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Prevalence of reproductive failures in dairy animals: Insights from selected districts of Mid-Karnataka

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Abstract

This study evaluated the prevalence of infertility-related reproductive disorders in dairy cattle and buffaloes presented at animal health camps conducted by veterinarians under BAIF auspices in Karnataka. Across 100 animal health checkup camps were conducted in 100 selected villages during August 2024 to March 2025 within districts of Davanagere, Haveri, and Chitradurga which was financially supported by the IDFC-Shwetdhara project. A total of 1,548 dairy animals were examined for infertility-related concerns based on owner anamnesis. A subset of animals underwent further diagnostic testing to identify specific infertility etiologies. The overall distribution of infertility etiologies indicated that delayed puberty was the most prevalent (38.11%), followed by anoestrus (33.56%), repeat breeding (27.15%), pyometra (0.67%), and other infertility-associated conditions (0.51%) like under growth of reproductive organs, kinked cervix, prolonged heat, cystic ovaries etc. All other symptoms were considerably ($p < 0.05$) greater in cross-bred cows except for delayed puberty. Delayed puberty was significantly more prevalent in local non-descriptive cows compared with cross-bred cows ($p < 0.05$). Seasonal analysis revealed cumulative prevalence of infertility of 30.62% (Autumn), 30.42% (Summer), 20.23% (Spring), and 18.73% (Winter). Infertility-associated issues were significantly more common in autumn and summer season than in spring and winter ($p < 0.05$). These findings underscore the relative burden of delayed puberty and anoestrus among dairy animals in southern India and highlight the influence of breed and season on infertility prevalence.

Keywords: Cattle health camp, mid Karnataka, infertility, delayed puberty, anoestrus, pyometra, prevalence, season

Introduction

Infertility can be caused by anatomical, infectious, functional, or managerial variables. Infertility is described as a temporary lack of fertility that results in failure or delay in generating normal live offspring as next generation. Hereditary and congenital, acquired, functional (anoestrus, cystic ovary, luteal deficits, and ovulation defects), nutritional deficiencies, infectious reasons, and miscellaneous causes are the main categories of causes of infertility in cows in India (Thakur *et al.*, 2006) [21]. According to reports, infertility and reproductive problems may impact 10-30% of lactation yield, and in affluent nations, these issues result in the annual loss of 3-6% of the herd (Maji and Samanta, 2013) [16]. For lactating cows, each missed heat results in a loss of approximately Rs.300 and for impoverished farmers' heifers, the cost is nearly double (Kutty, 2000) [15]. In India, it is not common practice to diagnose and treat large animal infertility in the field. However, as the slaughter of cattle in India is being outlawed on a daily basis, prompt diagnosis and mitigation of these animals are crucial to preventing production loss and the growing culling tendencies of the non-productive animals (Sharma, 2015) [20]. According to data from several states, the most prevalent gynaecological issues in cattle and buffaloes in India are anoestrous, repeat breeding, cystic ovarian degeneration, and uterine and tubal abnormalities (Agarwal *et al.*, 2005) [1]. Mid-Karnataka's Davanagere, Haveri, and Chitradurga are home to five Pashu Vikasa Kendra dispersed throughout three districts. According to farmer reports, infertility in domestic animals is a prevalent issue in these locations, making livestock one of the peoples' most

valuable sources of income. Therefore, based on the aforementioned circumstances, no similar study has been undertaken in Mid Karnataka. The current study was carried out to analyse the frequency of infertility in cows in specific locations of the Mid Karnataka Districts.

Materials and Methods

The villages of Davanagere, Haveri, and Chitradurga districts of Mid Karnataka were chosen for the current study in which the sponsored project was implemented. The study was carried out on the animals that were presented during the animal health checkup camps organized by the veterinarians under the sponsored IDFC-Shwetdhara CSR project. (Infrastructure Development Finance Company Corporate Social Responsibility). A total of 1,548 dairy animals mainly crossbred and local non-descript were examined for issues linked to infertility during the period of August 2024 to March 2025 spread across 100 selected villages and 100 health checkup camps. According to owner anamnesis, the animals were mainly regarded as infertile or having various reproductive issues. Following Kumar and Singh (2018) [14] methodology, those tested animals underwent additional clinical examinations, primarily rectal palpation by trained veterinarians to assess for types of infertility associated with the animals like delayed puberty, anoestrus, repeat breeding, pyometra and other ailments which includes endometritis, metritis, cystic ovary, and non-specific genital infections. SPSS version 18.0 software packages were used to analyse the data using the chi-square test and cumulative prevalence. The findings were displayed as a percentage.

