. That's going to affect heifer conception rates, but not the cow. The best thing we can do to increase fertility is cross-breeding."

A few things producers can look for, however, are adequate scrotal size, because daughters of bulls with larger testicles are younger at puberty and earlier to conceive. In terms of conformation, Moser suggests that producers avoid selecting bulls that are too straight legged. That trait, which passed down to his progeny, inhibits easy movement and leads to more lameness issues. Also, if it is possible to see the bull's mother—or several of his daughters, you can check for such traits as healthy udders.

Feed efficiency is another trait that affects profitability, but Moser said the cattle industry is just beginning to scratch the surface in terms of measuring it.

In closing, he offered that while careful scrutiny of bull suppliers can reduce liability, natural service breeding programs are inherently riskier than AI programs, because the quality of a bull's offspring won't be known for a year or two. "By that time, you may have 30 daughters in the pipeline," concluded Moser.

So, no matter what genetics program you rely on, or the goals for your operation, Purina has a nutrition program that can be designed to meet those goals. Talk to your Purina dealer or your local Purina representative about a program that meets the needs of each life stage of your cows. Choosing a feeding program that contains Intake Modifying Technology® helps to assure your cows and calves are eating the right amount of product based on your available forage and performing to their peak potential. Ask about Accuration®/Cattle Limiter and Wind and Rain® Minerals to develop the exact feeding program for your herd.

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when grass is lush and green, for instance, you have to be careful about grass tetany, so make sure you have adequate magnesium in your supplement."

In the fall and winter, it's a good idea to provide a higher level of Vitamin A and of phosphorus, she said, adding that phosphorus must always be balanced with calcium at approximately a 2:1 ratio (2 parts calcium: 1 part phosphorus).

Further, in late summer when forage matures, growth rates may slow down and require supplementation. The hot weather also brings flies, and many mineral products, including Purina's Wind and Rain® Minerals, provide products with additives to discourage horn flies and anaplasmosis, while also providing a balanced mineral supplementation program.

Parish also recommends a good trace mineral package, regardless of the time of year. This is important for immune function and helpful for animals that are stressed, growing and/or lactating.

Water is also a major nutrient, so having clean water available all year round is essential. In the summer, when animals require 2.5 times as much water as other times, it's even more important.

All these things will help prepare heifers for their first pregnancies. For many, that will be mean reaching two-thirds of their expected mature weight by 14 months of age, although Parish says "recent studies are beginning to suggest we don't have to go quite that far."

It's a fine line, though, she adds, warning that low weight can definitely have a negative impact on when heifers hit puberty.

"If you are going to back off the two-thirds weight target, you need to know about the genetics of your herd," Parish advised. "When do the females hit puberty? When do they mature and at what weight? The whole target weight concept is based on expected mature weight, which can vary from 1,000 to 1,600 pounds, depending on breed and genetics. That gap makes a big difference in how much you expect them to gain."

A reasonable daily gain is 1-2 pounds, Parish said. The rate of gain doesn't have to be constant, so with proper planning, producers can gain efficiency by using available resources, such as high quality forage, then supplementing when needed.

At the same time, she cautions against "getting so far behind that you have unreasonable weight gain expectations at the end." Instead, she suggests weighing heifers whenever possible, and

at least 30-60 days before expected breeding so that dietary adjustments can be made.

Bunk management can also improve gains, Parish added. Separating heifers from the rest of the herd keeps them from being crowded out at the feed bunk. It can also improve efficiency by reducing the amount of feed for cattle that don't need as much. Multiple feedings each day, if feasible, replicate cattle's natural feeding patterns and can also improve efficiency.

She exhorts producers to remember that heifer weight and condition—and the high nutrient requirements to get them there—aren't just about achieving that first pregnancy. They are also necessary to maintain a healthy pregnancy and birth, followed by lactation and breed-back. It's a tall order, but one that can be attained with careful planning and ongoing diligence.

Purina offers a full line of products to help your heifers reach their genetic potential and reproduce successfully. The Accuration® Cattle Limiter line utilizes Intake Modifying Technology®, which causes cattle to consume multiple small snacks daily, enhancing digestion and nutrient absorption, and optimizing feed efficiency in young cattle. And, of course, a full line of mineral supplements is also available to meet your specific needs for macro and trace mineral supplementation. Contact your Purina dealer or local Purina representative for more information.

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How Do You Know If Your Herd's Winter Nutritional Needs Are Being Met?

