Reproductive Performance of Buffaloes under Field Conditions in Bundi District of Rajasthan, India

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Abstract

The study was conducted during 2015-16 in Bundi district of Rajasthan to assess the reproductive performance of buffaloes. A multi-stage sampling design was used to select the 180 sample households. The selected respondent farmers were interviewed personally using a well structured and pre-tested interview schedule. The results of the study indicate poor reproductive performance of buffaloes. Further, anestrous and repeat breeding were the most prevalent reproductive disorders in buffaloes in the study area.

Keywords
Buffalo, Dairy, Reproductive performance, Production.

Introduction

Livestock plays an important role in the agricultural sector. It contributes directly and indirectly to agricultural production. It is an important source of livelihood and generates regular income to the farmer. Despite of the vital importance of livestock and dependency of farmers, the productivity is far below than the actual potential. Several factors are responsible for this low production. Reproduction is one of the most important considerations determining the profitability of dairy animal production. Efficient reproductive performance of animal is an important prerequisite for efficient livestock production. This is essential for the production of milk, as well as to provide replacement animals. The performance of dairy production system all relies on the acceptable level of reproduction. Thus, a need was felt to understand the current status of reproductive management of buffaloes in Bundi district of Rajasthan. The information obtained from this study could serve as the basis for the exploitation of genetic potential to further dairy development in this area.

Materials and Methods

The study was conducted in Bundi district of Rajasthan. A multi-stage sampling design was used to select the sample households. In first stage, all six blocks of the Bundi district namely, Bundi, Hindoli, Nainwa, K. Patan, Talera and Lakheri were selected. In second stage, three villages from each selected block were selected purposively to ensure good representation of the selected block. Thus, 18 villages from six blocks were selected.
Finally, in third stage, 180 farmers, representing ten households from each selected village, were selected. The selected respondent farmers were interviewed personally with the help of a well-structured and pre-tested interview schedule. The data, thus collected, were subjected to appropriate statistical analysis.

The reproductive problems responsible for the low productivity of buffaloes production system were identified through a pilot study. The intensity of the identified problems in the actual field situation was measured to prove their validity. The quantification of data was done by first ranking the problems based on the responses obtained from the respondents and then calculating the Rank Based Quotient (RBQ) (Sabarathnam, 1988), as follows:

\[
R.B.Q. = \frac{\sum f_i(n+1-i)}{N \times n} \times 100
\]

Wherein,
- \(f_i\) = Number of farmers reporting a particular problem under \(i^{th}\) rank
- \(N\) = Number of farmers
- \(n\) = Number of problems identified

**Results and Discussion**

**Reproductive performance**

An assessment of the reproductive performance of buffaloes in Bundi district was performed and findings are presented in table 1. The results indicate that the mean age at first service of buffalo heifers was 42 months. With this, the mean age at first calving was estimated to be 52 months. The mean estimated age at first calving observed in this study was too late as compared to acceptable level. The age at first calving in good herds was 36 to 40 months (Viswanath, 2002). This large difference might have resulted from the low level of management and poor feeding of calves and heifers at the earlier stages, which consequently had reduced growth rate and delayed puberty. The interval between calving and subsequent conception, known as service period, was widely varied in study area. An average 420 days service period was observed in study area.

It was observed that two or more services were required to conceive for majority of buffaloes. The mean of the number of services per conception required was 2.20. The calving interval in this study was observed much longer. The mean calving interval recorded was 560 days which clearly reflects evidence of poor reproduction performance of buffaloes. The longer duration of calving interval observed might be due to poor feeding and production management. The mean lactation length of 240 days was recorded. The interval between end of lactation and subsequent calving is called as dry period. An average 320 days dry period was recorded in this study.

**Breeding practices**

The results regarding various breeding practices followed by the buffalo farmers are presented in table 2. It was noticed that majority of farmers (90%) were rearing non-descript buffalo. Bidwe et al., (2009) also reported similar practices. Table 2 further indicates that bellowing and vaginal discharge were the most common symptoms observed by majority of respondent farmers for heat detection in addition to observing the frequent urination and mounting on other animal. Similar observations were also reported by Brar and Nanda (2004), Tanwar et al., (2012), Kumar et al., (2014) and Patel et al., (2014). As far as the method of breeding is concerned, majority of respondents were practicing natural service. Only 13.33 %
farmers were using artificial insemination. Yadav et al., (2009), Sinha et al., (2010), Tanwar et al., (2012) and Patel et al., (2014) also reported similar practices, supporting the present findings. This situation revealed that the dairy farmers had bred their animals with the locally available bull in their village or vicinity area.

