Is Heat Detection Required in NZ Non-Cycler Programs?

A comparison of reproductive outcomes of NZ anoestrous dairy cows treated with a classical 10 day program (including a progesterone insert) or a 9 day program with afternoon Set Time Artificial Insemination (STAI).

Objective

This study was designed to evaluate the reproductive performance of non-cycling cows following a 9 day progesterone treatment program against the standard 10 day program traditionally used in New Zealand non-cycling cows.

Background

The current recommendation for treating non-cycling cows is that heat detection should occur after progesterone insert removal, and any cows detected on heat be mated at the next possible opportunity. Any cows not seen in heat are typically administered GnRH 48 - 60 hours after device removal followed by STAI 8-20 hours later.

With progesterone device removal generally being performed by veterinarians after morning milking it is most practical and common for the GnRH injection to be given at the afternoon milking two days later. This usually means the final GnRH injection is given between 3pm and 5pm on most farms, therefore STAI should be completed by midday the following day.

In New Zealand most dairy farms have AI technicians inseminate cows each morning during Spring. However, when cows are synchronised for STAI following non-cycler programs, it is common for larger groups of cows to be inseminated after the completion of a technician's normal farm visit schedule (i.e. in the afternoon).

This often means that for 10 day programs STAI occurs after the optimal insemination time period. Delays in insemination can be compounded by heat detection errors made by the farmer. A 9 day program allows for STAI without the same need for heat detection. Importantly, 9 day programs also allow for AI to occur in the afternoon when there are more likely to be multiple technicians available to inseminate larger groups of cows.

Method

The study was designed to compare pregnancy outcomes of 9 day versus 10 days programs, with the expected hypothesis that 9 day programs would not have inferior in-calf rates. A total of 2,226 cows from 20 seasonally calved herds from one veterinary practice in the North Island of New Zealand were enrolled in the study. Cows were enrolled if they had not been observed in heat during the period 9 to 35 days before the planned start of mating. Cows were randomly assigned to a 9 day group (1,110 cows) or a 10 day group (1,116).

Both programs involved the insertion of a progesterone device (DIB-h), with concurrent injection of a standard dose of GnRH (2mL Gonasyn) followed by progesterone device removal 7 days later. A standard dose of prostaglandin (2mL Cyclase) and 400IU eCG (2mL Novormon) were also given at device removal.

For the 10 day program, cows underwent heat detection and were submitted for AI on days 8 and 9 if observed in heat. If not detected in heat by the afternoon of day 9 they were treated with a second dose of GnRH that evening with STAI by midday the following day (day 10). Refer to figure 1.

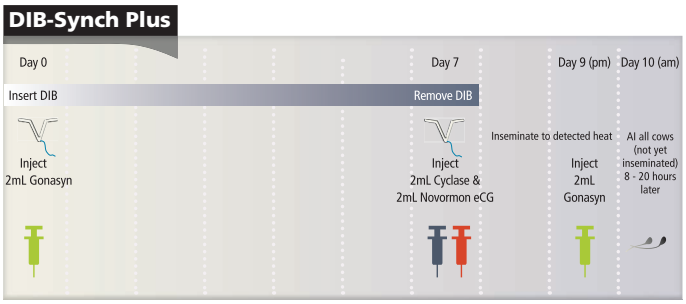

Figure 1. 10 day non-cycling cow treatment program

For the 9 day program, cows were not mated to detected heat (for the purpose of the trial heat status was recorded) and all cows were treated with a second dose of GnRH on the morning of day 9 (approx 6am) followed by STAI that evening (approx 4pm), being 10 hours after GnRH administration. Refer to figure 2.

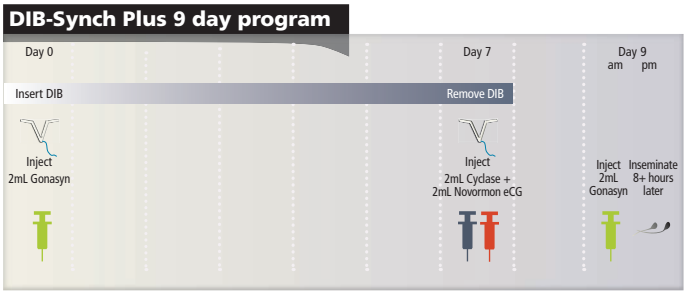

Figure 2. 9 day non-cycling cow treatment program

Results

There were 39 cows lost to follow up leaving 1,086 in the 9 day group and 1,101 in the 10 day group. Cows treated in the 9 day program had a 4.1% higher first service conception rate (33.8% vs 29.7%, p=0.04). The 9 day program cows conceived 5.2 days earlier than the 10 day program cows (Kaplan Meier mean days to conception 37.89 days, CI 35.73 - 40.05 vs 43.19 days, CI 40.97 - 45.41, log rank p=0.0036).

Regardless of which program cows were enrolled in there was a significant increase in conception rate for cows observed in heat on the morning of day 9 compared with those not observed on heat at this time (46.6% vs 28.2%, p=0.000). The greatest difference between the 9 day and the 10 day program came from the cows that were not detected in heat on the morning of day 9.

Discussion

The 9 day treatment program was superior to the 10 day treatment program in the herds that were studied. It is not inferred that the 9 day program is necessarily superior physiologically. Of note, in this study many of the day 10 cows were mated towards the end of the recommended 8 - 20 hour window and this may have contributed to the lower than expected in-calf rates in this group. It is possible that there was merely better compliance to the recommended timing of treatments in the 9 day program.

Regardless, this study provides confidence to recommend the 9 day program, as an alternative to the 10 day program. It is common for 9 day program timings to better suit management practices of larger herds, for instance.

It could also be possible to utilise the better conception rate found in cows that are observed in heat on the morning of day 9 where semen of differential value is to be used.

Acknowledgments

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