IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Sexed Sorted Semen In Dairy Animals: Additional Income Through Producing Female Progenies.

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Abstract

About 70% human populations in rural areas of district Kaushambi are engaged in agriculture and animal husbandry activities. The maximum populations of indigenous cows in district are genetically inferior, nondescript and their productivity are lower. These animals are not maintained scientifically by rural farmers. Presently, the male calves are not using in ploughing due to mechanization. The low productive cows with male calves (Orphan /Anna animals) are grazing the farmers cultivated crops and losses the production. To short out this social problem, a cumulative programme awareness campaign for catalyzed the use of sex sorted semen organized by KVK, Kaushambi with help of block veterinary hospital () under State A.H. scheme- Gokul Mission) of one gram sabha- Dehmafi bhiti, for extension of sexed sorted semen technology in selected area. Since last year 2022-23, total 265 animals were selected. In which 245 animals selected by Veterinary Officer, Block Muratganj and 20 animals under OFT were selected by KVK, Kaushambi. Semen straws (Sahiwal, Gir, Tharparker, Murrha) were supplied by UPLDB, salon, Raebarilly, U.P. All animals were inseminated with sexed sorted semen through artificial insemination (A.I.) onset of heat for desire offspring and help to reduce the number of males and increasing number of genetically superior females of dairy animals. As per cumulative result analysis conception rate, female calves, male calves and repeat condition/ abortion and female still birth were recorded 103 (38.86%), 92 (89.32%), 11 (10.67%) and 162 (61.13%) respectively. This small scale study highlights the success of sexed semen under field condition in producing calves of the desired sex in high percentage.

Key words: Infertility, Sex sorted Semen, Gokul Mission and Semen conception rate.

Introduction:

Sexed Semen for Dairy sector is a relatively new concept, but having grown in popularity over the past few years. Sexed semen technology is one of the breed improvement efforts in cattle and buffalo, dairy farmers appear to be quite interested in this new tool. Although sexed semen has been offered commercially for some time, the dairy industry has been slow to adopt it. The demand for sexed semen has increased due to concern about Gokul Mission project was implemented by Uttar Pradesh Livestock Development Board (UPLDB), Lucknow, U.P. Sexed sorted semen (Sahiwal, Gir, Tharparker, Murrha) practices in livestock are economically beneficial for farmers. These emphasizes the need to develop new strategy for sustain the livestock production system. The use of sexed sorted semen in cows and buffalo through artificial insemination (A.I.) is an alternative for reduce the number of males and increasing number of genetically superior females.

It is possible to explain this technology as one that selects embryos for gender in order to produce offspring of the desired sex by sorting the X and Y carrying chromosomes. By identifying differences between sperm that carries X and Y sperm are sorted. In cattle, the X-chromosome (female) has nearly 3.8%

more DNA than the Y-chromosome (male). The X- and Y-bearing sperm are separated using the difference in DNA content. The most efficient way for semen sexing has been found to be flow cytometry-based sorting (Prakash et al., 2014). Over the years, the technology has been improved to the point that sex sorting can now be done with a purity of more than 90%. The method has been successfully patented, standardised and commercialised in the USA, Europe, and other nations. Sexed semen can also be used for artificial insemination without risk. The conception rate with sexed semen is apparently lower (Lu et al., 2010) than with conventional semen because the concentration of sperm in the sexed semen straw is significantly lower than that of the conventional semen straw and the sorting process itself damages the sexed sperm.

Advantages of using sexed semen:

1. Farmers are able to conserve resources by producing exclusively female calves rather than undesired males.
2. Maintaining a superior fleet of bulls with superior genes for the purpose of future reproduction can be valuable for dairy farmers.
3. The dairy farmers can raise the herd more quickly and internally with the application of sexed semen. The amount of undesired male dairy calves is also reduced owing to this technology.
4. Heifers are known to benefit from the technology more. Importing heifers from outside is a cost-effective way to strengthen the herd without running the threat of spreading diseases (Dystocia cases).
5. Only viable sperm are available because dead, dying, or damaged sperm cells are eliminated during the sorting process, allowing the sexing of semen to be successful even at low concentrations than conventional semen (Seidel, 2007).
6. Also helpful in the production of superior breeding bulls as India has limited elite cattle and buffalo bulls.

