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

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A B S T R A C T

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.

Introduction

Livestock plays an important role in the agricultural sector. It contributes directly and indirectly to agricultural production. It 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 serves 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:

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

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	0.741	I
Silent estrus	37	33	29	28	29	14	10	0.666	III
Repeat breeding	46	38	32	34	13	12	5	0.725	II
Prolaps of uterus	21	28	31	32	24	25	19	0.587	IV
Retention of placenta	12	14	27	25	33	41	28	0.486	V
Abortion	7	19	15	23	32	38	46	0.435	VI
Dystocia	3	6	13	19	38	41	60	0.360	V

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 door step 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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