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## A study on productive and reproductive management practices of dairy animals in district Varanasi of Uttar Pradesh

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**ABSTRACT:** The present study assesses the analysis of productive and reproductive management practices of dairy animals in district Varanasi of Uttar Pradesh. Detailed information collected from farmers of five villages from Rajatalab block of district Varanasi were used for the study. The data were collected on various management practices including general profile of dairy farmers. Majority of farmers were from middle age group, had small land holding and medium herd size with main source of income as dairying. Majority of farmers were from medium milk production, consumption and milk selling groups and sold their milk to the co-operatives. Majority of farmers reared indigenous breeds. Mucus discharge and bellowing was the major sign of heat detection rather than use of a teaser. Majority of farmers were relying on artificial insemination for breeding and time of insemination considered was 18 hours after estrus. Most of the farmers were not drying off their milch animals. Breeding of animals after (2-3) months of calving were considered by majority of farmers. Calving interval in cattle and buffaloes was more than 15 and 18 months, respectively.

**Key words:** Breeding, dairy animals, Indigenous breeds and Management practices

The livestock population in the state of Uttar Pradesh during the period 2007 to 2012 registered positive growth rate of 14.01% in the total number of animals in various species. There is an increase in livestock population over 2007 to 2012 from 60.27 million to 68.71 million mainly triggered by increase in population of dairy animals (19<sup>th</sup> Livestock Census 2012). 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°C. 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 per cent 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). Dairying is an important source of subsidiary income to marginal/small farmers and agricultural laborers. Milk production alone involves more than 150 million producers, each raising one or two cows/buffaloes primarily for milk production (Meena *et al.*, 2013). The

productive and reproductive management practices are the most important practices in animal husbandry. Understanding the livestock management practices followed by the farmers is necessary to identify the strengths and weaknesses of the rearing system and to formulate suitable intervention policies (Gupta *et al.*, 2008). With this background this study was undertaken with the objective to assess the analysis of reproductive and productive management practices of dairy animals along with general profile of farmers of district Varanasi of Uttar Pradesh.

### MATERIALS AND METHODS

The present investigation was conducted from August to November in the year 2021 in district Varanasi of Uttar Pradesh. The information pertaining to productive and reproductive management practices of dairy animals along with general profile of dairy farmers 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 farmer must be a commercial dairy farmer, maintaining proper records, must raise more than five dairy animals and sell milk not less than 5litre/day for 365 days continuously in a year from his own milk herd. The selected farmers were surveyed using structured schedule in the month of August 2021.

Detailed information was collected on various management practices and profile of farmers involved in that. The collected data were tabulated as per the objectives of the study and statistical analyzed.

## RESULTS AND DISCUSSION

### General profile of dairy farmers

**Socio-personal profile:** The data in the Table 1a clearly indicate that majority of the respondents (57.5%) were in the middle age category (31-50 years), followed by young (22.5%) and the old age groups (20%). Roy *et al.* (2013) in their study reported that the average age of the respondents was 42 years. Most of the respondents were having primary educational status (33%), followed by intermediate (27.5%), middle (14.5%), graduate (12.5%) and illiterate (12.5%). Majority (54%) of the respondents belonged to the joint families and rest 46% to the nuclear families. Vekariya *et al.* (2016) in their study reported that majority of the maldhari dairy farmer's belonged to joint family. 47.5% of the respondents were having medium family size of 5 to 10 members. The respondents having small family size of less than 5 members were 42.5% followed by large family (10%) size i.e., more than 10 members. Singh *et al.* (2021) in their study reported that 25.15% respondents had middle education category and 57.27% respondents had medium family size.

**Socio-economic profile:** Table 1b indicate that majority of the respondents (75%) were having dairying as the main occupation followed by agriculture (25%). It may be correlated to the fact that the Varanasi district is having large dairy animal's population, thus maximum farmers were concentrating in dairying and agriculture is also integrated. Ashoo *et al.* (2021) revealed in their study that 68.33% farmers engaged in agriculture and dairy. (61.5%) of the respondents were having small land holding followed by 17.5% with medium land holding, 15.5% with marginal land holding, 3% with large land holding and 2.5% with no land holding. Rearing of cattle and buffalo has always been regarded as a symbol of pride in the farming community. It was observed that the majority of the respondents (61%) had medium herd size i.e., 10 to 20 animals, 19% small herd and 20% large herd size. Gopi *et al.* (2017) in their study reported that 39.16% of the farmers had marginal land holding followed by 29.17% of small land holding and 73.33% of the farmers had medium herd size. About 67.5% of the respondents were harvesting medium milk production i.e., 30 to 80 liters per day, followed by 19% high milk production i.e., more than 80 liters per day, 13.5% low milk production produced i.e., milk less than 30 liters per day. From the milk