Methodology:

The study was conducted on farm trial as per action plan of KVK, Kaushambi, with the help of V.H., Muratganj and Artificial inseminator Mr. Arvind Kumar. One village was selected under, gram sabha-Dehmafi bhiti, Muratganj, Kaushambi. The selected village covered with Gokul Mission scheme. In year Nov.2022 to Dec.2023), a cumulative awareness campaign programme was started for catalyzed the use of sex sorted semen in dairy animals. Total 265 animals were selected in this year and on set of animal heat inseminated with sex sorted semen by inseminator. 20 animals were selected for KVK trial out of 265 animals for keen observation. More than 90 days postpartum, gynaecological examination and nature of estrual cervico-vaginal mucus positive were screened as per history, as per to identification, animals were inseminated with sexed sorted semen through artificial insemination (A.I.) supplied by UPLDB, salon, Raebarilly, U.P., onset of heat for desire offspring and help to reduce the number of males and increasing number of genetically superior females of dairy animals.

Result and Conclusion:

Results of this study were most encouraging and scientifically manage to female progenies by used of Sexed sorted semen in dairy animals. The one worked and analysis reported that the conception rate of sexed sorted semen using confirmative pregnancy diagnosis (per rectal examination) at 90 days of post insemination were low, due to different parities of the animals (like- age, body weight, health status and no. of calving) and deposition in uterine body (Seidel et al., 1999).

Table: Sexed Sorted Semen Analysis data sheet

No.	Parameters	No. of animals Inseminated by Sexed Sorted Semen				Total no. of animals	Overall Success %
		By V.H. Muratganj	Success %	KVK, OFT	Success %		
1	No. of Animals selected	245	-	20	-	265	-
2	Conception rate	90	36.73	13	65.0	103	38.86
3	Female Calves	81	90.0	11	84.61	92	89.32
4	Male Calves	9	10.0	2	15.38	11	10.67
5	No. of Repeat animals	155	63.3	7	35.0	162	61.13

Heifers/ primiparous were shown the high % of conception rate than pluriparous/ multiparous. The study showed that sexed sorted semen gives good conception in animals of first or second parities provided they are reproductively clean and possess good fertility (Garner and Seidel, 2003). The sperm concentration as well as motility of sexed sorted semen is lower than the conventional semen (Shettles, 1960). Overall, the results analysis provided evidence that the 103/265 was diminished by 38.86%, pregnancy rates and calving of female and male calves were 92/103 (89.32%) and 11/103 (10.67%), potential success on basis of number of female progenies borned. Unawareness of sexed sorted semen (over second parities) used, lactating stage of animals, various agro climatic conditions, breeds and use of old semen straw, insemination time etc, caused the higher incidence of still birth, repeat breeding, abortion and discrimination between male and female calves shown 162/265 (61.13%) (Thomas, J. M. . (2019), Maicas, C., (2019), Drake, E. (2020) and Andersson, M.,et.al., (2006)).

The use of sexed sorted semen in animals through artificial insemination (A.I.) is an alternative for reduce the number of males and increasing number of genetically superior females in least period and practices in livestock is economically beneficial for farmers. The use of sexed sorted semen in A.I will be beneficial for faster increment in herd size. These emphasizes the need to develop new strategy for sustain the livestock production system. The use of sexed sorted semen in districts has been possible through fully involvement of staffs of U.P. Animal Husbandry Department. The A.I. charges are very nominal Rs. 100/- each dose application under this mission. The extension activities for awareness in farmers are organized by KVK and Veterinary Hospital time to time. The potential impacts of that study have been presented additional income of farmers through producing more females and sustain the livestock production system.

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