



Texas Agricultural Extension Service

People Helping People

SELECTING REPLACEMENT FEMALES: Commercial Heifer Selection

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Selection, as it is used here, encompasses both the direct selection for desirable traits and the indirect effect of improving herds by culling individuals with undesirable characteristics. In the absence of performance records, producers must select animals based on physical appearance. The three primary traits to emphasize when evaluating heifers for use as replacements are fertility, structural soundness and growth. Certain physical characteristics are associated with these traits in high performing cattle.

Fertility

Fertility, or reproductive performance, is the most important trait in beef cattle production. Producing a live calf every 12 months from every cow exposed to a bull should be the primary goal of every cow/calf producer. Fertility is low in heritability and difficult to recognize in young females. The best approach to improving fertility is to select against obvious structural or reproductive problems and to cull based on reproductive performance.

Heifers that are too coarse-fronted, express too much muscling or appear masculine or steer-like should be avoided. Fertile, productive females tend to be long and lean-necked, shed their hair early in the year, have a long smooth muscle pattern and a functional udder with small, well-shaped teats. Avoid heifers from cows with low milk production, pendulous udders or balloon-shaped teats.

Structural Soundness

A sound skeletal structure is essential for the beef animal to remain productive for several years. A structurally correct animal will stand with her legs squarely placed and toes pointed straight ahead. Minor deviations, especially with commercial replacement heifers can be tolerated, but major deviations should be avoided. Problems in the skeletal structure of the hind legs are more serious than those of the front legs. Post legged, or straight hindlegs, can cause more problems than those with too much "set" to their hocks (sickle-

hocked). The latter may be unsightly and detract from visual appearance, but only in extreme situations do they result in unsoundness that affects performance or longevity. Overly straight and/or open shoulders and bucked knees are other possible indications of unsound structure.

Growth

Growth is an important performance trait in beef cattle because rapid and economical gains are essential for profitable production. Research has shown that larger, heavier heifers born earliest in a calving season will generally breed earlier, raise more calves and rebreed sooner after calving. Attention should be given to skeletal size and weight. Without the benefits of records, the oldest, largest heifers should be retained as replacements. These heifers are from the earlier calving cows that produced optimum milk for a good weaning weight. Such heifers also may have had the genetic ability to continue to grow when they were independent of their dams. All three characteristics—the ability to breed and calve early, milk supply for optimum growth, and ability to grow rapidly—are important in selecting highly productive females.

In a practical production situation, a sequential selection can be practiced without extra gathering of the herd. Retain approximately twice as many heifers at weaning as are required for actual replacements. Then re-evaluate and cull heifers that do not meet set standards prior to breeding, 60 days after removing bulls and again after weaning the first calf.

Weaning Selection

Weaning selection involves removing any heifers that are structurally unsound, undersized for their age, have a wild disposition or show signs of masculinity or coarseness. For further herd reductions, select the largest heifers of acceptable maturity type for the environment and cull the rest.

Breeding Age Selection

Breeding age selection consists of removing any heifers that have developed any structural unsound-

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ness since weaning. This is also the opportunity to cull any heifers that are smaller than others in the group because of slow growth. For accurate selection at this stage, compare heifers that have been managed alike and are on a nutritional regimen adequate for optimum growth to express genetic differences. A guide for adequate heifer growth is they should have attained 65 percent of their mature body weight before beginning the first breeding season.

Selection After Breeding

Selection after breeding is based primarily on whether or not they are pregnant. The breeding period should be restricted to a short period, about 60 days, for selection of early, easy breeding heifers. Open heifers should be sold because their chances of expressing high, lifetime performances are less than those that are already bred. Avoid purchasing open heifers from a group given the chance to breed.

Selection Based on Performance

Selection based on first calf performance is the final step in assuring a high performing cow herd. Identifying pairs (dam/calf) can be difficult, but obviously small, unthrifty calves can be paired with their dams and culled. Pregnancy checking is another tool for selecting first-calf heifers. It is often difficult to rebreed first-calf heifers because they are still growing and lactating and their reproductive system requires time to prepare for rebreeding. Culling open cows after a specified breeding period will put additional selection pressure on reproductive performance. Economics usually dictates whether or not to sell open first-calf heifers after their calf is weaned.

Improving by Selection

The single most effective method of accomplishing cow herd improvement is by selecting outstanding sires, based on performance records, to use on the cow herd. In most breeding herds, more than 80 percent of the genetic material comes from the last three generations of sires. To enhance the improvement process, replacements should be the best heifers available.

The use of the following simple subjective and objective selection procedures will allow for sounder decision making and improve the productive capability of commercial cow herds.

1. Identify heifer calves at weaning with an individual hot brand or ear tag number. Each heifer and eventually every cow, is then identified and should be viewed as an individual productive unit of the ranching operation.

2. At weaning, cull heifers that are structurally unsound, undersized, display bad temperament or are otherwise undesirable for your operation.
3. Shortly after weaning, weigh each heifer individually under uniform and repeatable weighing conditions. Weaning weight is a combination of the milking ability of the cow and the calf's genetic ability to grow. Both are important characteristics in selecting replacement heifers. The weaning weight is the first measurement for growth rate during the developmental stage. To minimize the possibility of penalizing the fleshier heifers from heavy milking cows, the heifers should be weighed 4 to 6 weeks after weaning. This allows the group to equalize and provides a more valid basis for measuring post-weaning rate of gain. Selection pressure on post-weaning gain alone may foster poor milking ability as thinner heifers at weaning may make compensatory gains during the post-weaning growth period.
4. Manage all heifers alike in the environment in which they are expected to perform. It is preferable to give them access to the better forage and supplement during the winter months. It is not necessary to achieve maximum gain on replacement heifers, but time and environment should be allowed to become part of the performance evaluation process. If nutrition is sufficient to allow individuals to express their genetic potential for growth, then the differences within the group will be evident. Gains of 1 to 1.25 pounds per day during their development period are adequate. For most breeds this is adequate to promote early sexual maturity so heifers can be bred at an early age.
5. Prior to breeding, weigh the heifers again using the same weighing procedures and conditions that were used at weaning. Commercial heifers would probably be 12 to 18 months old.
6. From the weight records, calculate the individual gain from weaning to second weighing and rank them. If all the conditions were the same, the observed differences in weight gain among these heifers will be genetic and thus highly heritable. Heifers should be approximately the same age for accurate comparisons.
7. Remove the lowest gaining heifers and those which have developed any unsound features.
8. Expose the remaining heifers to bulls which will minimize calving difficulties. Limit exposure to a 45- to 60-day breeding period.
9. Pregnancy check all heifers 60 days after the end of the breeding season.
10. Make your final selection from the pregnant, highest-gaining heifers in the group.

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