



DAIRY CATTLE REPRODUCTION COUNCIL

## High Production, low fertility?

### Tips to improve conception rates

Over the past 30 years, as production has continued to climb, conception rates have been moving in the opposite direction. The question facing producers is how to improve conception rates without sacrificing milk.

Research has found that 96 percent of the variation in conception rates comes from management factors like heat detection, nutrition and semen handling, and environmental factors like heat stress. The last 4 percent is related to the individual cow's and service bull's genetics. Following are five key areas that impact conception rates and ways to minimize their effects.

#### **Heat Detection**

Training employees to correctly identify cows in heat or using synchronization programs are two ways to improve heat detection.

Heat detection aids can flag cows that may be in heat. Even when tools like pedometers, mount detectors and tail chalk are used, a human element is still needed to verify whether the cows actually are in heat. Standard operating procedures (SOPs) should be implemented to train employees how to watch for heats. The information on these SOPs should mention what signs to look for, whom to tell if a cow is in heat and the proper time for breeding. Some dairies offer incentives to employees when improvements are made in reproduction as judged by heat detection, conception or pregnancy rates.

Estrous synchronization is gaining popularity as a means to improve conception rates, but many different procedures exist. OvSynch,<sup>™</sup> PreSynch and CoSynch are just three of many synch methods used to induce estrus. But what about the cows that come into heat before all the shots are given?

The ongoing debate surrounding synchronization programs revolves around "cherry picking." Some producers breed cows at the first signs of heat regardless of synch programs, while others disregard heat signs and breed on synch programs. If you choose to breed off of heats rather than the synch program, it is critical to keep management records up-to-date or mark the cow to alert others she has already been bred. This will help avoid hormone injection that may abort a pregnancy. On your farm, choose one method or the other to eliminate confusion.

#### **Nutrition**

More is being learned every day about how nutrition impacts reproduction. With the right essential fatty acids in their diet, cows will begin cycling sooner after calving. Poor nutrition can lead to poor body condition scores, which in turn can cause poor reproductive performance and metabolic disorders. For example, research shows that ketosis may have a profound effect on a cow's ability to get pregnant quickly during her next lactation.

New research shows adding omega-3 and omega-6 essential fatty acids (EFAs) to the ration can improve reproduction. A University of Arizona study fed different diets to two groups of cows, one with a higher level



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of EFAs, especially omega-3 and omega-6. Results showed cows fed the higher level of EFAs got pregnant faster and experienced fewer metabolic disorders, improving profits by \$87.02 per cow per year.

### **Heat Stress**

Hot weather can cause many reproductive problems because it minimizes signs of estrus. In the midst of summer heat as many as 75 to 80 percent of estrous events can be missed, and conception rates can sink as low as 10 percent. And even when you think the worst of it is over, the negative effects from heat stress can linger into the fall months. The best thing to do is to avoid breeding cows in the summer. For those cows that need to be bred, help them fight the heat by:

- *Providing cooling.* Use fans, sprinklers, soakers and shades to keep cows cooler. Make sure there is sufficient cooling in places where cows will be crowded, such as holding pens outside the milking parlor.
- *Utilizing alternative heat detection.* Other heat detection methods besides observing standing heats may be necessary in these weather conditions. It's also possible that cows calving during hot weather will not cycle or express heats properly. Using a synch program or embryo transplantation may be good alternatives to get cows pregnant.
- *Updating the ration.* Do anything you can to help the rumen function properly. Increased energy density, mineral concentration and soluble fiber levels are all elements of "cooler" nutrition during hot weather. Providing a good, clean source of water is essential, too.

### **Breeding and semen handling**

AI breeder technique can change conception rates, especially if standard procedures are not followed. This problem can be eliminated through refresher breeding courses for managers and employees responsible for breeding cows.

The method by which the animal is inseminated will affect the conception rate as well. Careful attention to details can ensure sperm survival and a better chance of conception. Details like keeping the canister below the frost line, using tweezers rather than fingers to remove straws and placing thawing semen in a bath of 90 to 95 degree water for a minimum of 40 seconds are important to give sperm the best chance of survival.

### **Genetics**

New research at the University of Wisconsin-Madison has found that a lethal gene may be linked to why top-producing cows are tough to get bred. Researcher Hasan Khatib is in the preliminary stages of research on a gene that causes embryonic death around the fifth day of pregnancy. This occurs when the gene is homozygous, i.e., both parents contribute the lethal variant, which is estimated to affect 30 to 35 percent of dairy cattle. The heterozygous (nonlethal) form of the gene, however, is linked to increased milk, fat and protein production. DNA testing, Khatib says, may help to identify carriers to eliminate situations where bulls and cows carrying the lethal form of this gene are mated. Research on this new area will continue, with a goal of providing further information to producers in the near future.