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Cooperative Extension South Dakota State University

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# Calving Two-Year-Old Heifers



Cooperative Extension Service  
U. S. Department of Agriculture  
South Dakota State University

# Calving Two-Year-Old Heifers

by J. A. Minyard, Extension livestock specialist

With good management and proper nutrition, calving beef heifers at two years of age can be an advantage for South Dakota cattlemen. Many producers successfully utilize this breeding replacement plan to improve production efficiency and increase profits. Others encounter numerous problems, and for some attempts to calve two-year-olds will be disappointing. Success will depend on breeding, feeding, and management practices.

Economic benefits of calving two-year-olds have been shown in a study conducted at the Oklahoma Experiment Station. Over their lifetimes cows calved first at two years of age averaged nearly one calf more than cows calved first at three years. Early calving had no adverse effect on subsequent maturity and reproductive performance, weaning weight of calves, or life span of the cow.

## ADVANTAGES

**Lower cost of getting cows into production.** Under normal conditions the cost of raising a replacement heifer will be substantially less by breeding her to calve at two years of age. Although more daily feed and feeds of higher energy will be required for the heifer to be bred as a yearling, the total feed cost from weaning to first calving should be somewhat less because of the much shorter time interval. In addition, fixed costs such as interest and taxes will be less for the heifer calving first as a two-year-old.

**Higher percentage of cows in production.** Breeding yearling heifers will allow a producer to run more producing cows. The grass and feed that normally would be used for nonproducing heifers between two and three years of age and the few extra replacements needed can be utilized by producing cows.

**More selection pressure possible.** A producer will need fewer replacements to maintain cow numbers if each cow produces one additional calf in her life. In a herd of 100 cows this means about three fewer replacement heifers each year to maintain cow numbers. Although the long-range effect of this selection intensity and genetic improvement in the herd will be small, it will allow a little more selection pressure on replacement heifers for important performance traits.

**Make better mothers.** Some producers have observed that heifers which breed at an early age appear to take better care of their calves and perhaps produce more milk than those calving first at three years of age. However, these observations are not supported by experimental data.

## PROBLEMS

**Failure to conceive as a yearling.** Some producers indicate a lower percentage of yearling heifers conceive during the breeding season compared to older cows. Consequently, the percentage calf crop may be smaller than that obtained with older cows. In addition, the calving season may be spread over a longer period.

A primary reason for low conception rates among yearling heifers is that many may not have reached sexual maturity by the first breeding season. Research results from Fort Robinson, Nebraska, indicate average age and weight of heifers exhibiting first estrus to be about 15 months and 550 pounds, respectively. However, this appeared to vary widely among heifers. Some heifers had not exhibited estrus when heat checks stopped at 18 months of age. Some heifers started cycling at about 400 pounds, while a few weighed 700 pounds.

There are also breed differences in conception rate. Results from another Fort Robinson study indicate that Angus and Shorthorn heifers reach puberty at a younger age and at a lighter weight than Herefords.

**Calving difficulty.** Two-year-old heifers ordinarily experience more difficulty during their first calving period and thus require close observation. Some will require assistance at calving time.

Calving difficulty among two-year-old heifers is affected by 1) size of young cow, 2) size and shape of the calf, 3) sex of calf, and 4) sire of calf. In general, larger heifers tend to have less calving difficulty. Heavier heifers tend to drop heavier calves, but they usually experience less difficulty. Other factors being near equal, calving difficulty increases as birth weight increases, particularly when birth weight is over about 80 pounds.

Size, shape, and conformation of the calf at birth also are factors in calving difficulty and may be influenced by sex of the calf and type of bull used for breeding. Heifers dropping bull calves generally experience more difficulty than those dropping heifer calves, probably because bull calves normally weigh four to five pounds more than heifers.

**Failure to rebreed following calving.** Research indicates a longer period from calving to first estrus and a lower conception rate on first service for two-year-old heifers compared to older cows. This can be particularly important in its effect on season of calving in subsequent years unless the heifers are bred to calve early the first time.

**Retarded growth of heifers.** Many producers feel cows that calve first as two-year-olds never become quite as large as those calved first at three years of age. Growth of the fetus and lactation that follows may temporarily take priority over growth requirements of the mother and, therefore, slow her growth rate. However, a long-term study at Oklahoma State University indicates the effect on mature size to be quite small (30 pounds or less). Early calving had no adverse effect on subsequent reproductive performance, weaning weight of calves, or life span of the cow.

#### **SUGGESTED PRACTICES**

The following suggestions may help producers who calve two-year-olds minimize the problems and disadvantages often associated with the practice. Remember that good reproductive performance of first-calf heifers can be achieved if they are developed properly and provided adequate nutrition.

