

# Reproductive Management: What Should we Focus on Next?



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We have learned a lot about reproductive management over the last 20 years. Although it seems like they have been around forever, the most commonly used synchronization protocols (Ovsynch, Presynch, and Resynch) were not developed until the late 1990s. We started using CIDRs in the early 2000s. Sexed semen and the first activity monitoring systems were commercialized only 12 years ago in 2005. Genomic data was added to sire summaries in 2007.

All of these advances have resulted in overall improved reproductive performance, but we still have room to improve. Each year the Dairy Cattle Reproductive Council comes together to discuss new reproductive management ideas. A few items that were highlighted at the 2016 annual meeting in Columbus, Ohio included managing twinning rates and striving for the economically optimal pregnancy rate.

## Managing Twins

Twinning rates in the dairy industry have increased in recent years. According to Dr. Paul Fricke from the University of Wisconsin, very few twins result from a single ovulated egg that splits in half (which would result in identical twins). Instead, most twins result from double ovulation. This is when two follicles are selected to ovulate instead of just one. This double ovulation is triggered when the cow has low progesterone levels during the selection phase, or when follicles become dominant over others and are chosen to ovulate. Low progesterone can be due to many things. Most commonly, high milk producing cows experience greater feed intakes, leading to higher liver blood flow and resulting in faster progesterone break-down.

If twinning is a problem in your herd, practices can be implemented to reduce and manage it. To reduce the occurrence of twins, progesterone levels need to increase during follicle selection. The best way to do this is by breeding cows using a Double Ovsynch protocol (see example below). Additionally, using a CIDR in resynched cows that do not have a CL can decrease the chance of twins. If twins are already present, the location of the pregnancies determines the best way to handle them. If the twins are in different horns, or bilateral twins, both calves have a good chance of survival with low complication rates. Bilateral twins only result in around a 7% pregnancy loss and for the most part the pregnancy should be continued. If the pregnancies are in the same horn (unilateral), the chance for pregnancy loss greatly increases. In this case, the herd manager should consider terminating the pregnancies or have a veterinarian attempt to selectively eliminate one calf.

## Economically Optimal Pregnancy Rate

When we think about pregnancy rate, we tend to think of bigger as better. But is there a point where that is not true – can pregnancy rate be too high? Dr. Albert DeVries from the University of Florida has been considering this question. According to his research, we have not yet identified a point where improving pregnancy rate does not improve overall herd performance. However, improved herd performance is only half of what we need to consider to

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find the economically optimal pregnancy rate. The other half is the cost associated with increasing the pregnancy rate. In other words, if we improve herd performance via increased pregnancy rates but spend more than that improvement is worth to do so, we are not actually improving overall herd profitability. This is important to keep in mind, especially when considering management changes focused on increasing pregnancy rate in a herd that is already accomplishing a high pregnancy rate. The value of increasing pregnancy rate shows diminishing returns, meaning that when pregnancy rate is already high there is less value in increasing it (i.e. increasing pregnancy rate from 18 to 20% is more valuable to overall herd performance than increasing pregnancy rate from 28 to 30%). Therefore, improving pregnancy rate in high pregnancy rate herds requires cheaper management changes.

In addition to the cost of management changes, other factors impacting increased pregnancy rate need to be considered. For example, with increasing pregnancy rates less cows will be culled for reproductive failure and more heifers will freshen or be available to sell. Ultimately, the economically optimal pregnancy rate depends on many herd-specific factors, but especially the costs associated with making the management changes that result in an increased pregnancy rate.

### Example Double Ovsynch Protocol

