

PREGNANCY RATES IN COWS INSEMINATED WITH CONVENTIONAL NON-SORTED AND GENDER SORTED SEMEN UNDER FIELD CONDITION

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ABSTRACT

The study was designed to compare the efficacy of conventional and gender sorted semen in cows. Overall pregnancy rate was 57.14 %, when cows were inseminated with conventional non-sorted semen. Cows inseminated with gender sorted semen resulted in overall pregnancy rate of 50.00 %. The results revealed no significant difference ($p>0.05$) in conception rates between the groups of cows. The overall conception rate in this study including cows from both the groups was found to be 53.57 %.

Keywords: Cows, AI, Conventional non-sorted semen, Gender Sorted Semen, Pregnancy Rate

Systematic breeding program is required to optimize reproductive management on dairy farms. Dairy farmers need to implement strategies which will produce the calves of desire sex for increasing the milk productivity in our country. Gender sorted semen is semen engineered to produce offspring of a desired sex with about 90 to 95% accuracy. It is possible to shift and/or control the gender ratio of calf crop by incorporating gender sorted semen into AI programmes. Taking advantage of gender sorted semen technology, heifers will be born as often as 95 % of the time. Despite the increased use of gender sorted sperm, the conception rate is less when compared to cows inseminated with non-sex sorted sperm. To facilitate the use of gender sorted semen, it is needed to monitor reproductive strategies, optimizing the detection of estrus and the timing of insemination. This research was aimed to investigate the fertility of the gender sorted semen and the conventional one in terms of conception rate in cows.

Thirty four normal cyclic crossbred cows presented for AI to Gynaecology Unit, Teaching Veterinary Clinical Complex, Krantisinh Nana Patil College of Veterinary Science, Shirwal, Dist. Satara (M.S.) and cows from adjoining villages were used for this study. Preceding to the study all the experimental animals were screened clinically by performing rectal examination on the day of treatment / selection of animals and at the time of insemination. Reproductive ultrasonography was carried out in animals to evaluate ovarian status, endometrial wall thickness and echotexture of the endometrium. Cows showing endometrial thickness more than 8 mm were considered as suffering from endometritis / uterine infection. Possibility of uterine infection of cows was also confirmed by conducting white side test on cervical mucus during estrus in the laboratory.

All the selected cows were randomly allocated in two groups. Conventional frozen semen in 0.25 ml French mini semen straw containing 20×10^6 unsexed spermatozoa was used for AI. The gender sorted semen used for artificial insemination in this study was produced by ST Genetics Sexing Technologies with 90 % of X gene sperms and 10 % of Y gene sperms. The sexed semen was obtained from HF 100 % bull, frozen in 0.25 ml French mini semen straw containing 2×10^6 sexed spermatozoa.

Cows were inseminated in the uterine body after confirming the estrus using recto-vaginal method of AI with frozen thawed semen straws with conventional semen or gender sorted semen. Pregnancy status of experimental cows was determined using real-time B-mode ultrasound scanner with multi-frequency curvilinear rectal probe (6-10 MHz) during 30-40 post-AI period. Pregnancy diagnosis of all the animals was reconfirmed 60 days later by per rectal examination.

Using conventional non-sex sorted semen, a total 14 cows were inseminated and 8 cows were confirmed pregnant with pregnancy rate of 57.14 %. 20 cows were inseminated with gender sorted semen and 10 were found pregnant with pregnancy rate of 50.00 %. The overall conception rate in artificially inseminated cows either with conventional or gender sorted semen in this study was found to be 53.57 %. Though statistically non-significant ($p>0.05$), the pregnancy rate was lower in cows inseminated with gender sorted semen, compared to cows inseminated with conventional non-sorted semen.

The mean percentage of pregnancy rate in the present study in cows inseminated with conventional non-sorted semen exhibiting overt signs of estrus was more or less agreed with the findings reported by An *et al.*

(2009) and DeJarnette *et al.* (2009). Our findings with respect to conception rates with sexed semen compared well with the observations of An *et al.* (2009) and Weigel (2014). Based on results from previous studies involving gender sorted semen (Andersson *et al.*, 2006 and Patel and Jethva, 2019), higher pregnancy rates were observed in the present study.

The use of sexed semen for gender selection is a reality today and is a novel technology that has been widely and rapidly implemented by dairy producers to increase the percentage of heifers born, capitalizing associated benefits and highlighting the importance to increase the milk yield and reduce the burden of male calves on the farm. However, the lower conception rate recorded for gender sorted semen to be a major drawback in its acceptance under Indian conditions. The cows inseminated with gender sorted semen are likely to be resulting in lower conception rate, since the flow cytometric cell sorting process may create potential damage to DNA of the sperm because of chemical and physical manipulations that limit sperm longevity in the female tract. Our results showed that more excellent management of cattle, careful handling of sperm, careful implementation of AI and use of a skilled inseminator is required for stable conception using gender sorted semen in field condition.

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