



# Vet Call

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## Developing heifers in the winter

*For spring-calving herds, proper development of heifers through the winter months from weaning to breeding is essential to ensure a high percentage become pregnant early in the breeding season.*

### Start early

I recommend starting the breeding season for heifers about one month ahead of the cow herd; and assuming that most replacements are selected from heifers that are born in the first two months of the calving season, the heifer breeding season will start when the heifers are 12 to 14 months of age. A heifer's heat period when she first reaches puberty is not as fertile as subsequent heats; therefore, it is recommended that heifers reach puberty at least three weeks ahead of the breeding season. Therefore, proper heifer development results in heifers reaching puberty by 11-13 months of age.

Age and body weight are the two most important drivers for the onset of puberty. Most Angus and Angus-cross heifers can reach puberty by 1 year of age if they attain 55%-60% of their mature body weight. Some heifers will reach puberty at a lighter percentage (55%) of their mature body weight than other heifers, but to be on the safe side, I recommend aiming to have the heifers weigh 60% of their expected mature weight by 12 months of age. For heifers that will have a mature weight of 1,100 pounds (lb.) — they will need to weigh 660 lb.; and heifers that mature at 1,400 lb. will need to weigh approximately 840 lb. in order to reach puberty.

If heifers are weaned 120-160 days prior to the time they should reach puberty, most will need to gain between 1.25 lb. and 1.75 lb. per day (and some will require up to 2.25 lb. per day) between weaning and breeding to reach their target weight. And while these required gains do not necessitate that heifers be fed a high-concentrate diet in a drylot, they exceed what can be expected from most all-forage diets. Heifers grazing dormant forage or being fed average- to good-quality hay will need to be supplemented with some grain or byproduct feeds in order to meet targeted weight gains.

If winter weather is severe, nutritional

maintenance requirements are even higher, and higher levels of concentrate feeds are needed. Although hitting the target weight at the start of the breeding season is important for fertility and future productivity, weight gains do not need to be consistent throughout the weaning-to-breeding period. Researchers have shown that heifers fed to gain slowly for several weeks followed by a period of more rapid gain but that reach the same target weight and body condition score prebreeding as heifers fed to gain at a consistent rate from weaning to breeding had the same reproductive performance.

Some research has indicated that replacement diets with a fairly high component of grain (starch) appear to reduce the age when heifers reach puberty compared to fiber-based diets with the same number of calories. Adding grain to the diet of heifers that are in danger of not reaching target weight is probably a good idea. Adding fat or oilseeds such as soybeans, sunflower, canola, or safflower to hasten the onset of puberty has not shown consistently beneficial effects.

Several university studies have indicated that heifers fed ionophores from weaning to breeding or exposed to progestogen-containing synchronization systems (such as MGA or CIDR®) will reach puberty at a lower percentage of their mature weight than heifers developed without them. In addition, ensuring that heifers are dewormed properly will help guarantee that they are not delayed reaching puberty.

### Two hurdles

The two greatest obstacles heifers face to reach puberty in a timely manner are poor-quality forage and severe winter weather. When these two factors occur in the same year, weight gains from weaning until the start of breeding can be less than necessary to have a high percentage of heifers become pregnant early in the breeding season.

While short-term nutritional challenges

associated with isolated storms are not likely to delay the onset of puberty, longer-term nutritional challenges from poor quality or quantity of forage or several weeks of wet and cold temperatures can delay the onset of puberty and, in severe situations, actually cause heifers that had reached puberty to stop cycling. To avoid having a low percentage of heifers ready to breed at the start of the breeding season, I recommend that at least a subset of heifers be weighed at least once and preferably more often between weaning and yearling age. If a group of heifers are not meeting their targeted weight gains, the ration should be adjusted to allow them to reach 60% of their mature body weight by 12 months of age.

While my greatest concern for the nutritional development of replacement heifers during the winter is to avoid being underweight at the start of the breeding season, some heifers are overdeveloped and are excessively heavy. Research has indicated that heifers in a body condition score (BCS) of 5.5-6 (on a 9-point scale) have the highest fertility, while those with either less or greater amounts of fat cover have reduced fertility.

Heifers that are a BCS 7 or higher have a higher feed bill than properly developed heifers and are less likely to become pregnant early in their first breeding season. In addition, excessive supplemental feeding of beef heifers before puberty has been shown to reduce lifetime calf weaning weights due to impaired milk production. This impaired milk production appears to occur in heifers that deposit fat in the udder prior to puberty.

Proper nutritional development of heifers from weaning to breeding is essential to ensure that a high percentage of heifers become pregnant early in their first breeding season. For spring-calving herds in much of the U.S., that time coincides with winter weather and dormant forage. These constraints call for producers to carefully monitor heifer growth and to be ready to adjust rations if necessary to meet target breeding weights.

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