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Breeding Dairy Heifers

Careful management of dairy heifers is essential in order to obtain early breeding, minimize calving difficulties, maximize or speed genetic progress, and ensure a long productive life. You can increase your income by changing your heifer management program:

IF your heifers do not calve by 25 months of age.

IF your heifers do not have their first heat by 12 months of age.

IF your heifers have excessive calving difficulties.

IF you cannot detect your heifers in heat.

IF you breed your dairy heifers to beef bulls.

IF you cannot replace at least 30 percent of your milking herd with homebred replacement heifers.

Heat Detection

You may have problems detecting heifers in heat. Virgin heifers frequently have shorter heat periods than cows and sometimes don't show typical symptoms of estrus. These problems are intensified if you cannot observe heifers regularly and if they are in loose housing.

Extra care is needed for detecting heat in heifers. Check closely for heat two or more times daily, preferably not as the heifers are being fed.

To improve heat detection, try stimulating activity among the heifer group. Raise them to their feet just before you go to bed and the first thing in the morning. You might also try turning a strange animal in with the group during heat observation periods.

Keep a record of heat dates of heifers prior to breeding; it will help you anticipate when heats are to occur.

Separate heifers from the group during heat and handle them gently, especially if they are to be bred. Conception is reduced when animals become excited near breeding time.

Controlled Breeding of Heifers

You can use feed additives (progesterone-like compounds) to simplify heat detection and to control partially the breeding date of a group of heifers. These heat control additives are fed to each animal for 18 consecutive days. The first breeding period occurs from 1 to 5 days after the last day of additive feeding.

Heifers not conceiving or not bred at the first period should return to heat 18 to 26 days after the last day of additive feeding. The conception rate at the first cycle (1 to 5 days) generally is lower than for untreated heifers. However, the conception rate at the second cycle (18 to 26 days) is usually high. So the combined conception results equal results expected with untreated heifers.

For successful heat control and breeding results, you must:

- Have heifers that are sexually mature, cycling normally, and on a good plane of nutrition prior to treatment.
- Allow each animal equal access to the feed containing the additive; condition heifers to clean up this feed in a short time.
- Make heat checks twice daily during the expected breeding periods; breed heifers as often as they return to heat.
- Carefully follow all instructions coming with the additive.

Abnormalities

About 1 of every 10 heifers has an abnormality of the reproductive organs. These abnormalities, found in the ovaries, uterus, cervix, or vagina, frequently render the animal sterile. You often can recognize abnormal animals early if you keep records of heats before breeding.

Heifers not in heat by 1 year of age should be examined by a veterinarian; some may be treated successfully. Remove heifers that are found sterile from the group. Early detection of these abnormal animals saves you the rearing costs of nonbreeders.

About 90 percent of the heifers born co-twin to bulls are sterile. These freemartins have organs with varying abnormalities that usually can be detected by a veterinary examination.

Calving Difficulties

Calving difficulty that results in injury to heifers and loss of calves is costly. Unfortunately, you can expect heifers of all sizes and ages to have more calving difficulty than animals that have calved previously. But well-grown heifers that are at least 24 months old at calving time usually have minimal difficulty. A Wisconsin study concluded that the V-shaped nature of the pelvic girdle and smaller birth canal in young heifers (under 24 months) increase the incidence of birth difficulties.

Nutritional effects on reproduction in heifers

Feeding standard	Age at first heat (mo.)	Wt. before calving (lb.)	Age at calving (mo.)	Birth wt., females (lb.)	Percent calving difficulties
Low (62%)*	20.2	969	32	77	48
Medium (100%)	11.2	1,188	28	82	26
High (146%)	9.2	1,353	28	87	24

* Percentage of Morrison Feeding Standards for TDN.
Source: J. T. Reid, J. K. Loosli, R. W. Trimberger, K. L. Turk, S. A. Asdell, and A. E. Smith, *Causes and Prevention of Reproductive Failures in Dairy Cattle*. Cornell Univ. Agr. Exp. Sta. Bull. 987. 1964.

