

JULY 2019 DAIRY NEWSLETTER

Repeat breeders and Embryo Transfer

Repeat breeder cattle do not become pregnant until after three or more breeding attempts; this represents an important reproductive disorder. Many hypotheses have been proposed why cows become repeat breeders.

The physiological cause of the repeat breeding phenomenon is likely to vary considerably and be multifactorial, such as:

- Endocrine dysfunction, including higher levels of progesterone with low levels of estradiol during estrus,
- Delayed luteinizing hormone surge and resulting in the aging of oocytes and abnormal fertilization,
- Slow increase in progesterone levels during the early luteal phase,
- Qualitative changes in oocytes and follicular fluids result in either fertilization failure or early embryonic death.
- Intrauterine cytokine regulatory mechanism disorder.
- Endometritis

Table 1. Expected repeat breeders at various conception rates¹.

Conception (%)	Cows Conceiving in 3 Services (%)	Repeat Breeders (%)	Cows Conceiving in 5 Services (%)	Open after 5 Services (%)
70	97	3	100	0
60	94	6	99	1
50	88	12	94	3
40	78	22	92	8
30	66	34	83	17
20	49	51	67	33

¹Based on Dairy Reproduction Simulation Model, Jeff Reneau and B.J. Conlin, University of Minnesota, 1984.

Many treatments have been proposed for the prevention of repeat breeders at both the herd and individual levels, for example,

- Gonadotropin-releasing hormone (GnRH/Fertiline),
- Controlled internal progesterone release (PRID),
- Exogenous estradiol benzoate,
- Prostaglandin (Bioestrovet),
- Timed AI,



- Combinations of the above
- Embryo transfer

Embryo transfer is an important tool to disseminate individual with high genetic merit and potentially improve herd performance. In addition, ET has the potential to increase fertility in repeat breeder cows.

Embryo transfer following artificial insemination in repeat breeder cattle reportedly improves pregnancy rate, a transferred 7 day old embryo has already withstood several steps, e.g. ovulation, fertilization, transportation etc.... However the reason why the conception rate improves remains unknown, it is speculated that the higher pregnancy rate of embryo transfer following artificial insemination in repeat breeders is due to the increased release of interferon tau (a well known pregnancy recognition signal in ruminants) from the added embryo.

A 2019 study from Tokyo University shows that Significantly higher pregnancy rates were achieved by embryo transfer following AI than by embryo transfer alone in both heifers (49.2 and 29.5%, respectively) and cows (41.5 and 20.4%, respectively). Pregnancy rates were not significantly different between heifers and cows.

Ask your veterinarian about strategies to improve pregnancy rate and decrease the number of repeat breeders in your herd.