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GnRH treatment and double insemination for management of repeat breeding crossbred cows of *Tarai* region

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Repeat breeding is a major reproductive problem bearing significant impact on production of the herd. Several etiological factors have been explored and documented, which mainly focused around infection of the uterus (Singh and Pant 1998, Shukla and Wani 2002) and delayed ovulation (Hernandez *et al.* 1993, Dolelel *et al.* 1998) as major determinants of repeat breeding bovines. Accordingly, many treatment regimes involving antibiotics (Rao and Naidu 2000, Shukla and Wani 2002), chemotherapeutic agents (Freemen *et al.* 1997) and hormones (Stevenson *et al.* 1990, Macmillan and Peterson 1993) have been reported with varying results. This study was designed to determine if double insemination during the same estrus period along with GnRH treatment would improve the pregnancy rates in repeat breeding cows.

Crossbred (HF × Sahiwal) cows (30) in second to fourth lactation with a history of 3 or more unsuccessful inseminations with good quality frozen semen were selected for the study. All the selected animals were apparently healthy and were maintained under identical conditions of feeding and management. Clinicogynaecological examination of the animals confirmed normal genitalia and absence of any other disease condition. The animals were cycling normally with clear mucus discharge at estrum.

The animals were divided into 2 equal groups of 15 each and were inseminated with high quality semen from fertile bulls according to the am-pm rule. Additionally, group 1 cows were treated with 10 mg GnRH analogue, buserelin (2.5 ml receptal) i/m, whereas group 2 cows received 2.5 ml normal saline (NS) i/m at the time of first AI. Second AI was repeated after 8 to 16 h of the first AI. The subsequent data for non return to estrus at day 30 after AI were recorded and all the animals, which did not exhibit estrus were palpated per rectum at day 60 for pregnancy diagnosis. The results were compared statistically using students Z test (Snedecor and Cochran 1994).

Groups differed significantly (Table 1) for the per cent non return rate (86.66 vs 53.33) at day 30 after insemination. The same trend was observed following per-rectal confirmation of pregnancy on day 60 post-insemination. Pregnancy rate in group 1 cows which received GnRH treatment (53.33%) was significantly higher than control cows of group 2 (13.33%). These results are in confirmation to the earlier reports in crossbred cows (Vamerzani *et al.* 1997, Srivastava and Ahlawat 1998) and HF cows (Rangnekar *et al.* 2002). Van Rensburg (1962) and Dolelel *et al.* (1998) recorded a high incidence of abnormal ovulation and reported delayed ovulation as one of the important causes of unsuccessful inseminations (Noakes 1997, Dolelel *et al.* 1998) in cattle. Hence treatment with GnRH, which facilitates ovulation, is of significance in dealing with such reproductive failure incidences.

Lower preovulatory LH surge reportedly caused repeat breeding in heifers (Gustaffson *et al.* 1986) and Holstein cows (Bloch *et al.* 2001). This may also be a reason of repeat breeding in the animals included in our study. Also, some cows might had very long intervals between estrus and ovulations, and between LH surge and ovulations (Bloch *et al.* 2001) and treatment of such cows with GnRH enabled them to achieve a larger LH peak, which in turn might have resulted in their ovulation within 30 h of estrus (Kaim *et al.* 2003).

Table1. Effect of GnRH treatment on conception rate in repeat breeding crossbred cows

Treatment groups	Cows not returned to estrus at day 30 post AI (%)	Cows pregnant at day 60 post AI(%)
Group 1 (GnRH)	13/15 (86.67) [a]	8/15 (53.33) [a]
Group 2 (NS)	8/15 (53.33) [b]	2/15 (13.33) [b]

Different superscript within a column indicates significant difference ($P<0.05$).

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SUMMARY

Crossbred repeat breeder cows (30) were divided into 2 equal groups and were inseminated according to the am-pm rule. Group 1 cows were treated with 10 mg GnRH analogue, buserelin (2.5 ml) i/m whereas group 2 cows received 2.5 ml NS i/m at the time of first AI. Second AI was repeated after 8 to 16 h of the first AI. Conception rate in the GnRH treated group (53.33%) was significantly higher than the NS treated control (13.33%).

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