Results and Discussion

A total of 1,548 animals were evaluated for reproductive issues and out of them 552 (35.66%) had delayed puberty (Table-1). The prevalence of anoestrus was observed in 498 animals (32.18%), while 422 cows suffered from recurrent

breeding circumstances (27.26%). The clinical pyometra was noticed in 40 (2.58%) animals. The other infertility-related problems like endometritis, metritis, cystic ovary, and non-specific genital infections were recorded in 36 animals (2.32%). Except delayed puberty (46.73%) overall prevalence was considerably ($p < 0.05$) greater in cross-bred cows in comparison with local animals (46.06%). When compared to cross-bred cows, the prevalence rate of delayed puberty was significantly ($p < 0.05$) greater in local non descriptive cows (53.27%). The findings of this study were consistent with those of Bhattacharyya *et al.* (2009) [5] and Bhat *et al.* (2012) [4]. In contrast to the current investigation, Dutta *et al.* (2020) [9] reported a lower percentage of repeat breeding cases and a larger percentage of anoestrus in their field study. Maji and Samanta (2013) [16] reported a larger percentage of anoestrus and repeat breeding incidence than the current findings in another investigation. In contrast to our current observations, Khan *et al.* (2016) [11] reported a larger percentage of pyometra and a lower percentage of anoestrus frequency. Wide changes in food, housing, reproductive management, hormones, and most importantly climatic circumstances could all contribute to these results (Dutta *et al.* 2020) [9]. All those authors, however, including Ashoo *et al.* (2020) and Asaduzzaman *et al.* (2016) [2] noted that native breed cows had a lower rate of reproductive issues than cross-bred cows. This is consistent with current research. In present study, it was found that a notably high rate of delayed puberty this could be because of balanced feed and fodder shortage to animals in the study areas. The frequency of floods in the Sundarbans increased as a result of climate change, raising the salinity of the soil in agricultural areas. Animals become malnourished throughout the year due to a lack of animal feed and a decrease in crop and fodder output (Das, 2011, Mohit *et al.*, 2015, Mukhopadhyay *et al.*, 2021) [11, 17, 18]. Additionally, farmers are less knowledgeable in managing livestock feeding (Das *et al.*, 2017) [6].

Table 1: Prevalence of reproductive disorder in crossbred and local non descriptive cows.

	Breed No. (%)	Delayed puberty No. (%)	Anoestrus No. (%)	Repeat breeding No. (%)	Pyometra No. (%)	Others No. (%)	Total No. (%)
1	Cross Breed	258 ^a	306 ^b	278 ^b	30 ^b	25 ^b	897 ^b
		46.73%	61.45%	65.87%	75%	69.45%	57.94%
2	Local Breed	294 ^b	192 ^a	144 ^a	10 ^a	11 ^a	651 ^a
		53.27%	38.55%	34.13%	25%	30.55	42.06%
	Total	552	498	422	40	36	1548
		35.66%	32.18%	27.26%	2.58%	2.32%	100%

Means bearing different superscript in a column differ significantly ($p < 0.05$)

Table 2: The season-wise prevalence of infertility cases in cows.

Season	Delayed puberty No. (%)	Anoestrus No. (%)	Repeat breeding No. (%)	Pyometra No. (%)	Others No. (%)	Total No. (%)
Autumn	176 ^b	158 ^b	119 ^b	11 ^b	10 ^b	474 ^c
	31.88%	31.74%	28.19%	28%	27.70%	30.62%
Summer	174 ^b	159 ^b	117 ^b	11 ^b	10 ^b	471 ^c
	31.53%	31.93%	27.72%	28%	27.70%	30.42%
Spring	102 ^a	99 ^a	95 ^a	9 ^a	8 ^a	313 ^b
	18.48%	19.87%	22.52%	22.00%	22.30%	20.23
Winter	100 ^a	82 ^a	91 ^a	9 ^a	8 ^a	290 ^a
	18.11%	16.46%	21.57%	22.00%	22.30%	18.73%
Total	552	498	422	40	36	1548
	35.66%	32.18%	27.26%	2.58%	2.32%	100%

Means bearing different superscript in a column differ significantly ($p < 0.05$)

Seasonal analysis from Table-2 revealed cumulative prevalence of infertility of 30.62% (Autumn), 30.42% (Summer), 20.23% (Spring), and 18.73% (Winter). The prevalence of issues associated to infertility was found to be

substantially ($p < 0.05$) higher in the autumn and summer season than in the spring and winter. Bhattacharyya *et al.* (2009) [5] and Bhat *et al.* (2012) [4] reported the same incidence as observed in the present investigation. In the

study of Khair *et al.* (2013) ^[12] found that cow reproductive issues were less common in the winter season than in the summer and during the rainy season. Animals may benefit nutritionally from an abundance of green grass and fodder during the winter and spring months, which would further improve their ability to reproduce (Shakeel *et al.* 2020) ^[19]. Heat stress affected animals' physiological balance over the summer, which decreased their ability to reproduce (Wolfenson and Roth, 2019, Dhara *et al.*, 2020) ^[22, 8]. On the other hand, seasons had no discernible impact on repeat breeding conditions, according to Kumar *et al.* (2006) ^[13].

Conclusion

According to the current study, cross-bred cows had a noticeably greater cumulative frequency of conditions connected to infertility. The prevalence of infertility among cows in the recent study was likewise impacted by the season. The prevalence was considerably higher in the summer and autumn season than it was in the winter and spring. Additionally, it was noted that anoestrus and repeat breeding were the most common issues in these areas, followed by delayed puberty.

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Conflict of Interest

Not available

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