**Table.1 Reproductive performance**

| Parameters                              | Mean reproductive performance |
|-----------------------------------------|-------------------------------|
|                                        | N    | Mean |
| Age at first service (months)           | 370  | 42.00 |
| Age at first calving (months)           | 336  | 52.00 |
| Service period (days)                   | 570  | 240.00 |
| Services per conception (No.)           | 570  | 2.20  |
| Calving interval (days)                 | 570  | 560.00 |
| Lactation length (days)                 | 570  | 240.00 |
| Dry period (days)                       | 570  | 320.00 |

**Table.2 Breeding management practices followed by farmers**

| Practices                                      | Particulars                               | Number | Percent |
|------------------------------------------------|-------------------------------------------|--------|---------|
| Types of animal                                | Descript                                  | 18     | 10.00   |
|                                                | Non-descript                              | 162    | 90.00   |
| Heat detection method                          | Vaginal discharge                         | 83     | 46.11   |
|                                                | Bellowing                                 | 97     | 53.89   |
|                                                | Vulval swelling                           | 13     | 7.22    |
|                                                | Frequent urination                        | 17     | 9.44    |
|                                                | Mounting on other animal                  | 23     | 12.78   |
|                                                | Allow other animal to mount               | 8      | 4.44    |
|                                                | Doka                                      | 11     | 6.11    |
| Method of breeding                             | Natural service                           | 156    | 86.67   |
|                                                | Artificial insemination                   | 24     | 13.33   |
| Time of insemination                           | Before 12 hours                           | 19     | 10.56   |
|                                                | within 12-18 hours                        | 92     | 51.11   |
|                                                | after 18 hours                            | 69     | 38.33   |
| Pregnancy diagnosis                            | Yes                                       | 13     | 7.22    |
|                                                | No                                        | 167    | 92.78   |
| Preventing exposure to abortifacient agents    | Yes                                       | 47     | 26.11   |
|                                                | No                                        | 133    | 73.89   |
| Drying off                                     | Yes                                       | 33     | 18.33   |
|                                                | No                                        | 147    | 81.67   |
| Record keeping                                 | Yes                                       | 29     | 16.11   |
|                                                | No                                        | 151    | 83.89   |
Table 3 Reproductive problems faced by farmers

| Problems                | Ranks | R.B.Q | Overall Rank |
|-------------------------|-------|-------|--------------|
|                         | I     | II    | III | IV | V | VI | VI |
| Anestrous               | 54    | 42    | 33  | 19 | 11| 9  | 12 |
| Silent estrus           | 37    | 33    | 29  | 28 | 14| 10 | 0.666 |
| Repeat breeding         | 46    | 38    | 32  | 34 | 13| 12 | 5  |
| Prolaps of uterus       | 21    | 28    | 31  | 32 | 24| 25 | 19 |
| Retention of placenta   | 12    | 14    | 27  | 25 | 33| 41 | 28 |
| Abortion                | 7     | 19    | 15  | 23 | 32| 38 | 46 |
| Dystocia                | 3     | 6     | 13  | 19 | 38| 41 | 60 |

Time of insemination after heat is very crucial aspect in conception; the farmers of the survey areas were inseminating their animals mainly within 12-18 hours (51.11%) of heat manifestation however 38.33% of farmers inseminating their animals after 18 hours of heat. This result was in agreement with Patel (2014), Tanwar et al., (2012) and Sabapara et al., (2010) who reported that the natural service or A.I. was performed between 12-24 hrs of heat detection by majority of respondents.

Pregnancy diagnosis after insemination is essential step for reducing calving interval at doorstep of the farmers. However, a small number (7.22%) of the farmers followed pregnancy diagnosis. These findings are similar to Patel et al., (2014), Kishore et al., (2013), Tanwar et al., (2012) and Dhiman et al., (1990). It was very interesting to know that 16.11 percent of farmers were keeping the breeding records, however, the records were not complete. Farmers were keeping records of peak milk yield, date of insemination and breed of bull or semen straw used. Patel et al., (2014) also reposted similar practice.

Thus, the overall picture about the existing breeding management practices followed by the dairy farmers was not satisfactory and this situation might definitely influence adversely the productivity of animal.

Reproductive problems

It is evident from the data in table 3 that anestrous and repeat breeding were the most prevalent reproductive disorders in buffaloes in the study area, based on RBQ which ranked first and second serious problems, respectively. The observed prevalence of reproductive disorders is similar to previously reported studies (Rabbani et al., 2010, Meena and Malik, 2009; Hedaoo et al., 2008; Agarwal et al., 2005 and Nanda et al., 2003).

Findings of the present study revealed that there was relatively high prevalence of reproductive disorders in buffaloes in study area. This might have been due to poor management practices followed by the farmers and inefficient veterinary extension services.

It is concluded that the reproductive performance of dairy buffaloes was relatively poor. The situation of breeding management practices followed by the dairy farmers was not satisfactory and this situation might definitely influence adversely the productivity of animal. Further, there was relatively high prevalence of reproductive disorders in buffaloes in study area. Thus, the government should support and focus on improving those important economic performance parameters of the buffaloes by educating farmers on improved management practices.
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