**Table: 1a: Socio-personal profile of dairy farmers  
Number of respondents = 200**

Variables	Categories	Frequency	Percentage
<b>Age (in years)</b>	Young (up to 30)	45	22.5
	Middle (31-50)	115	57.5
	Old (above 50)	40	20
<b>Education</b>	Illiterate	25	12.5
	Primary	66	33
	Middle	29	14.5
	Intermediate	55	27.5
	Graduate & Above	25	12.5
<b>Family Size</b>	Small (<5)	85	42.5
	Medium (5-10)	95	47.5
	Large (>10)	20	10
<b>Family Type</b>	Joint	108	54
	Nuclear	92	46

**Table: 1b: Socio-economic profile of dairy farmers  
Number of respondents = 200**

Variables	Categories	Frequency	Percentage
<b>Occupation (Dairying)</b>	Main	150	75
	Subsidiary	50	25
<b>Land holding (ha)</b>	Landless	5	2.5
	Marginal (up to 1)	31	15.5
	Small (1-2)	123	61.5
	Medium (2-4)	35	17.5
	Large (>4)	6	3
<b>Herd size</b>	Small (<10)	38	19
	Medium (10-20)	122	61
	Large (>20)	40	20
<b>Milk production (L/day)</b>	Low (<30)	27	13.5
	Medium (30-80)	135	67.5
	High (>80)	38	19
<b>Milk consumption (L/day)</b>	Low (<2)	25	12.5
	Medium (2-4)	125	62.5
	High (>4)	50	25
<b>Milk sale (L/day)</b>	Low (<27)	31	15.5
	Medium (27-76)	140	70
	High (>76)	29	14.5
<b>Mode of milk sale</b>	Milk vendors	27	13.5
	Milk cooperatives	117	58.5
	Direct to milk plants	23	11.5
	Any others	33	16.5

consumption results it could be observed that 62.5% of respondents had medium level of milk consumption (2 to 4 liters per day) followed by 25% and 12.5% having high and low level of milk consumption, respectively. Nishi *et al.* (2011) in their study reported that majority of the respondents had medium level of milk production and consuming medium quantity of milk. A cursory look at the milk sale results indicates that the majority 70% of the respondents were having medium level of milk sale (27 to 76 liters per day) followed by 15.5% of the respondents who sold less than 27 liters per day and 14.5% of the dairy

entrepreneurs who sold more than 76 liter per day. Sachan *et al.* (2018) found that majority of respondents were in medium category of milk sale. It was also observed that majority of the respondents (58.5%) were selling milk to the milk cooperatives followed by 13.5% to the vendors. However, 16.5% of the respondents sold milk directly to the sweet shop by processing (preparing channa, paneer and khoa) and the least i.e., 11.5% sold their milk to the milk plants.

### Productive and reproductive management practices of dairy animals

The results of productive and reproductive management practices of dairy animals are presented in Table 2a.

**Breeds (Cow & Buffalo):** The result indicated that majority of the respondents (60%) were rearing indigenous dairy animals followed by 40% of the respondents rearing crossbreds which might be due to lack of awareness about the advantage of raising crossbred animals. The reason for not showing interest on the crossbred animals rearing could be the non-adaptability and health issues of crossbred animals to the local prevailing environmental conditions. Hegde (2018) reported that after the introduction of breeding service using semen of recognized native breeds of cattle, the population of upgraded progeny

of indigenous breeds had increased by 66%.

**Symptoms of heat detection:** It was observed that 22.5% of the respondents observed mucus discharge while 60% relied on symptom of mucus discharge in combination with bellowing, 7.5% of the respondents observed frequent urination, 7.5% of the respondents observed mounting and 2.5% observed drop in milk yield on the day of heat as sole symptom of heat detection. It was informed by the respondents during personal interview that mostly buffaloes were showing mucus discharge as heat system while crossbred cow were showing mucus discharge and bellowing during estrus. The symptom of estrus was mostly pronounced in morning or during cool hours of day. In winter buffaloes showed more intense heat system as compared to summer. Similar finding was also observed in case of cattle and buffalo (Thakur, 2013).

