Improving repeat breeder cows fertility by synchronizing ovulation and timed insemination

M. Kaim, H. Gacitua and U. Moallem, Department of Ruminant Science, ARO, Israel.

Introduction

- Repeat breeders cows (**RBC**) are defined as cows with normal estrus cyclicity that fail to conceive after 3 or more inseminations.
- The prevalence of cows with 4 or more artificial inseminations (**AI**) out of the total in the Israeli dairy herd during 2011 was 30%.
- The conception rate (**CR**) of the RBC were 20-30% lower than CR at first AI.
- The RBC phenomenon causes a major economic losses to the dairy herds, including increasing the interval between calvings, more AI and veterinary treatments, and imposed culling of cows with high genetic potential.

Concept and objective

- The concept was to skip the return current estrus, synchronize growth of a new follicle wave for a predetermined period, induce ovulation, and inseminate at optimal timing.

  This protocol might also increase the endogenous progesterone secretion during the luteal phase preceding timed artificial insemination (**TAI**).
- Therefore, the objective was to improve RBC's conception rate by synchronizing ovulation followed by TAI.

Experimental Procedures

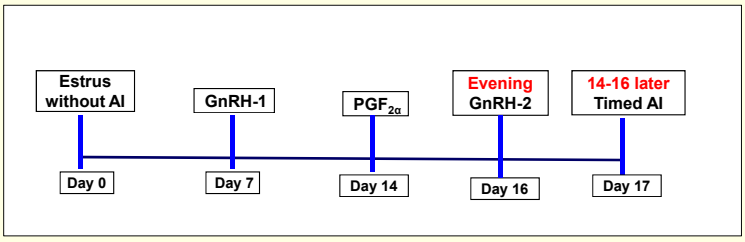
- Cows with 3 or more AI that return in estrus were defined as RBC and were randomly assigned into 2 treatment groups:

  1) **Control** – cows were inseminated after detected in estrus.

  2) **TRT** – cows that returned in estrus (day 0) were not inseminated.

  Seven days later they were treated with a GnRH injection, followed by a PG at d 14, and a second GnRH injection 50-60h later. Cows were inseminated 14-16 h after the second GnRH (Figure1).
- The study was conducted in 5 large commercial herds and data included 1044 and 1020 AIs in the control and TRT groups, respectively.
- Data were analyzed using the logistic regression procedure of SAS, and the model included the effects of treatment, herd, season (winter-spring or summer-autumn), parity, AI number (3+4 or ≥5), health uterus disorder, milk yield and days in milk.

Figure 1. Protocol of treatment group



Results

Figure 2. Conception rates by herds

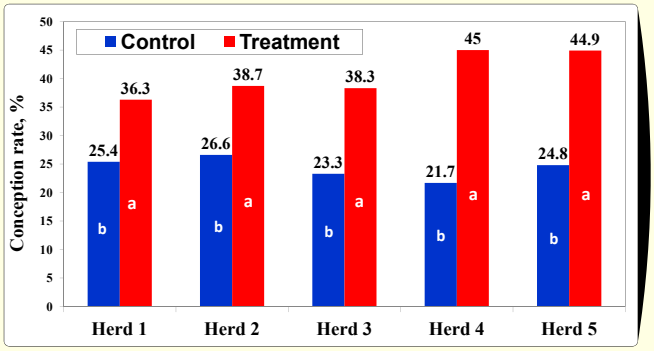


Figure 3. Conception rates according to no of inseminations

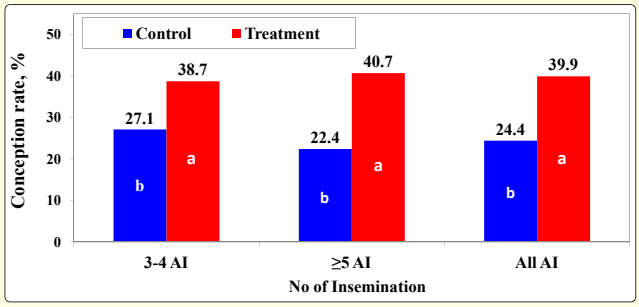
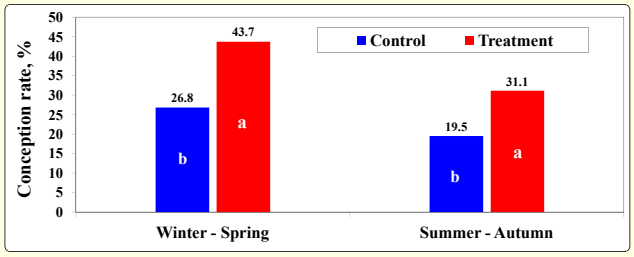


Figure 4. Conception rates by season



Conclusions

- The overall CR in TRT cows was 1.6 folds higher than of the control cows (39.9 and 24.4%, respectively; P<0.0003), and this was evident in both winter-spring and summer-fall seasons.
- We assume that the improved CR in the TRT cows might be attributable to the better quality of the ovulated follicle and to the increased endogenous progesterone.
- The protocol suggested in this study improved the CR of RBC cows by 15.5 percent units, and this procedure could be implemented in commercial dairy herds.