The wind, rain and cold of winter can take their toll on spring-calving cows—and their offspring. So, it's important to make sure that inadequate nutrition doesn't compound the problem. To minimize such problems, producers should monitor the appearance of your their throughout the winter to assure that they are in condition to feed the calf and rebreed quickly.

A body condition score of 6 is ideal at calving. Purina research indicates that a cow in better body condition will produce three pounds more milk per day, resulting in a calf that gains 0.4 pounds more per day. Research also shows that a cow in adequate body condition will rebreed 18-27 days sooner and conceive at a 10-20 percent higher rate than cows with lower body condition scores.

In planning your supplemental nutrition program, always look for products formulated with Intake Modifying Technology®. IM Technology optimizes the flow of nutrients to the digestive system by stimulating cattle to consume multiple small snacks each day. The result is increased forage intake, better overall utilization and enhanced cattle performance. Your Purina dealer has all of the facts about products containing IM Technology such as Accuration®/ Cattle Limiter, Sup-R-Lix®, Sup-R-Block® and Wind and Rain® Minerals. Contact your dealer today to develop a customized winter supplementation program for your herd.

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Winter Investment Pays Big Dividends All Year Long

Healthy, well-maintained cows deliver high-quality calves—and breed back more reliably. But winter nutrition presents special challenges.

It's a time when the cow must not only nourish her own body—and the fetus; she must also prepare her body to produce milk and rebreed shortly thereafter. Unfortunately, it's also a time when she faces cold temperatures, wind, rain and snow.

To make matters worse, forage quality plummets in winter, making it harder for the rumen microbes to break down. This slows digestion, so the cow consumes less. Her condition then suffers, compromising fetal development—and her own future reproductive performance. Protein and energy supplementation is crucial during this period to feed the rumen microbes, speed digestion and restore appetite during these rough winter months.

Adequate energy is required to maintain pregnancy and initiate milk production. Low energy intake during late pregnancy can result in reduced birth weights, weaning weights, milk production and conception rates, as well as higher calf death rates and increased days to first heat. Further, increased energy consumption postpartum will not completely reverse the effects of inferior prepartum energy levels.

Protein is also necessary for satisfactory performance. A series of recent studies at the University of Nebraska-Lincoln (UNL) demonstrated that benefit, particularly as it relates to the calf.

In three studies, UNL researchers found that even low levels of protein supplement, when provided to dams during late gestation winter grazing, increased the body weight and fertility of their progeny, according to Rick Funston, Ph.D., associate professor, beef reproductive physiology specialist, and one of the studies' four researchers.

Steers out of dams supplemented with just 1 lb./day of 42 percent crude protein weighed an average of 100 pounds more than those from unsupplemented cows, according to the first of the three UNL studies. That increased weight can yield $80 to $100 more in net value per animal. A second study found that pregnancy rates among female calves of supplemented cows were 13 percent higher than those from unsupplemented dams.

UNL's third study found that steers from cows supplemented with protein had a higher percent grading choice or greater than did steers from cows not supplemented. The difference, due to supplementation, was five percent for steers from cows on range and an impressive 23 percent for steers from cows on corn residue. And, in this third study the animals were supplemented with just 1 lb./day of 28 percent crude protein.

"Supplementing protein improves dormant forage digestibility, so they actually receive more protein and energy from the forage they eat, and they are able to eat more," Funston explained.

The future of your herd rests on the upcoming calf crop, so investing in a quality nutrition program now will pay big dividends for years to come. You can make sure your cows receive balanced, quality winter nutrition with Purina products, which incorporate appropriate levels of energy and protein to enhance body condition, reproductive performance and healthy progeny. See page 3 for more information.

Effects of Nutrition on Beef Cow Reproduction. http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex3527. 128.173.64.134/faculty/beal/Publications/FAPC96.pdf, Lamb, Cliff. Relationship between Nutrition and Reproduction in Beef Cows. North Florida Education and Research Center. dairy.ifas.ufl.edu/rns/2009/Lamb.pdf, Karstens. Funston, R; Martin, J; Adams, D; Larson, D. Effect of Winter Grazing System and Supplementation on Beef Cow and Progeny Performance., Other sources: Beal, W.E. Life Cycle of Beef Cattle Nutrition. Virginia Polytechnic Institute and State University. 128.173.64.134/faculty/beal/Publications/FAPC96.pdf

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It's all about genetics.

Proper nutrition is key to developing productive heifers

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