Study on Dairy Cattle, Breeding Management Practices in Milkshed and Non-milkshed Areas of Bikaner District (Rajasthan)

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ABSTRACT
Background: This investigation provides the data of breeding management practices followed by the livestock owners of milkshed and non-milkshed areas and analyze the effect of operation flood program in milkshed area of Bikaner district of Rajasthan in respect to dairy cattle breeding management practices.
Methods: In order to achieve the objectives of this study a field survey was conducted. The information required to complete the study were collected from milkshed and non-milkshed villages of Bikaner district. The data was collected by using the pretested interview schedule by visit to their farm to take visual observations and actual measurements of the various desired aspects. The collected data was tabulated and subjected to various statistical methods to draw meaningful inferences.
Result: Impact of operation flood programme could most appreciably be seen on the improvement of breeds and breeding methods. Significantly (P < 0.01) higher percentage of Rathi and crossbreds (41.89% and 13.14%) were found in milkshed area with the low incidence of natural service in comparison to non-milkshed area having low percentage of pure and crossbred cattle with high incidence of natural service. A significantly higher percentage (54.11%) of dairy cattle owners in milkshed area get their cattle inseminated/crossed after 7-12 hours of detection of heat, whereas in non-milkshed area only 32.22% get their cattle inseminated/crossed after 7-12 hours of heat detection. The operation flood program had statistically significant (P < 0.05) effect on milkshed area with respect to genetic improvement of their stock.
Key words: Breeding management practices adoption, Dairy cattle.

INTRODUCTION
Dairy cattle plays an important role in agrarian economy in developing country and so more in India. Breeding management is one of the important aspects for genetic improvement in dairy cattle. The response of dairy cattle owners on the management of breeding practices in dairy cattle right from the breeds of the cattle maintained by cattle owner and the detection of cattle in heat to parturition. Thus, this investigation provides the data of breeding management practices followed by the livestock owners of milkshed and non-milkshed areas and analysis the effect of operation flood program in milkshed area of Bikaner district of Rajasthan in respect to dairy cattle breeding management practices.

MATERIALS AND METHODS
In order to achieve the objectives of this study, a field survey was conducted. The information required to complete the study were collected from milkshed and non-milkshed villages of Bikaner district. The data was collected by using the pretested interview schedule by visit to their farm to take visual observations and actual measurements of the various desired aspects. The collected data was tabulated and subjected to various statistical methods to draw meaningful inferences.
program was running in milkshed area of URMUL denoted as villages of milkshed area. The selected villages were Nungesser, Palana and Barsingar. Three villages from non-milkshed area in contiguity with the milkshed area which has similar social agro climatic environment were selected for comparison. The villages so selected were Udasar, Nal and Udaramsar.

Selection of respondents

A list of livestock owners who possessed dairy animals in each of the selected villages was prepared with the help of village level worker (VLW) and secretary of the co-operative milk societies. Out of this list, 30 livestock owners were selected randomly for the study from each of the village thereby making to samples of 180 dairy cattle owners (90 from milk and nonshed area and 90 from non-milkshed area).

Construction of interview schedule

The required information was collected using a specially developed questionnaire (schedule) keeping in view the objectives of investigation. The questionnaire was designed to get information on breeding practices being followed for different categories of dairy animals and pre-testing of the schedule was done on two respondents of one village each from milkshed and non-milkshed areas. Pretesting helped in altering the contents and sequence of certain places and finalizing the procedure of filling the schedule.

Analysis of data and statistical test applied

The study of an exploratory nature, it was desirable to collect the data exhaustively. Only the data directly pertaining to dairy cattle breeding practices rather than to the peripheral aspects were analyzed. Basic statistical tool like frequency distribution, percentage, ratio, range, mean, standard error, were calculated to draw inferences, Chi-square test was applied for obtaining significant difference between two areas studied and significant difference between two means was tested by applying “t” test as per Snedecor and Cochran (1967).

