

An Evaluation of the Timing of Pre-Breeding Vaccination with a Modified Live Virus Vaccine and its Effect on Fertility in Beef Cattle

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Introduction

The use of modified live virus (MLV) vaccines incorporated as a pre-breeding management tool in beef herds is increasingly popular. There are a number of reasons why MLV vaccines are being used. Recent evidence suggests that pre-breeding use of MLV vaccines provides a broader immune response involving both cell-mediated and humoral immunity. Additionally, it is believed that immunity from MLV vaccines extends to at least a year, while killed virus vaccines (KV) are thought to provide a shorter duration of immunity. As well, vaccination of open cows pre-breeding with an MLV bovine virus diarrhea (BVD) vaccine optimizes immunity prior to the critical risk period of fetal exposure to field-BVD virus during the first trimester of pregnancy.

Breedback 9/Somnugen is a 4-way MLV vaccine (MLV Infectious Bovine Rhinotracheitis (IBR), Parainfluenza 3 (PI3), BVD) in combination with a *Hemophilus somnus*, *Campylobacter fetus*, and 5 way *Leptospira* bacterin. Label approval is for immunization of non-pregnant cattle. Most producers administer the vaccine to open cows and heifers 3-10 weeks pre-breeding. Producers that have an extended calving season may have some difficulty in vaccinating the cow herd as one group and thus are faced with occasionally having to vaccinate cows shortly before breeding.

The objective of this study was to determine if the timing of pre-breeding MLV vaccine (Breedback 9/Somnugen - Boehringer Ingelheim Vetmedica) had any effect on the pregnancy rate and the time of conception in beef cattle.

Materials and Methods

A commercial cow herd owned by the Western College of Veterinary Medicine, Saskatoon, Saskatchewan was selected for the trial. Most of the mature animals had been vaccinated with BVD and IBR vaccines in prior

years. The herd consisted of Hereford and Hereford-cross cows and was comprised of 113 mature cows and 33 heifers. Animals were randomized into one of three different treatment groups to provide equal numbers of cows and heifers in each group.

At the time of randomization, blood samples were obtained from each animal and submitted to the WCVM diagnostic laboratory for IBR and BVD titre assessment.

Group 1 – Vaccinated with Breedback 9/Somnugen 2 weeks prior to breeding season

Group 2 – Vaccinated with Breedback 9/Somnugen the day breeding began

Group 3 – No vaccine

Heifers from the three groups (n=33) were pastured together and exposed to 1 bull for 63 days beginning June 2, 1998. Cows (n=113) were also pastured together and exposed to 4 bulls for 52 days beginning June 12, 1998. All bulls had passed a breeding soundness exam prior to turnout.

All heifers and cows were rectally palpated for pregnancy diagnosis 50 days after removal of the bulls, and the fetal age was estimated by the attending veterinarian who was blinded as to the treatment groups.

Results

- Overall pregnancy rate was 89.0% (130/146).
- No significant differences were noted in pregnancy rate between treatment groups.
 - Mean age of pregnancy = 77 days at pregnancy testing.
 - No significant differences in days pregnant between treatment groups.
 - No significant differences in pregnancy rate between various titre categories for either IBR or BVD.
 - No differences in pregnancy rates or days pregnant between groups when heifers or cows were analyzed separately.

Table 1. Pregnancy rates and age of fetus at pregnancy diagnosis by treatment groups.

	Cows vaccinated with Breedback 9/Somnugen 2 weeks before bull exposure	Cows vaccinated with Breedback 9/Somnugen at time of bull turnout	Controls (unvaccinated)
Pregnancy rate	45/49 (91.8%)	42/49 (85.7%)	43/48 (89.6%)
Heifer pregnancy rate	9/11 (81.8%)	10/11 (90.9%)	8/11 (72.7%)
Cow pregnancy rate	36/38 (94.7%)	32/38 (84.2%)	35/37 (94.6%)
Average age of fetus at pregnancy diagnosis	78 Days	78 Days	77 Days

Conclusion

There were no significant differences in pregnancy rates or days pregnant in the different treatment groups. Cattle vaccinated with Breedback 9/Somnugen 2 weeks prebreeding and cattle vaccinated the day of bull turnout had similar pregnancy rates to cattle that were unvaccinated.

Additionally, there were no confounding effects of titre level to either IBR or BVD on pregnancy rates.

Cows or heifers with low pre-breeding titres for either IBR or BVD were just as likely to get pregnant as cows or heifers with high titres.

In conclusion, the use of Breedback 9/Somnugen at either 2 weeks prior to bull exposure or at the time of bull exposure did not have a detrimental effect on the fertility of these beef cows and heifers.