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## Productive and reproductive performance of dairy animals in district Varanasi of Uttar Pradesh

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**ABSTRACT:** A field study was conducted to find out the reproductive problems and productive and reproductive performance of dairy animals in district Varanasi of Uttar Pradesh. About 200 farmers 40 from each selected village engaged in dairying were interviewed. Findings revealed that there was high prevalence of repeat breeding (72.5%), retention of placenta (35%), anoestrus (32.5%), endometritis (27.5%), prolapse of uterus (20%), abortion (17.5%) and dystocia (15%) in dairy cattle and buffaloes. Inadequate veterinary facilities during the time of emergency, high cost of treatment for reproductive problems and lack of knowledge about reproductive management of dairy animals were the most important constraints reported by respondents. The study also revealed productive and reproductive parameters of dairy animals such as an average daily milk yield was higher in crossbred cow, lactation length was higher in indigenous cow, lactation yield as well as peak yield was higher in crossbred cow and buffalo had lower dry period. Crossbred cow had their lower age at first calving and shorter calving interval than buffalo and indigenous cow whereas service period was lower in buffalo than crossbred cow and indigenous cow.

**Key words:** Dairy animals, farmers, productive performance, reproductive problems, reproductive performance

The district Varanasi comprises of two tehsils, Varanasi and Pindra respectively. There are eight community development blocks (Vikas Khand) in the district Varanasi. Total numbers of inhabited villages are 1258 in the district Varanasi (423 in Pindra tehsil and 835 in Varanasi tehsil). Varanasi has a sub-tropical humid climate with extreme difference in the temperature between summer and winter ranging from (5-45) !. The average yearly rainfall in district Varanasi is 1110 mm (Source: Wikipedia, The Free Encyclopedia). Cattle and Buffalo population in district Varanasi are 16.52 and 1.30 lakhs respectively (Source: District Statistical Handbook 2018, Bureau of Applied Economics and Statistics, Government of Uttar Pradesh). Animal husbandry and Dairying sector contributes about 23 percent of the value of output form total agriculture and allied sector. At present, India is achieving an estimate annual milk availability of 406 g/day (Basic Animal Husbandry Statistics, DAHD&F, GOI). Production and reproduction are one of the most important considerations to determine the

profitability of cattle and buffalo which depends on four dimensions viz. breeding, feeding, health care and management practices. As India has entered into an era of economic reforms, agriculture, particularly the livestock sectors and dairying are projected to be the major growth areas (Manjusha *et al.*, 2016). The milk production is mainly depending on the reproductive performance of cattle and buffaloes reared by the farmer. Initially low genetic potential and poor nutrition were considered as major cause of low productivity. However, health care particularly the reproductive efficiency of dairy animals is the backbone of dairy farming. We need to enhance the productive and reproductive performance of dairy animals in India. Therefore, the study had been carried out to find out the productive and reproductive performance of the dairy animals in field condition.

### MATERIALS AND METHODS

The present investigation was conducted from

August to November in the year 2022 in district Varanasi of Uttar Pradesh. The information pertaining to reproductive problems and productive and reproductive performance of dairy animals were collected from five randomly selected villages from the randomly selected block Rajatalab of district Varanasi. The ex-post facto research design was applied in this study. The information was generated from 200 farmers, 40 from each selected village on the basis of criteria that farmers must raise more than five dairy animals. The selected farmers were surveyed using structured schedule in the month of August 2022. Detailed information was collected on various reproductive problems perceived and productive and reproductive performance of dairy animals by the farmers involved in that. Data was collected through personal interview using a structured interview schedule. Analysis of data was done by using simple statistical technique like percentage mean and standard deviation. The farmers were defined in following three categories: Buffalo based farmers: those who were rearing maximum number of buffaloes along with crossbred and indigenous cows. Crossbreed cow-based farmers: those who were rearing maximum number of crossbred along with buffalo and indigenous cows. Indigenous based farmers: those who were rearing maximum number of indigenous cows along with buffalo and crossbred cows.

## RESULTS AND DISCUSSION

### Reproductive problems perceived by dairy farmers

The results of reproductive problems perceived by dairy farmers are presented in Table 1.

**Repeat Breeding:** The study revealed that repeat breeding was the major fertility problem as perceived by 72.5% of the respondents. This high incidence was mainly because of poor conception through artificial insemination, which might be due to several reasons such as poor quality of semen, untrained inseminators and farmers in ability to present the animals at proper time of heat for artificial insemination. Meena and Malik (2009) and Sreedhar *et al.* (2017) were reported 68.66% and 71.87% of

farmers perceived repeat breeding.