#### **Selecting and Breeding Programs**

To maintain cow numbers it is necessary to keep about one-third of each year's heifer calves as replacements. Select these heifers for performance and structural soundness. Use the adjusted yearling weight to emphasize long-range genetic improvement in performance or growth rate. Yearling weight is moderately heritable and influenced by both weaning weight and post-weaning growth. And, there is a positive relationship between growth rate and feed efficiency in beef cattle. Faster gaining heifers will require less feed per pound of gain than slower gaining heifers.

From a practical standpoint, and particularly in herds where performance records are not taken and first selections are made at weaning, the heaviest heifers may be selected. Cows producing the heaviest heifers generally are those that calve early in the calving season (an indication of their fertility). Weaning weight also is a reflection of milking ability; thus, by selecting heavier heifers, two desirable attributes are selected at the same time. In addition, older and heavier heifer calves are more likely to be sexually mature

by breeding time and will require less feed to reach puberty. One may also expect less calving trouble from the larger heifers.

Bulls used in the herd, including those used on yearling heifers if their offspring are considered when selecting replacements, will account for about 90 per cent of the future genetic change in a beef herd. Therefore, it is particularly important to select sires with above-average performance records. Since bulls influence size and shape of offspring, many cattlemen use a certain breed of bull on yearling heifers in an effort to obtain smaller calves at birth and alleviate calving difficulties. Differences between bulls within a breed are probably as important in this respect as differences between breeds. When possible, select bulls from lines with few calving problems. Do not breed yearling heifers to a bull with generally coarse bone structure, rough shoulders, large head.

#### **Nutrition**

If heifers weigh much less than 400 pounds at weaning, do not attempt to calve them as two-year-olds. Feed replacement heifer calves for gains of 1.00 to 1.25 pounds per head daily during the first winter, depending on weaning weight and weaning date. They should gain enough to weigh at least 650 pounds at breeding time.

Research at South Dakota State University has shown that heifers will gain up to one pound per head daily when fed sufficient amounts of good quality alfalfa hay. If gains of 1.25 pounds or more per head daily are desired, it will be necessary to add grain to the ration. A protein supplement will be needed if nonlegume hay is fed.

As a general rule, heifers should receive about 0.8 pounds of digestible protein per head daily from weaning until calving. This normally will be supplied by 1) good pasture, 2) seven pounds of alfalfa hay, 3) two pounds of a 40 per cent protein supplement, or 4) three pounds of 32 per cent protein supplement. If a protein supplement is fed, it would be good insurance to include vitamin A. Provide access to salt at all times, and offer a mineral mixture, free-choice, containing about 10 per cent phosphorus, particularly during fall and winter months.

Heifers should grow at a rate after breeding that will bring them to 850 to 950 pounds three months before calving. The necessary growth rate usually can be achieved with good pasture or ample amounts of high-quality roughage. The "eye of the master" can best determine if concentrates or commercial supplements are necessary to meet the above goals.

Provide heifers sufficient high-quality feed after calving, too. The lactation period is critical and requires good nutrition to produce adequate milk and maintain the heifer in condition for rebreeding in about 90 days.

## Management

It is generally advisable to breed yearling heifers 20 to 30 days ahead of the regular breeding season. An early calving program for heifers has the following advantages:

1. More time can be spent with two-year-olds during calving.
2. Weaning weight of calves from two-year-olds should be greater since calves will be older.
3. With an additional 20 to 30 days, rebreeding of two-year-olds should improve substantially, and they are likely to calve earlier as three-year-olds.

There may, however, be disadvantages in an early calving program:

1. The overall calving period is longer for the operator.
2. Weather may be more severe during the earlier calving period.
3. Replacement heifers must be selected and grown out to accommodate early calving. This may require keeping a few extra replacements through the first breeding season, and there may be additional feeds costs.

Success or failure of calving two-year-olds can hinge on close observation and timely assistance during parturition. Under normal conditions, expect to assist many heifers with calving.

Heifers to be calved as two-year-olds should not be run with the cow herd until 90 days after they had their first calf. In fact, heifers should receive additional feed during the third winter if they are rundown. Some cattlemen have found the necessity of higher quality feeds and closer observation requires wintering yearlings and two-year-old replacement heifers together, separate from the cow herd.

## Health Precautions

Disease problems usually are minor with healthy, growing beef heifers, but take precautions. Vaccinate all replacement heifers for brucellosis between four and eight months of age. Treat for grubs with an approved systemic compound. Be sure to follow the manufacturer's recommendations regarding dosage and time of year of treatment. Spray or dip the heifers in the fall using a recommended insecticide for the control of lice.

The possibility of bloat, shipping fever, pneumonia, and scours, as well as other less common ailments, suggest close observation of replacement heifers. Bloat or scours may be caused by the ration. Since there is no cure for bloat yet, sell chronic bloaters. Shipping fever and pneumonia are most common when heifers are going through periods of severe stress. Take special care at times such as weaning to provide an ideal environment.



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