Pregnancy Rate: A Clear Picture of Herd Performance

Over the years there have many different ways to measure dairy-herd reproductive performance - average calving interval, days in milk at first breeding, percentage pregnant at vet check, and first-service conception rate. Unfortunately, these statistics don't tell the whole story.

Averages can be deceiving, and don't always reflect the performance of the whole herd. For example, heavy culling of open cows could make the numbers look good, but the herd would be experiencing heavy financial losses and/or going backwards on herd size.

Pregnancy Rate (PR) is a more accurate and useful measurement of total herd reproductive performance. This indicates the percentage of cows in a herd that become pregnant every 21-day period after the voluntary waiting period (VWP).

How to calculate PR

First, determine your herd's Heat Detection Rate (HDR) - or more appropriately, the insemination rate. It is calculated by dividing the number of cows inseminated over a 21-day period by the total number of cows available to be inseminated over that same period.

Next, calculate the herd's Conception Rate (CR) by dividing the number of cows confirmed pregnant from those breedings by the total number of cows inseminated.

Then multiply the Heat Detection Rate times the Conception Rate to calculate the Pregnancy Rate: HDR X CR = PR.

$$\text{Heat Detection Rate} = \frac{\text{\# of cows inseminated over 21 days}}{\text{\# of cows elegible to be bred over 21 days}}$$

$$\text{Conception Rate} = \frac{\text{\# of cows pregnant}}{\text{\# of cows inseminated}}$$

$$\text{Pregnancy Rate} = \text{Heat Detection Rate x Conception Rate}$$

For example, a herd with an HDR of 50 percent and a CR of 50 percent would have a 25-percent PR, meaning that 25 percent of all the cows in the herd became pregnant in the first 21 days after breeding started. At the end of three estrous cycles after the VWP (63 days), only 58 percent of cows will be pregnant. At this rate, 15 percent of the normal cows in the herd will not become pregnant over a regular 305-day lactation. These cows probably would become reproductive culls.

Improving one or both factors to increase PR to 35 percent would mean that 73 percent of cows would be pregnant after three cycles.

A PR of 35 percent or higher is a good goal. At this level, you'll be able to optimize economic returns associated with reproduction.

Higher PR means higher profits

Pregnancy Rate takes the variability out of reproductive evaluation. It is an objective evaluation tool because it measures the performance of all cows, not just those that stay in the herd. It also determines the herd's calving interval and culling rate.

A PR of 35 percent can be achieved only through a systematic, controlled breeding program using prostaglandins such as $PGF_2\alpha$ to induce estrus.

Raising your herd's PR means that you can reduce reproductive culling, dramatically lower replacement costs, produce more milk because cows are at peak lactation (fresh) more often; have more calves born per year; and keep the number of cows in your milking string consistent throughout the year.

It's important to remember that Pregnancy Rate is a time-sensitive variable. Pregnant cows at 60 to 80 days in milk are more valuable than pregnant cows anytime later. So, it is worthwhile to invest dollars and effort into breeding programs that will accelerate pregnancies in this early window.