

Rebreeding First-Calf Heifers

Generally the most expensive and valuable animals in the herd, 2- and 3-year-olds require some extra management attention. Here are some tips on how to get them rebred.

Whether purebred or commercial, reproduction has long been a major limiting factor in beef-cow operations. One of the most common frustrations is the failure to get first-calf heifers rebred, says Tom Geary, with the U.S. Department of Agriculture's (USDA's) Agricultural Research Service (ARS) in Miles City, Mont.

The first-calf heifer has a few things working against her, he explains. First, she's not mature, so she has to find enough energy for growth, maintenance and lactation all at once. Plus, she's often asked to do these things at a time of year when only poor-quality forage is available. Is it any surprise the pregnancy rate in 2- and 3-year-olds is frequently the lowest in the herd?

The 2-year-old female is the most expensive and valuable animal in the herd. After all, she hasn't yet generated any income, but considerable money has been invested in her. In fact, estimates say it costs \$950 to develop a replacement heifer and get her to the point of her first calving.

So, if a heifer fails as a 2-year-old, that's a significant financial loss. In most herds, a replacement female won't actually pay for herself until she's 5 years old — after weaning her fourth calf.

For all these reasons, it's often logical to invest a little extra in getting her rebred than to start over with another animal, Geary says.

Postpartum interval

Many research studies have looked at identifying and addressing the rebreeding troubles of first-calf heifers, he explains. The primary problem stems from differences in the postpartum interval (PPI) between heifers and their older counterparts.

Cows need 40-60 days to recover from calving and to overcome the resulting negative energy balance. Once that's done, a cow will return to regular estrous cycles and be ready to rebreed.

But, 2- and 3-year-olds may require as many as 70-90 days. Genetic selection for increased productivity may worsen the problem if a female's genetic potential gets out of synch with the production environment. After all, high-performance animals have higher nutritional requirements.

Research suggests the key to increasing pregnancy rates, especially among young cows, is to shorten the PPI. This increases the number of opportunities to allow her to conceive in a given breeding season and increases her fertility early in the breeding season.

Some producers try to get around the heifer's longer PPI by breeding heifers three weeks before the rest of the cow herd. The intent is to allow them more time to recover before the next breeding season begins.

But, this practice can backfire, and heifers that calve too early in the spring may actually have a longer PPI because they have an even longer wait after calving for green grass, Geary adds. If just-calved heifers don't get sufficient nutrients, they'll be even further behind at the next breeding. Postpartum nutrition affects fertility primarily, but deficiencies during that period can also lengthen PPI.

More successful strategies

Research suggests other strategies can more successfully shorten a heifer's PPI, Geary says. One is to ensure heifers have sufficient energy stores before calving. It's very difficult, if not impossible, to make those up afterward.

"In fact, prepartum nutrition, especially during the 50-60 days before calving, is the primary controller of PPI length. She should be in a body condition score (BCS) of 5 to 6 at calving," Geary says.

Also, five different studies suggest feeding ionophores after calving shortens PPI in cows an average of 18 days, if adequate energy is also available. It will increase feed costs by less than 2¢ per day.

Heifers that calve late as 2-year-olds often fail to rebreed, or they calve later as 3-year-olds. So, having them calve early in the calving season is critical. That means they must be cycling at the beginning of the breeding season.

Geary offers several suggestions:

- **Weight:** The old rule that heifers must be at least 65% of their mature weight at the start of breeding season is still true. What's different is mature weight, which used to average around 1,000-1,100 pounds (lb.), so heifers needed to weigh 650-700 lb. Now, mature cows weigh 1,250 lb. or more. As a result, heifers must be at least 800 lb. to be at 65% of their mature weight. Selecting replacement heifers from older calves will help get them there.
- **Synchronization** can be a helpful tool for any heifer development program — even with natural service — to increase the number of heifers that calve early. Synchronization can be as simple as feeding MGA® (melengestrol acetate) in pellets for 14 days, then turning in bulls two weeks after the final feeding.
- **Calving difficulties** (dystocia), which are known to increase PPI and delay rebreeding, are more common among first-calf heifers. That fact has made artificial insemination (AI) for heifers



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popular. It allows producers to be certain of using only proven calving-ease sires.

One study showed that heifers experiencing dystocia were 35% more likely to be culled than herdmates. Future reproductive failure is most often the cause.

If calving assistance is needed, it must be given early. After a heifer has spent 1½ hours in Stage 2 labor (with hooves visible), every 30-minute delay in getting her help means adding six days to her PPI.

- **Estrus induction** can be done in several ways. One is to expose heifers, ideally from 30 days after

calving until the start of breeding, to sterile bulls or androgenized cows. A bull pheromone is what makes this technique work; it requires 30 days of exposure and a ratio of one bull or androgenized cow to 20 heifers.

Estrus can also be induced with hormones used for synchronization, though neither a normal nor a high

dose of MGA worked in studies. But, a CIDR® (controlled internal drug release) inserted into the vagina for seven days releases progesterone. When cows were treated in early postpartum with the CIDR, 60% were in estrus within four days. The fertility of the estrus, however, was not tested.

Another hormone, gonadotropin-releasing hormone (GnRH), can be injected to induce estrus. It causes the release of progesterone for five to seven days, initiating a short cycle. The estrus that follows a shot of prostaglandin seven days after GnRH has been shown to be very fertile. Either hormonal induction can be used 30 days after calving.

Early weaning holds more promise for improving reproductive efficiency of first-calf heifers.

- **Early weaning:** Short-term calf removal effectively induces estrus in postpartum cows, but doesn't work as well in first-calf heifers. However, early weaning holds more promise for improving reproductive efficiency in that group than all other methods combined.

The demands of lactation are a critical factor affecting PPI, especially in first-calf heifers. To affect reproduction, the calf should be removed, preferably before the beginning of the breeding season. Thus, it may mean weaning calves less than 60 days old. But calves do need to be at least 30 days old, so it is still important that heifers have their first calves early in the calving season.

Studies have shown that even 40-day-old calves can outperform suckled calves if fed a highly palatable and high-energy ration.

Extra labor, management and expense may be necessary to make a difference in reproductive efficiency for first-calf heifers. But, it can be worth the effort.

Getting heifers to conceive and calve early as 3-year-olds may translate into greater lifetime productivity. Just remember, Geary points out, it's a \$950 savings each time a 2-year-old gets rebred.



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