Research workers found an increased incidence of calving problems among underfed heifers, even though they were older than the well-fed animals at calving time. All heifers in the study were bred at the first heat after 18 months of age. But the underfed heifers reached sexual maturity (first heat) at an older age and produced smaller calves.

Feed Heifers for Early Breeding

If heifers are short of energy, they do not develop to their genetic potential for size and production at an early age. Well-grown heifers express their first heat by 12 months of age; they can freshen at 2 years with minimal problems at calving time. Heifers 1 year and older usually should gain 1-1½ pounds per day.

Underfed heifers reach sexual maturity slowly. They are more apt to possess nonfunctioning ovaries and have a higher incidence of calving difficulties than well-fed heifers. These conditions are associated with slow growth, thinness, and roughness of hair coat.

Provide your dairy heifers with good quality forage and about 4 pounds of grain daily prior to 9 months of age. After 9 months, grain is not needed if the forage is of good quality and the heifers grow rapidly.

Good pasture supplies ample nutrients for growing yearling heifers. However, parasites may be a problem for cattle on pasture. Infested cattle grow poorly and appear underfed, thus delaying breeding. Consult a veterinarian for treatment.

Although overfed animals usually come into heat earlier than those on a moderate plane of nutrition, do not overfeed heifers. It is costly to waste feed. Moreover, overly fat animals may not perform well in later life from the standpoint of both production and breeding efficiency.

Breeding Recommendations

The most profitable time to have heifers freshen is the youngest possible age at which they will have minimal calving difficulty. Compared to later calving, calving at 24 months is most profitable; the cost of rearing is less over the shorter unproductive period, even though production may be less in the first lactation.

To harvest profits from early calving and to have minimal calving difficulties, consider the size and age of the animal at the time of breeding. Do not breed heifers before they reach the recommended age and size, as shown in the table.

Minimum age and size of dairy heifers at time of breeding

Breed	Minimum age (months)	Minimum size (pounds)
Ayrshire	13	600
Brown Swiss	15	750
Guernsey	13	550
Holstein	14	700
Jersey	13	500
Milking Shorthorn	14	650

Breed Dairy Heifers to Dairy Bulls

Many farmers breed dairy heifers to beef bulls so they will produce small calves and have fewer calving problems. But the advantage of fewer calving problems does not offset the loss in future herd replacements and potential genetic improvement of your herd. **Breed dairy heifers to dairy bulls.**

Because some dairy bulls sire larger calves than others, use known sires of small calves when possible. Crossbreeding studies show that the dam has about three times more influence on the size of the calf than does the sire. The sex of the calf, as well as the size, age, and nutritional level of the dam, greatly influence the size of the calf. Therefore, crossbred dairy-beef calves are only slightly smaller than straightbred dairy calves. This size reduction occurs only when bulls of a small beef breed, such as Angus, are mated to heifers of large dairy breeds, such as Holstein or Brown Swiss.

The size of your replacement crop and its potential producing ability are critical to your herd's genetic improvement. The more replacement heifers available from genetically superior production sires, the greater is your opportunity for genetic progress of your herd. Both the size and quality of your heifer replacement crop will be limited if you breed heifers to beef bulls, because the resulting calves will not be replacement material. Your opportunity to cull low producers will be decreased.

Calves produced by the youngest animals in your herd usually have the highest potential producing ability when you continually use superior production sires. Therefore, you will lose the best potential producers of your replacement crop if you breed your dairy heifers to beef bulls.

Follow a good heifer management program:

—Watch heifers closely for heat; record all heat dates.

—Rear heifers so that they have their first heat by 12 months of age and are large enough to breed by 15 months with a high conception rate.

—For maximum genetic gain, breed heifers to superior production dairy bulls of the same breed.

—Recognize potentially sterile animals early to save their rearing costs.

—Keep calving difficulties minimal by (1) feeding heifers for early calving and (2) breeding between 13 and 15 months of age.

—For the best opportunity for genetic progress, raise all heifer calves born for future herd replacements.

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