Table 1: Breeds and breeding methods adopted in milkshed and non-milkshed areas.

| Parameters/categories | Milkshed area | Non-milkshed area |
|-----------------------|---------------|-------------------|
|                       | Frequencies   | Percentage        | Frequencies | Percentage |
|                       | number        |                   | /Number     |           |
| Breeds of cow maintained by the respondents. |               |                   |             |           |
| Rathi                 | 274           | 41.89             | 164         | 26.93      |
| Non-descript          | 294           | 44.95             | 391         | 64.20      |
| Crosses of Holstein Friesian/Jersey | 86            | 13.14             | 54          | 8.87       |
| Total                 | 654           | 100               | 609         | 100        |
| $X^2 = 47.134^\text{**}$ |               |                   |             |           |

Breeding methods adopted by the respondents

|                       | Milkshed area | Non-milkshed area |
|-----------------------|---------------|-------------------|
|                       | Frequencies   | Percentage        | Frequencies | Percentage |
|                       | number        |                   | /Number     |           |
| Natural Service       | 19            | 21.11             | 69          | 76.67      |
| Artificial insemination | 29         | 32.22             | 4           | 4.44       |
| Both (Natural service and A.I.) | 42           | 46.67             | 17          | 18.89      |
| Total                 | 90            | 100               | 90          | 100        |
| $X^2 = 57.941^\text{**}$ |               |                   |             |           |

** = significant at 1.0% level.
breeding were not utilized properly in Tarikhet Block of Almora district of Uttaranchal. Yadav (1993) observed that a significantly higher (68.87%) proportion of respondents reported to natural service, while only 14.16% adopted A.I. Sharma (1993) observed that higher percentage of cattle keepers followed natural service of mating and Gandhi et al. (1998) reported that 10% of bovine population of our country was covered through A.I. The poor conception rate from A.I. under field condition is also the cause of concern, the poor animal keeper cannot afford to take the risk of an animal being empty, which would cause financial loss to him. (Table 2) indicates that bellowing, as a symptom of heat detection was known to majority (91.11% and 92.22%) of cattle owners, followed by mounting on other animal was known as symptom to 66.67% and 51.11% in milkshed and non-milkshed areas, respectively. Handa and Gill (1986), Sharma (1993) and Sharma (1996) also noticed that bellowing is the important symptoms of heat detection. (Table 3). reveals that a significantly higher percentage (54.11%) of dairy cattle owners in milkshed area get their cattle inseminated/crossed after 7-12 hours of detection of heat, whereas in non-milkshed area only 32.22% get their cattle inseminated/crossed after 7-12 hours of heat detection. It showed that in non-milkshed area cattle keepers were not aware of the fact the best time for insemination of cattle in heat is 10-12 hours after onset of heat (mid to end of estrus). All the dairy cattle owners in milkshed area, who opted A.I. as a breeding tool brought their cattle to nearby dairy cooperative society centre or veterinary dispensary/ hospital to get the cow inseminated by veterinary staff. Whereas, in non-milkshed area the farmers get their cattle inseminated only in veterinary dispensary/ hospital. Frozen semen was used for A.I. in milkshed as well as non-milkshed area. Invariably the semen of exotic bull was preferred by 20 and 10% dairy owners for A.I. of their cows in milkshed and non-milkshed areas, respectively. The operation flood

### Table 2: Major symptoms as basis for heat detection emphasized by respondents.

| Parameters/categories                  | Milkshed area | Non-milkshed area |
|---------------------------------------|---------------|-------------------|
|                                       | Frequencies   | Percentage        | Frequencies | Percentage |
| Bellowing                             |               |                   |             |            |
| Yes                                   | 82            | 91.11             | 83          | 92.22      |
| No                                    | 8             | 8.89              | 7           | 7.78       |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 0.072^{NS}$                     |               |                   |             |            |
| Frequent urination                     |               |                   |             |            |
| Yes                                   | 36            | 40.00             | 26          | 28.89      |
| No                                    | 54            | 60.00             | 64          | 71.11      |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 2.460^{NS}$                     |               |                   |             |            |
| Mounting on other animals              |               |                   |             |            |
| Yes                                   | 60            | 66.67             | 46          | 51.11      |
| No                                    | 30            | 33.33             | 44          | 48.89      |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 0.091^{NS}$                     |               |                   |             |            |
| Mucous discharge from vagina           |               |                   |             |            |
| Yes                                   | 32            | 35.55             | 19          | 21.11      |
| No                                    | 58            | 64.45             | 71          | 78.89      |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 4.623^{**}$                     |               |                   |             |            |
| Excitement and nervous symptoms        |               |                   |             |            |
| Yes                                   | 34            | 37.78             | 26          | 28.89      |
| No                                    | 56            | 62.22             | 64          | 71.11      |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 1.600^{NS}$                     |               |                   |             |            |
| All of the above 1 to 5                |               |                   |             |            |
| Yes                                   | 34            | 37.78             | 26          | 28.89      |
| No                                    | 56            | 62.22             | 64          | 71.11      |
| Total                                 | 90            | 100               | 90          | 100        |
| $X^2 = 1.600^{NS}$                     |               |                   |             |            |