**Anoestrus:** Anoestrus was found to be the second most problem of dairy farmers which was due to imbalanced feeding of dairy animals that resulted in minerals deficiencies. Kilic *et al.* (2007) recommended zinc as a trace element for normal reproductive function. The major possible cause of reproductive problems is imbalanced concentration of materials (Ahmed *et al.*, 2008). Patel and Ponnusamy (2019) reported 19.19% of dairy farmers were perceived anoestrus.

**Retention of placenta:** Retention of placenta was reported by 35.0% of dairy farmers in the study area. The probable reasons for retained placenta are minerals deficiencies, pre - mature birth, abortion, lack of tonicity in uterus muscles, infection in uterus etc. this also indicates the poor feeding of the dairy animals. The incidence of retention of placenta was found to be higher than reported by Meena and Malik (2009) and Sreedhar *et al.* (2017).

**Endometritis:** 27.5% of farmers expressed endometritis in the study area. Farmers reported it after problem identified by veterinarian, because it is gynecological problem and is difficult to detect by them. Meena and Malik (2009) and Sreedhar *et al.* (2017) were reported 23.66% and 22.5% of the farmers expressed endometritis in their farm.

**Prolapse of uterus:** Prolapse of uterus was perceived by 20% of dairy farmers. The major reason for that were infection in the vagina/uterus and lack of muscular tonicity because of mineral deficiency. Meena and Malik (2009) and Sreedhar *et al.* (2017) reported 16% and 16.25% of farmers were perceived prolapse of uterus.

**Abortion:** 17.5% of the farmers expressed that abortion was another reproductive disorder in dairy animals. The lower prevalence rate of abortion in this study may be attributed to the increasing practices of A.I. in the study area where the semen is collected from bulls free from brucellosis. The incidence of abortion was found to be higher than reported by Sreedhar *et al.* (2017) and Patel and

**Table 1: Reproductive problems perceived by dairy farmers (Number of respondents = 200)**

S. No.	Problems Identified	Frequency	Percentage
1.	Repeat Breeding	145	72.5
2.	Anoestrus	65	32.5
3.	Retention Placenta	70	35.0
4.	Endometritis	55	27.5
5.	Prolapse of Uterus	40	20.0
6.	Abortion	35	17.5
7.	Dystocia	30	15.0

Ponnusamy (2019) i.e., 15.62% and 4.85% respectively.

**Dystocia:** 15% of the farmers expressed dystocia which might be due to the large size or abnormal fetus. The other causes were failure of proper parturition stage and abnormal anatomical conditions of dairy animals. The incidence of dystocia was found to be lower than reported by Meena and Malik (2009) and higher than reported by Sreedhar *et al.* (2017).

### Productive and reproductive performance of dairy animals

The results of productive and reproductive performance of dairy animals are presented in Table 2.

**Average daily milk yield:** Milk yield of the dairy animals is very important in showing the performance of the dairy animals. An effort was made to find out the average daily milk yield of Buffalo in combination with other animals. It was observed from (Table 2) that Buffalo, Crossbred cow, and Indigenous cow were  $6.01 \pm 0.5$ ,  $7.59 \pm 0.75$ , and  $3.32 \pm 0.25$  liters per day per animal respectively

Meena *et al.* (2015) in their study observed that average daily milk yield was  $5.75 \pm 0.65$ kg,  $7.55 \pm 0.74$ kg and  $3.27 \pm 0.38$ kg in buffalo, crossbred cow and indigenous cow respectively which is more or less similar to the above results.

**Lactation length:** The optimum Lactation length of the dairy animals is one of the best indicators in the performance of the dairy animals. The data pertaining to lactation length of Buffalo, crossbred cow, and Indigenous cow were  $281 \pm 19$ ,  $274 \pm 11$ , and  $296 \pm 15$  days/animal respectively. The lactation length near about 305 days confounded good but in among all animal indigenous cow had good lactation length. The average lactation was similar in Ayodhya (Faizabad) district of Uttar Pradesh as  $276 \pm 14$ ,  $274 \pm 16$  and  $294 \pm 18$  for buffalo, crossbred cow and indigenous cow respectively (Meena *et al.*, 2015).

**Lactation yield:** The lactation milk yield of the dairy animals has positive relation with the overall performance of an animal. A cursory look on the Table 2 revealed that the lactation milk yield of buffalo, crossbred cow, and indigenous cow were  $1733.03 \pm 189$ ,  $2079.66 \pm 210$  and  $989.67 \pm 160$  liters/animal respectively. There are similar finding were observed by Meena *et al.* (2015) in their respective study whereas Manjusha *et al.* (2016) reported higher lactation yield in their study because there were high yielding varieties of animals like Holstein-Friesian, Murrah buffaloes and generous availability of feed and fodder.