**Breeding methods:** It was observed that (77.5%) of the respondents used scientific method of artificial insemination (A.I.) for breeding their dairy animals while 22.5% followed natural service. It may be due to availability of good infrastructure facilities for the preservation and timely A.I. service with satisfactory result provided by A.I. workers besides no option of proven crossbred bulls for natural services. Kumar (2019) reported in their study that highly majority of the

**Table 2a: Productive and reproductive management practices of dairy animals.**  
Number of respondents = 200

Variables	Categories	Frequency	Percentage
<b>Breed (Cow &amp; Buffalo)</b>	Crossbreed	80	40
	Indigenous	120	60
<b>Symptoms of heat detection</b>	Mucus discharge	45	22.5
	Mucus discharge and Bellowing	120	60
	Frequent urination		
	Mounting	15	7.5
	Low milk yield on the day of heat	15	7.5
<b>Breeding methods</b>	Natural service	45	22.5
	Artificial insemination	155	77.5
<b>Time of insemination</b>	Between (12-18) hrs. after estrus	80	40
	18 hrs. after estrus		
<b>Drying off milch animals</b>	Yes	60	30
	No	50	25
<b>Breeding after calving</b>	(2-3) months	150	75
	(3-6) months	35	17.5
	After 6 months	15	7.5
<b>Calving interval</b>	<b>a) Cattle</b>		
	Below 15 months	75	37.5
	More than 15 months	125	62.5
	<b>b) Buffalo</b>		
	Below 18 months	95	47.5
	More than 18 months	105	52.5

respondents was breeding of female animals through artificial insemination.

**Time of Insemination:** It was observed that 40% of the respondents allowed their female animals for breeding through A.I. at early heat and 60% at mid heat period. This is a good practice adopted by farmers to serve their cow or buffaloes in between 12 to 18 hours from onset of estrus for better results of conception. Tanwar *et al.* (2012) reported in their study that Majority (59.17%) of members families mating to animals after 12 hours of onset of heat whereas majority (60.83%) respondents in non-members bred just after onset of heat.

**Drying off milch animals:** Majority (75%) of the respondents were not drying off their milch animals. The probable reason might be that most of the farmers are interested to get consistent supplementary income through sale of milk. Similar finding was reported by Sreedhar *et al.* (2017).

**Breeding after calving:** About 7.5% of the respondents re-bred their dairy animals after six months of calving while 17.5% of the respondents between 3 to 6 months and 75% after 3 months of calving. Most of the farmers did well in this aspect but rest 25% of the farmers did not bred their animals within 3 months might be due to lack of awareness about reproductive management practices. These results were not conformity with the study of S. Sreedhar *et al.* (2017).

**Calving interval:** The calving interval below 15 months and more than 15 months were observed as 37.5% and 62.5% of dairy cattle respectively, where as 47.5% of buffaloes had below 18 months and 52.5% of buffaloes had more than 18 months of calving interval. Similar finding was reported by Sreedhar *et al.* (2017).

## SUMMARY AND CONCLUSION

The study revealed that majority of the respondents (57.5%) were under middle age group and belonged to joint family (54%), had small holding (61.5%) and medium herd size (61%). Majority of the respondents (70%) were practicing dairying as the main source of income, had medium milk production (67.5%), medium milk consumption (62.5%) and medium milk sale (70%). The majority of the dairy farmers (58.5%) sold their milk to the co-operatives and was rearing indigenous breeds (60%). Most of the respondents (60%) observed mucus discharge and bellowing as the main sign of heat detection and used artificial insemination method of breeding

(77.5%). Most of the respondents (60%) followed time of insemination after 18 hours of onset of estrus symptoms. Only about 25% of the respondents were drying off their milch animals and most of the respondents 75% were bred their animals after 2-3 months of calving. The Calving interval in cattle (37.5%) was below 15 months and in buffaloes (47.55%) were below 18 months. It was suggested that dairy farmers should be focused on rearing more crossbred dairy animals than indigenous and also follow drying off their milch animals.

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