



# Getting Heifers Bred

***High pregnancy rate reduces development costs and leads to cow herd longevity.***

by Heather Smith Thomas

A high rate of pregnancy among replacement heifers makes total cost in developing them less because the cull rate is lower. And statistics show that heifers that settle early tend to be early calvers the rest of their lives. Here are some tips to help get those first-time mommas bred.

## Sort them

Heifers should be managed as a separate group through calving and rebreeding. Gerry Kuhl, Kansas State University Extension beef nutritionist, says cow herd profitability is directly related to the early management given to virgin and first-calf heifers.

"They can't compete physically or nutritionally with older cows," says Kuhl. Their nutritional requirements are so much greater than cows; it is impossible to feed them all together and expect the heifers to do well.

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## Genetics

Heifer fertility also depends on genetics, which are determined long before feeding them in preparation for breeding.

Robert Cope, veterinarian for a three-county area in eastern Idaho, says, "Pregnancy rate in yearling heifers is largely a matter of genetics, whereas in 2-year-olds (heifer breed back after calving) it is more a matter of management, meaning nutrition."

If producers consistently select for fertility and early puberty, using a short breeding season and ruthlessly culling any yearling that does not become pregnant, they soon create a more fertile cow herd. Factors that help are using early maturing bulls, which tend to have larger scrotal circumference, higher fertility and daughters that reach puberty quicker, and selecting heifers from the most fertile cows that consistently breed and calve early.

For producers with a long calving season, one way to tighten it up is to select the most fertile heifers to keep as replacements — the larger, older heifers from cows that calved early, suggests Harlan Ritchie, Michigan

State University animal scientist. But he says there are some risks when selecting the largest, fattest heifers. Overfat heifers have fat deposits in their udders and may never milk as well as their more moderately fleshed herdmates.

## Early puberty

Ritchie says the younger a heifer starts to cycle, the better her chance of calving by 24 months of age. Age of puberty is moderately to highly heritable, he says, and very important to future reproductive performance. Heifers must be cycling and ovulating before you put the bulls in.

Two studies at the U.S. Department of Agriculture (USDA) Fort Keogh Livestock and Range Research Laboratory, Miles City, Mont., demonstrated the need to have heifers reach puberty well ahead of the breeding season.

According to Robert Short, research physiologist at Miles City, the first study looked at "nonpuberal estrus" (NPE) — heifers showing every outward sign of heat but not actually ovulating, thus having no chance to become pregnant. Short says, "We observed as high as 35% of the replacement heifer herd showing a NPE in a given year. The NPE may be followed by a normal,

potentially fertile estrus, but is more often followed by another NPE of extended period of time with no sexual activity at all. The message from this study is that a few observations of riding in the replacement heifers do not mean the heifers have reached full puberty and are ready to breed."

The second study was to see if first estrus at puberty is as fertile as heat periods occurring later on. "We bred half our heifers at first puberty heat and the other half at third estrus," says Short. "Conception rate was 21% higher at third estrus than at puberty. These results show the advantage of having heifers reach puberty well before the start of the breeding season so they are not being bred at the first estrus of puberty."

Ritchie says if you aren't sure heifers are reaching puberty early enough, they can be palpated a month before breeding season, using Colorado State University's reproductive tract scoring system to rate them. In this system 1 is infantile (reproductive tract still immature) and 5 is cycling. Heifers scoring 1 or 2 (not yet sexually mature) could be culled.

Kuhl says if heifers don't cycle when they reach puberty, they are not good risks. "They are likely to become cows that always breed slow."

Slow breeders mean late calves and lower weaning weights. Each day a heifer stays open sets her back a day next calving season, which means a lighter calf in the fall and less chance to rebreed. Once you lose those days, they are hard to make up. A late-calving heifer may be late the rest of her life.

Studies have shown that social stimulation can affect age of puberty. Presence of a bull encourages heifers to start cycling sooner. Short says it may be advantageous to use a sterile teaser bull before the breeding season starts to stimulate estrus.

#### Nutrition

The need for early puberty shows the need for a sound nutrition program. "Rate at which heifers gain during winter after weaning will have a major influence on

age and weight at puberty, and on future reproductive potential," Short says. "Heifers on high rate of gain (ROG) will be heavier and younger at puberty than heifers on a lower rate of gain."

Short says a low ROG seriously delays puberty and heifers will be smaller when they do start cycling. "In such cases, conception rate is poor and serious problems are encountered at calving, which decreases calf survival and damages future reproductive performance of the heifer," he says.

