DRECA
DAIRY RESEARCH SUMMARY

"Issues and Suggestions for Improvements in Reproductive Management of Alberta Dairy Herds"

Why is this important?

Fertility in dairy cows has been declining in Canada and throughout the world. Decreasing conception rates, heat detection rates, and higher cow-to-person ratios on increasingly large farms have all been identified as major issues.

What did we do?

To pinpoint problems in Alberta dairies, we monitored 637 cows in 23 herds throughout the province by monitoring milk progesterone (twice-weekly) until 90-days after calving, DHI records, and by ultrasonography in one herd. Below are the critical issues and possible suggestions for improvements.

Issue #1: Low heat detection and submission rates to artificial insemination

Our study found that 23% of the cows were not submitted for insemination for up to 125 days post-calving. Of these, 76% were eligible for breeding, half of which had normal estrous cycles. Moreover, only 35-38% of eligible cows were submitted to AI during any given 21-day period.

Despite the low heat detection rate, 90% of the cows submitted to AI were actually in heat. High-producing dairy cows have shorter duration of heat and show less obvious behavioural changes associated with heat. As herd sizes and cow-to-person ratios increase, heat detection will become increasingly challenging.

Suggestions: Ovulation synchronization and more efficient estrus detection

The 21-day submission to AI rate should be improved to 50-60%. The use of heat detection aids can increase submission rates; submission rates can also be improved by using protocols for timed AI such as Ovsynch. By synchronizing ovulation, producers can increase AI efficiency and reduce the need for heat detection.

Cow with heat mount detector

Issue #2: Lengthy delays in re-breeding after a failed initial insemination

On average, 42 days passed between the 1st and 2nd breeding and 34 between the 2nd and 3rd. These cows would have been assumed to be pregnant, but in reality, were not, representing economic liabilities to the producer.

Suggestions: Early pregnancy diagnosis and resynchronization (resynch) protocols

Pregnancies can be accurately diagnosed by 28 days using ultrasound; the viability of the embryo can

also be confirmed at the same time. Scheduling more frequent herd health (vet) visits can increase the chances of detecting open cows early. Aggressive use of tests for pregnancy specific proteins can also greatly assist in reducing inter-breeding intervals. Visual aids (e.g. heat mount detectors or tail paint / chalk) to mark bred cows can also be used to catch cows that return to heat.

Tail paint

In addition to earlier pregnancy diagnosis, resynch programs using an intravaginal progesterone device/ Ovsynch combinations can help reduce the interbreeding interval.

Issue #3: Lower fertility in mature cows

Older cows had lower conception rates to first insemination than those on their first or second lactation. They also had lower overall pregnancy rates by 125 days after calving (37% vs 50%) and higher abortion (5.9% vs 3.5%) rates.

Suggestions: Closer monitoring of mature cows and nutritional management

Mature cows should be monitored for signs of heat more aggressively in order to improve their AI submission rate. Because of the higher risk of abortion in older cows, more frequent monitoring of fetal well-being and pregnancy maintenance in this higher-risk-group should be considered.

Recent studies have shown that including oilseeds high in omega-3 fatty acids (e.g. flax) in dairy cow rations can potentially improve conception rates and reduce pregnancy losses. Polyunsaturated fatty acids are reported to enhance early embryonic growth in dairy cattle. Such nutritional strategies should also be considered to improve overall reproductive performance.

Issue #4: Cows with reproductive disorders or mastitis are at higher risk of poor fertility

Cows with reproductive disorders had a conception rate of 24% to first insemination, compared to the 44% rate of non-diseased cows. Those with mastitis had similarly lower rates (26% vs 39%). Overall pregnancy rates 125 days after calving were also significantly lower (26% vs. 49%) in cows that had reproductive disorders compared to those that remained healthy during the postpartum period.

Suggestions: Closer monitoring during the early post-calving period

Increased observation for postpartum abnormalities is recommended. Any suspected cases of disorders such as retained placenta, uterine infections (e.g. foul smelling discharge), or mastitis should be reported as soon as possible to the herd veterinarian. Early interventions in such cases may help minimize the negative carry-over effects on fertility, thereby reducing the interval from calving to conception.

What does this mean?

Undetected heats, poor AI submission rates, and excessively long intervals between breedings are major factors in reproductive inefficiency in Alberta dairy herds. Increased emphasis should be placed on improving the efficiency of heat detection and on preventing postpartum infections.

Summary Points

- Heat detection rates are less than optimal; this must be improved.
- Increasing submission rates to AI through improved heat detection or timed AI (synchronization of ovulation) programs can increase herd pregnancy rates.
- Early pregnancy diagnosis and resynch programs can reduce interbreeding intervals.
- Mature cows and those with reproductive disorders and mastitis post-calving are at a greater risk of reduced fertility.