**Peak yield:** The data present in Table 2 revealed that the average peak milk yield of buffalo, crossbred cow, and indigenous cow were  $8.7 \pm 0.98$ ,

**Table 2: Productive and reproductive parameters of dairy animals (Number of respondents = 200)**

Parameters (Total animal=300)	Buffalo (Animal=230)	Crossbred Cow (Animal=50)	Indigenous Cow (Animal=20)
Average milk yield (liters/day/animal)	$6.01 \pm 0.5$	$7.59 \pm 0.75$	$3.32 \pm 0.25$
Lactation length (days)	$281 \pm 19$	$274 \pm 11$	$296 \pm 15$
Lactation yield (liters/animal)	$1733.03 \pm 189$	$2079.66 \pm 210$	$989.67 \pm 160$
Peak yield (liters)	$8.87 \pm 0.98$	$10.26 \pm 1.05$	$5.58 \pm 0.54$
Dry period (days)	$211 \pm 12$	$221 \pm 14$	$265 \pm 21$
Age at first calving (days)	$1260 \pm 112$	$1140 \pm 95$	$1513 \pm 125$
Service period (days)	$189 \pm 0.52$	$247 \pm 12$	$273 \pm 21$
Calving interval (days)	$495 \pm 45$	$491 \pm 36$	$563 \pm 55$

10.26±1.05, and 5.58±0.54 liters/animal respectively. Peak yield was found to be the criteria for selling/ purchase of animals. More the peak yield of animal higher will be its cost in the market. B S Meena *et al.* (2015) found that peak yield in buffalo, crossbred cow and indigenous cow were 8.56±0.85, 10.42±1.42 and 5.51±0.53 liters/animal respectively. Descript breed of buffaloes were also reported to have peak yield 10.5±0.3 liters/animal (Singh *et al.* 2011).

**Dry period:** It was observed from the Table 2 that the dry period of buffalo, crossbred cow and indigenous cow were 211±12, 221±14, and 265±21 days respectively. It was found that average dry period values were highest for indigenous cow followed by crossbred cow and buffalo. Meena *et al.* (2015) reported that dry period was higher in indigenous cow followed by buffalo and crossbred cow whereas lower dry period was reported by Manjusha *et al.* (2016).

**Age at first calving:** Age at first calving is one of the most important factors in the performances of dairy animals. In the present study it was observed in (Table 2) that the age at first calving of buffalo, crossbred cow and indigenous cow, were 1260±112, 1140±95, and 1513±125 days respectively. Similar finding was observed by Meena *et al.* (2015) whereas lower age at first calving was observed by Manjusha *et al.* (2016).

**Service period:** The data pertaining to service period was presented in the (Table 2) and found that the service period of buffalo, crossbred cow and indigenous cow were 189±15, 194±12, and 273±21 days/animal respectively. Similar finding was observed by Meena *et al.* (2015) whereas lower service period was observed by Manjusha *et al.* (2016).

**Calving interval:** It was observed from the Table 2 that the calving interval of buffalo, crossbred cow and indigenous cow were 495±45, 491±36, and 563±55 days respectively. The factors like the time of estrous, quality of semen and skill of inseminator, the variation in availability of feed and green fodder, nutritional

and health status of animals, particularly the conditions that influence the conception rate in dairy animals, which in turn, effects the duration of calving interval in dairy animals. Similar finding was observed by Meena *et al.* (2015) whereas lower calving interval was observed by Manjusha *et al.* (2016).

## SUMMARY AND CONCLUSION

The study revealed that the reproductive performance of dairy animals was relatively poor. The adoption of management practices followed by dairy farmers was not satisfactory which might definitely influence the productivity of dairy animals. Further there was relatively higher prevalence of reproductive disorders like repeat breeding, anestrus, retained placenta etc. of dairy cattle and buffaloes in the study area. Certain preventive measures such as efficient detection of estrus, routine pregnancy diagnosis (40–60 days of post breeding), prevention of occurrence of post-partum uterine infections, regular deworming and synchronization of estrus especially in buffaloes where heat detection is more difficult, could be advantageous in preventing the occurrence of anestrus. Hence, there is a need to create awareness among dairy farmers on recommended breeding practices and reproductive management by conducting training program to the dairy farmers and continuous interventions needs to be done to the dairy farmers so that the average daily milk yield, lactation length, lactation yield can be enhanced and age at first calving, service period, and calving interval can be reduced. It is also stated that communication variables are very important tools to manage the productive and reproductive performance of dairy animals, Hence it was suggested that involvement of veterinarians must be done to gear up the activities on reproductive traits for better productivity of the dairy animals.

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