The effect of heifers' ROG, after weaning and before breeding, was demonstrated in another study at Miles City. Heifers were in three groups, given different feed levels to produce a low, medium or high ROG. According to Short, "Each step up in rate of gain decreased the age at puberty by about 22 days, or the length of one estrus cycle. Also, body weight at puberty increased 25 lb. for every half pound increase in daily gain."

In the low-fed group, 20% of the heifers did not reach puberty during the 45-day breeding season and when pregnancy checked in the fall, only 50% were pregnant, says Short. In the medium- and high-ROG groups, all the heifers reached puberty before or during the breeding season and both groups had a pregnancy rate of 86% when checked that fall.

Short says this study showed that low ROG due to inadequate nutrition could decrease calving



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percentage three ways — fewer heifers reaching puberty in time to breed, lower conception rate in those that reach puberty, and greater embryo death rate between conception and calving.

The study showed no advantage to feeding for a really high ROG. If heifers are fed adequately, "additional feed does not necessarily provide additional return. The heifers on the high rate of gain took 2 lb. more grain per day than those fed for medium rate of gain, but no advantage was made in pregnancy rate or time to conception," Short says. The additional grain was an added expense that gave no financial return.

Kuhl says heifers should be 65% of mature body weight by breeding time; English-breed heifers should weigh about 650-700 lb., while larger-framed continental breeds should weigh 750-800 lb.

*continued on page 28...*

#### Early calving heifers usually stay in the herd longer

Robert Short, research physiologist at Fort Keogh Livestock and Range Research Laboratory, Miles City, Mont., says on average cows are culled at 5-6 years of age, usually because they come up open. A breeder can add years to a cow's average reproductive lifespan by selecting and managing heifers to breed and calve early.

These early calvers, Short says, tend to follow that pattern throughout their lifetime and stay in the herd longer than heifers that calve in the second half of the calving season their first year. As a result, these early calving cows "not only wean older and heavier calves, they also produce more calves than their slower-developing herdmates."

Harlan Ritchie, Michigan State University animal scientist, says that in a typical herd with a cull rate of 14-20%, weaning percentage of 80-90% and a 90-95% heifer pregnancy rate, you need to keep at least 33-56% of your heifer calves to maintain cow numbers.

Veterinarian Robert Cope says you can improve these statistics if you select and cull hard for fertility in the cow herd. Since fertility is a highly heritable trait, selection pressure will result in replacement heifers being above average for the trait. **HW**

At calving time he says heifers should weigh between 80-85% of mature weight. This means good flesh covering but not fat. An overly fat heifer will reach target weights too soon, before she is structurally large enough or mature enough, and could have calving problems since too high a proportion of her weight is in fat instead of structural growth.

#### **Calving heifers ahead of cows**

Some stockmen start breeding heifers a few weeks earlier than the main cow herd. This gives heifers a longer chance to rebreed after calving. First-calf heifers are the toughest females to get rebred on schedule since they are still trying to grow, nurse a calf and recover quickly enough from calving to rebreed. This also enables first calvers to wean slightly larger calves.

This practice does have drawbacks. It only works if heifers are well-grown and receiving

adequate nutrition to cycle early. The cost of feeding an early calving, lactating heifer from calving to green grass may outweigh benefits of weaning a heavier calf and getting the heifer rebred easier. Whether it works will depend on the individual operation. Genetically fertile heifers, fed properly before and after calving, will usually breed back without the extra time, but in some herds it can make a helpful difference.

Terry Goehring, South Dakota State University beef specialist, says the manpower available to handle calving can be a factor in deciding whether to calve heifers ahead of the cows. "If a person wants to give all their attention to heifers before moving on to the cows, then I'd say breeding them three weeks earlier than the cow herd for a short 45-day season is the route to go." The heifers will be calved out quickly and have maximum time to recover and cycle by breeding season, whereas late-calving heifers that

calve late with the cow herd may have only a short time before the bulls are turned in and many will be late breeders or open.

#### **Calving difficulty**

Also important in a heifer program is minimizing calving difficulty. Many studies show that long labor results in longer recovery time and later rebreeding.

Cope says it's always better to assist a heifer with a difficult birth, even if she could eventually have the calf by herself, to minimize stress on both her and the calf.

In a Montana study, 87% of heifers given early assistance came in heat by the start of the breeding season compared with only 70% of heifers that were not helped until late in labor. Eighty-eight percent of early helped heifers were pregnant at the end of breeding season compared with only 68% of the heifers given late-calving assistance. **HW**