* = significant at 5.0% level NS= non-significant at 5.0%level.
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Table 3: Heat detection, Insemination time, type of semen used for A.I. and usual ways of confirming pregnancy in cow by the dairy cattle keepers

| Parameters/categories                                      | Milkshed area | Non-milkshed area |
|----------------------------------------------------------|---------------|-------------------|
|                                                          | Frequencies   | Percentage        | Frequencies   | Percentage        |
| Time taken by dairy cattle owners, after heat detection for insemination |               |                   |               |                   |
| 1 to 6 hours                                             | 41            | 45.56             | 57            | 63.33             |
| 7 to 12 hours                                            | 46            | 51.11             | 29            | 32.22             |
| 13 to 18 hours                                           | 03            | 3.33              | 04            | 4.45              |
| Total                                                    | 90            | 100               | 90            | 100               |
| $X^2 = 6.608^*$                                          |               |                   |               |                   |
| Type of semen used for A.I.                             |               |                   |               |                   |
| Exotic                                                   | 18            | 20.00             | 9             | 10.00             |
| Rathi                                                    | 25            | 27.78             | 12            | 13.33             |
| Not used                                                 | 47            | 52.22             | 69            | 76.67             |
| Total                                                    | 90            | 100               | 90            | 100               |
| $X^2 = 11.78^{**}$                                       |               |                   |               |                   |
| Usual ways of confirming pregnancy in cow by the dairy cattle keepers |               |                   |               |                   |
| Observing sign of heat in the next heat cycle            | 53            | 58.89             | 38            | 42.22             |
| Pregnancy diagnosis after 2 to 3 months of insemination  | 12            | 13.33             | 08            | 8.89              |
| Observing the enlargement of abdominal cavity            | 25            | 27.78             | 44            | 48.89             |
| Total                                                    | 90            | 100               | 90            | 100               |
| $X^2 = 8.504^{*}$                                        |               |                   |               |                   |
| Extra care/precaution taken for an advanced pregnant cow. |               |                   |               |                   |
| Given more concentrates                                  | 17            | 18.89             | 14            | 15.55             |
| Do not allow to go for grazing                            | 3             | 3.33              | 5             | 5.56              |
| Do not allow to mix with other livestock                  | 9             | 10.00             | 7             | 7.78              |
| Combination of above                                     | 16            | 17.78             | 8             | 8.89              |
| Not any                                                  | 45            | 50.00             | 56            | 62.22             |
| Total                                                    | 90            | 100               | 90            | 100               |
| $X^2 = 4.905^{NS}$                                       |               |                   |               |                   |

* = significant at 5.0% level  ** = significant at 1.0% level  NS = non-significant at 5.0% level.

program had statistically significant ($P \leq 0.05$) effect on milkshed area with respect to genetic improvement of their stock. About 13.13% dairy cattle owners in milkshed area also protected go for pregnancy diagnosis after 2-3 months of insemination, whereas only 8.89% livestock keepers in non-milkshed area had preferred it. Singh et al. (2007) reported that majority of the farmers did not prefer pregnancy diagnosis. Largely dairy cattle owners of both the areas do not take any extra care of pregnant cow. However, in some cases extra ration was given to pregnant dairy cattle. No assistance of veterinary staff was taken at the time of parturition but majority of them providing bedding. These observations were in accordance with the findings of Das (1981) who reported special care needed for pregnant animals in rural areas of Mizoram, Sharma (1993) also reported that special care of pregnant animals were not taken except giving them some extra ration in Udaipur district of Rajasthan. Similarly, Rajendra and Prabhaharan (1992) reported that only 43.33% respondents gave special care during in feeding of pregnant animals in Dharmpuri district of Tamilnadu.

**CONCLUSION**

On the basis of the findings of the breeding management practices the operation flood programme had significant effect on breeds of cow maintained by the livestock keepers, breeding methods adopted, awareness in farmers to time taken after heat for insemination, and extra ration given to advanced pregnant cow. It was found that majority of the respondent were adopting the improved breeding practices but there is some gap in adoption of A.I. and pregnancy diagnosis.

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