

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

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. To pinpoint problems in Alberta, we monitored 637 cows in 23 herds throughout the province using milk progesterone levels, DHI data from 2004 to 2006, and ultrasonography in one herd. Below are the critical issues and possible suggestions for improvements.

1. The Issue: Low estrus detection and submission rates to artificial insemination.

Our study found that 23% of the cows were not submitted for insemination during the 125 days post-calving. Of these, 76% were eligible for breeding, half of which had normal estrous cycles. Furthermore, only 35-38% of eligible cows were submitted to AI in any given 21 d period. The average Canadian dairy herd has a heat detection rate of only 33%.

Improvements: Ovulation synchronization and more efficient estrus detection

Despite the low heat detection rate, 90% of the cows submitted to AI were actually in heat, indicating that current detection mechanisms are very accurate. However, as herd sizes and cow-to-person ratios increase, estrus detection will become increasingly challenging.

The 21-day submission to AI rate should be improved to 50-60%. Heat detection aids such as pedometers can be explored; otherwise, submission rates can be improved through timed artificial insemination programs such as Ovsynch. By synchronizing ovulation, producers can increase AI efficiency and reduce the need for heat detection.



Cow with a heat mount detector

2. The Issue: 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 that were assumed to be pregnant but in reality were not represent economic liabilities to the producer.

Improvements: Early pregnancy diagnosis and resynchronization protocols

Pregnancies can be diagnosed and the status of the embryo can be determined by 28 days using ultrasound. However, this practice is not currently very common. Producers should consider scheduling more frequent herd health visits with their veterinarian, who can accurately diagnose pregnancies via rectal palpation at 35 days. Visual identification markers (e.g. heat mount detectors or tail paint) of bred cows can also be used to catch cows that return into heat. In addition to early pregnancy diagnoses, resynchronization programs using an



Tail paint

intravaginal progesterone device (PRID) may be useful.

3. The Issue: Declining fertility in mature cows

Older cows had lower conception rates after first insemination than those on their first or second lactation. They also had lower overall pregnancy rates by 125 days after calving and higher abortion rates.

Improvements: Closer monitoring of mature cows and nutritional management

Mature cows should be monitored for estrus behaviours more aggressively in order to improve their AI submission rate. It seems logical that older cows would be more fertile than younger ones, since less of their energy partitioning would go toward growth. This would ideally result in a less severe state of negative energy balance, which would be beneficial to reproductive function.

Evidently, this is not the case. Recent studies have shown that feeding various dietary supplements such as linola or flaxseed during the transition period may improve fertility. More research and new developments are needed in this area.

4. The Issue: Lowered fertility in cows with infections or reproductive diseases

Cows with reproductive disorders had a conception rate of 24% after the first insemination, compared to the 44% rate of non-diseased cows. Those with mastitis had similarly lower rates. In addition, overall pregnancy rates were significantly lower (26% vs. 49%) in diseased cows.

Improvements: Closer monitoring during the early post-calving period

Any suspected cases of disorders such as retained placenta, uterine infections or mastitis should be reported as soon as possible to the herd veterinarian.

Conclusions:

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

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