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Oestrous Synchronization and Artificial Insemination in Dairy Cattle

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Abstract

TRIU-B, Gonadotropin Releasing Hormone (GnRH) on day 0, Prostaglandin F_{2alpha} (PGF_{2alpha}) on day 7, and GnRH on day 9 intramuscularly improve infertility in dairy cattle. Cattle were observed visually for oestrous after treatment. The cattle were artificially inseminated after detection of oestrous signs. Pregnancy was determined by rectal examination 90 days after insemination. The results of the present study revealed that oestrous synchronization with artificial insemination improved fertility in pleuriparous cattle under field condition.

Introduction

Fertility is one of the most complex measures of reproduction, being indisputably influenced by genes and environment. Although these two components act in concert, they synergistically mask the contribution of the other confounding selection strategies for fertility ultimately affecting reproductive performance (Beever, 2006). One of the strategies for improving pregnancy rates in the dairy cattle is by utilizing a synchronization program. Oestrous synchronization and artificial insemination (AI) can be used to maximize the reproductive potential of cows by incorporating superior genetic into their operations (Leitman *et al.*, 2009). The oestrus detection rate on many farms is less than 50%, being a very limiting factor to reproductive efficiency.

Many factors, such as footing, management and milk production level will affect the demonstration of oestrus. While these cows are not observed in oestrus, they have normal oestrous cycles and will respond well to ovulation synchronization programs (Wiltbank *et al.*, 2002). In the present study improving fertility by administering hormone in pleuriparous dairy cattle was demonstrated in Dharmapuri district.

Oestrous Synchronization

TRIU B

TRIU-B is a Progesterone Impregnated intra-vaginal device, it comprises of 3 medicated rings (green colour) containing Progesterone IP 186 mg each and one additional ring (pink colour) with Progesterone IP 400 mg (Virbac India private limited).

Preparation of Animals

Animals will be given a dose of deworming, supplemented with mineral mixture @ 35 g daily animal⁻¹ and maintained with positive energy balance. The selected animals will be re-examined after 20 days and the synchronization protocol will be adopted. All the physiological

parameter was in normal condition. The animals will be subjected to rectal examination. All the animals will receive progesterone impregnated intra vaginal TRIU-B (Figure 1) and GnRH @ 10 µg on day 0, PGF_{2α} @ 25 mg on day 7, and GnRH @ 10 µg on day 9 intramuscularly (Figure 2). Cattle were observed visually for oestrous after treatment. The cattle will be artificially inseminated after detection of oestrous signs (Figure 3). Pregnancy was determined by rectal examination 90 days after insemination (Figure 2).

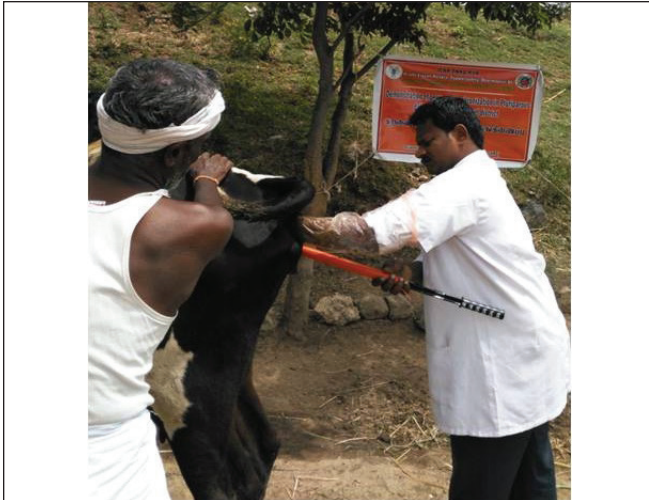


Figure 1: Intravaginal insertion of TRIU-B



Figure 2: Hormonal Injection

It will improve conception rate by 30-35% and reduce calving interval by 5-6 months. This protocol achieved a conception rate of 90% by the way the farmers were saved from maintaining unproductive animals for a long time and they earned more income because of more days of milk production. The major limiting factor for optimum reproductive performance on many farms is failure to detect estrus in a timely and accurate manner. A number of controlled or breeding programme have been developed for synchronizing groups of lactation cattle. Cows bred within 72-84 hrs after PGF_{2α} injection, with

improved techniques of different protocol with combination of gonadotropin releasing hormone and prostaglandin (Jordan et al., 2002); however, in the present study GnRH is injected 7 days prior to PGF_{2α} treatment causes development of follicles of ovulation of the dominant follicle depending on the stage of the estrous cycle. The second GnRH is administered 48 hrs post PGF_{2α} (Paul and Prakash, 2005). In the present TRIU-B + GnRH + PGF_{2α} programme, is found to be cost effective and laborious. Oestrous synchronization is a useful technique in cattle practice as it allows the use of improved heat detection efficiency. The oestrous synchronization with TRIU-B along with artificial insemination will eliminate the heat detection difficulty and improved fertility rate with reduction of inter calving period in dairy cattle and also improved the fertility. Oestrous synchronization with TRIU-B + GnRH + PGF_{2α} programme seems to be laborious; it is cost effective and also helps to manage the reproduction capacity of animal.



Figure 3: Artificial insemination after detection of heat



Figure 4: Examination of pregnancy on 90 days after insemination

Conclusion

The oestrous synchronization with TRIU-B along with artificial insemination will eliminate the heat detection difficulty and improved fertility rate with reduction of

inter calving period in dairy cattle and also improved the fertility.

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