

# Selecting and Managing Replacement Heifers

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**Effective Replacement heifer** development is a critical component of an integrated management system. The main objective should be to select and develop an adequate number heifers to a point where they reach puberty and are cycling regularly at the start of the breeding season

Furthermore, heifer development should include management as a first-calf heifer at least until she breeds back and weans her first calf. She should continue to be managed separately from the mature cows during the winter since she has increased nutritional demands through this period.

The replacement heifer represents the future profitability and genetic improvement of the cow herd. Because of the impact of age of calf on pounds weaned, it's important that heifers conceive early in that first breeding season. Researchers have concluded that heifers conceiving the earliest immediately indicate greater reproductive efficiency and lifetime production potential.

Development of the replacement heifer is an extremely costly operation. Since she won't produce any economic return until she is approximately two and a half years old when she weans her first calf, she's an easy target for mismanagement. Because of the expense associated with getting the heifer into production, it makes weaning an adequate-sized calf all the more critical.

Selection and development of replacement heifers can be divided into five general phases:

## ■ Selection

Genetic improvement through the replacement heifer starts with sire selection. Emphasis should be given to prioritizing traits of economic importance. Expected progeny differences (EPDs) should be evaluated for growth, maternal and scrotal circumference data, the latter playing an even greater

role when nutritional resources are limiting.

Since breed influences when heifers reach puberty, it's important to consider available nutritional resources when evaluating which breeds to use in order to take advantage of maternal heterosis. Genetic control is one advantage of raising as compared to buying replacement heifers.

### ■ Pre-weaning

We largely depend on the dam to nurture and care for the heifer during this phase. If feasible, the commercial producer should identify calves at birth, record birth dates (birth weights could be optional), assign a calving-ease score and then develop a performance record program to subsequently utilize in heifer selection and cow culling. The better your information, the more accurate your decisions.

Age and weight along with breed will largely determine when heifers will reach puberty.

However, this weight should be muscle mass without a substantial amount of fat. Research has shown that a high-energy creep feed fed to suckling heifers of British breeds may hinder subsequent milking ability because of fat deposition in the developing udder.

However, a summary of similar data collected on large frame heifers with Continental breeding showed no effect of creep feeding on subsequent maternal performance.

The use of growth promoting implants is a highly profitable practice use to increase weaning weights. If the product is cleared for use in potential replacement females and used according to label specifications, it will most generally not have a negative effect on conception rates. The appropriate window of a single administration is approximately 45 days of age. Potential replacement heifers should not be implanted at birth or at weaning nor receive multiple implant administration.

### ■ Weaning to breeding

The "first cut" in selecting replacements should occur at weaning. This is a good time to eliminate those heifers that have a less than desirable disposition. You need to determine how many replacements you will need and then keep from 10 to 50 percent more than that number, depending on the availability of feedstuffs and associated costs.

Nutritional programs should be built around feedstuffs raised on the farm or ranch with a minimal amount of purchased supplemental feed. The nearer this can be accomplished, the closer the female is matched to the environment.

At this stage, select those females that appear to be most optimum in their kind. You typically would not keep extremes on either end of your calf crop — those too small because they may have difficulty reaching puberty and those too big because they may become mature cows that are too large and have too much body weight to maintain.

Frame size may be used to assist in predicting mature sire. Most optimum frame size will vary depending on the environment and available feed resources. However, in most cases the average commercial cow will probably range from a frame score of 4 to 6.5. Heifers will need to weigh from 65 to 70 percent of their mature weight at the start of the breeding season to consistently breed as yearlings.

Once a uniform group of heifers has been selected, determine how many days you have until breeding season and set a target weight for your females to attain. Then develop a ration that will allow you to attain that level of performance.

Ideally, heifers should cycle four to six weeks prior to when you want to start breeding. Research suggests the puberal estrus may be of reduced fertility.

Ionophores may have a place in heifer development diets. Heifers will gain more weight

on less feed and may reach puberty at a younger age. It's also critical that producers monitor the weight change during this period to make sure they stay on schedule to attain their target weight. Severe winter weather can derail the best planned program. If they are being grown on a forage-based diet, these forages should be high quality. It's critical that nutritional requirements are met to allow the appropriate level of gain.

### ■ Pelvic area (PA)

measurements may be taken near one year of age. This is another tool that may be used in the selection process. These can be adjusted to a year of age by using the factor of plus/minus .27 cm sq/d. Heifers can be ranked with the extremely small PA heifers (the smaller 5 percent) being removed as potential replacement candidates. Although not as critical as in registered operations, skeletal structure should be evaluated and determined to be acceptable.

**Heifers should be bred** three to four weeks before the mature cow herd. This allows a longer postpartum period to fit in with the breeding scheme of the older cows and allows for more attention to be given to the heifers during the calving season. A short 35- to 45-day breeding season should then be used with the final number of replacements selected being determined by those heifers that are bred the earliest during the breeding season.

Synchronization and artificial insemination may enhance this process.

### ■ Breeding until calving

Another step in the profitable management of replacement heifers is to assure adequate growth and development from breeding until she calves as a two-year-old, at about 85 percent of her mature weight. The most critical nutritional period is the last third of gestation when

approximately 70 percent of fetal growth takes place. Therefore, adequate nutrition, especially energy and protein, is essential for proper development of the fetus and preparation for calving, lactation and rebreeding.

Vitamin A and an appropriate salt/mineral package containing adequate phosphorus should be considered for supplementation. Other mineral considerations may be area specific. Supplementation decisions should always be based on analysis of the utilized forage. Don't supplement something that is not needed.

Continue to monitor body condition and make adjustment in your feeding program accordingly. Research has consistently shown that inadequate nutrition prior to parturition results in lighter, weaker calves without a decrease in calving difficulty. In addition, it resulted in increased calf sickness and mortality, lower milk production, longer post partum interval and poorer overall performance.

### ■ Calving to breed back as a three-year-old

Feeding an adequate amount of high-quality forage to two-year-olds before green grass is essential to maintain adequate body condition. Remember, they are still growing, along with having to breed back. If possible they should be wintered separate from the mature cow herd after weaning the first calf.

Consider weaning calves off first-calf heifers and possibly three-year-olds a couple of months earlier than those off mature cows. If these early weaned calves can be grazed on high-quality forages such as meadow regrowth, they can maintain weight gain while the young dams can add body condition prior to winter weather, saving on supplemental feed costs.

