



Manage Replacement Heifers for Reproductive Success

by Barb Baylor Anderson

Managing replacement heifers for reproductive success can be one of the most rewarding, and also one of the most challenging, tasks on the farm.

Tom Woodward, Broseco Ranch, Omaha, Texas, who manages 1,000 replacements per year, confirmed that statement during the Cattlemen's College® at the 2005 Cattle Industry Annual Convention & Trade Show in San Antonio, Texas, Feb. 2. He says developing a productive cow, "is the most intense and difficult thing we do in ranching."

He defines *productive* as a heifer that calves when 2 years old and continues to calve each year within the same calving season for life, raising each calf to weaning. He includes in his definition the number of years the cow stays in the herd and total calf pounds produced.

"Three factors affect heifer development: genetics, nutrition and management. It's important because from weaning until 24 months, health, breeding and maintenance costs at a minimum equal the initial value of the heifer during that time," Woodward says. "When you talk about heifer development, you have to determine whether or not you have a good possibility of making a good cow. You have to have a plan for the process."

Starting points

Woodward considers genetics the starting point. "Genetics play a role in the long-term productivity of the cow," he says. "I look for balance when I select bulls for my operation. I look at maternal EPDs (expected progeny differences). You need to have carcass value, too, but we are so enamored with carcass traits that we are ignoring maternal traits. . . . If you consistently select for low birth weight for heifers, you get small calves. If you select bulls with adequate yearling weight, then you get calves that can compete with the best of them."

"You have to find a balance," concurs Justin Sexten, beef cattle specialist with the University of Illinois Extension service, Mount Vernon. "Increasing the pounds of calf weaned per exposed cow by

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selecting for increased mature size and milk production will decrease the likelihood of successful reproduction in a limited-resource environment. By combining genetics and management, producers can reduce calving difficulty. Selection of low-birth-weight calving ease sires and culling heifers with abnormal or small pelvic areas offer producers the chance to improve reproductive efficiency by eliminating dystocia."

Once bulls are selected, Woodward considers conception rates a major economic driver in replacement management success. He artificially inseminates (AIs) about 700 heifers per year during a five-day period in mid-May before turning in his selected bulls.

Once the heifers are ready to calve, he focuses on getting live calves on the ground. "We bring the heifers into a 200-acre trap with pens. We check them in the morning, before lunch, at mid-afternoon and at dark with minimal input," he says.

Nutrition is next

If genetics lay the foundation for heifer reproductive achievement, Woodward says, nutrition is generally the reason for failure in getting heifers bred to calve at 2 years of age. "Research has shown that if a heifer is going to have a chance to cycle and breed at 14 to 15 months, she must weigh about 65% of her mature weight at that time," he says. "If the heifer is behind at weaning time on weight, she won't catch up with the others."

Woodward contends preweaning weight and preweaning gain are important factors to watch and manage. In the 180 days from

Keys to young cow reproductive efficiency

Justin Sexten, University of Illinois Extension service, Mount Vernon, outlines these factors as the main points for obtaining reproductive efficiency in first-calf cows.

- Develop replacement heifers to 65% of mature weight.
- Only utilize a "heifer bull" 45 days per breeding season.
- Heifers must have at least a body condition score (BCS) of 5 at calving, preferably a BCS 6.
- Minimize calving difficulty through pelvic measuring, bull selection and early assistance.
- Feed young cows your best feed, separately.

weaning to breeding, he expects his replacement heifers to gain a minimum of 1.5 pounds (lb.) per day. Sexten adds that replacement heifers should not gain more than 2.2 lb. per day prior to breeding, because high rates of gain during that time can reduce future milk production by 25%.

“Additional stress is placed on the young cow during the last trimester of gestation through rebreeding, since rebreeding must occur within 83 days of parturition to maintain a yearly calving interval,” he continues. “Managing young cows to achieve a minimum precalving body condition score (BCS) of 5 and providing the best feed resources possible prior to and after calving will improve reproductive efficiency.”

Sexten says first-calf cows are most likely to fail to rebreed because they are expected to accomplish so many tasks: become a cow, lactate, recuperate from pregnancy, return to estrus and continue to grow.

“Timing is critical. A young cow needs adequate nutrients to grow, lactate and reproduce. Failure to meet the minimum growth and lactation requirements will inhibit reproduction,” he says. “If you have proper body conditioning, the cow will always be carrying a ‘feed bucket’ with her (in the form of body tissue) and you won’t have to carry additional feed out to her on a cold day.”

In Woodward’s experience, growth following the breeding season comes with cows on green grass for 90 days. In September, he takes cows with a BCS of 6 or better off grass.

“Proper nutrition requires energy, protein and minerals,” he says. “We manage for good consumption, which includes managing nutrition in the field for proper consumption.”

Managing for health

Health is also a contributing factor. Dale Grotelueschen, veterinarian with Pfizer Animal Health, Gering, Neb., says development of replacement heifers can have significant effects on herd productivity and profitability. “Heifers that breed early in the breeding season have higher lifetime levels of production,” he says. “Health programs are part of that.”

Grotelueschen says infectious disease can severely affect that productivity. “Disease control, including and beyond vaccination, can and should be accomplished by using biosecurity and biocontainment fundamentals to economically address disease risk,” he says. “Disease control plans can be designed to address various infectious diseases and optimal levels of health risk in individual operations.”

Biosecurity efforts help prevent disease entry, while biocontainment controls disease agents. “Using these concepts, we can increase immunity of the animal/herd, eliminate the disease agent and prevent transmission due to animal contact,” he says. “Plans must be highly effective and result in predictable economic returns to the enterprise.”

Grotelueschen reminds producers that replacement heifers raised at



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home do not present the same risks for new disease as other animals. “Herd immunity begins with sound vaccination programs in young animals. Raised replacements are already part of those plans,” he says. “Commingling animals from more than one source results in the inevitable exchange of viruses, bacteria, parasites and other agents.”

He recommends producers gather as much history on purchased replacements as possible. “Your disease control plans become more important and more comprehensive when you buy cattle,” he says. “You get all kinds of subpopulations for immunity, size and breed. As much as you can, only buy replacements with health history and vaccination records, diagnostic and treatment records, and implant and other important health information.”

Grotelueschen encourages producers to treat open and pregnant animals differently. “You are restricted on vaccinations for pregnant replacements, and you do not want to commingle pregnant females at calving time because of the risk of calf diarrhea and infectious disease,” he says. “BVD (bovine viral diarrhea) virus is often introduced through the purchase of persistently infected (PI) animals, including offspring of pregnant females. Part of a herd BVD biosecurity plan includes testing of newly purchased cattle or their offspring prior to commingling with the resident herd to be sure they are not PI BVD carrier animals.”

“You want low stress, and separating replacement heifers from the resident herd for a period of time can reduce your risk significantly,” he continues. “Remember that you do have options, and what you choose to do is an individual decision.”

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- Utilize early weaning to minimize cow nutrient requirements, eliminate calf presence and suckling inhibition, and efficiently utilize high-quality feedstuffs.
- Use progestin-based estrus synchronization protocols in late-calving cows.

“In general, management of replacement heifers to achieve 65% of mature weight at breeding and 85% of mature weight by calving will go a long way toward successful heifer development. The key is knowing the ‘real’ mature weight of your cow herd,” Sexten adds. “And, if you find replacement heifers are dragging on, you need to get rid of them.”