

## International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693  
 ISSN Online: 2617-4707  
 IJABR 2024; SP-8(1): 973-976  
[www.biochemjournal.com](http://www.biochemjournal.com)  
 Received: 23-10-2023  
 Accepted: 27-11-2023

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## Dairy performance of Sanchori cattle

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DOI: <https://doi.org/10.33545/26174693.2024.v8.i1Sm.488>

**Abstract**

To planning any breed improvement programme for dairy cattle it is pre-requisite to know the production and reproduction performance of that breed in detail. Sanchori cattle of Rajasthan have been recently registered by the ICAR-NBAGR. Data available on production and reproduction performance of this breed are scanty so present study was conducted on this breed. Survey for the present study was conducted in three districts of the Rajasthan state i.e. Jalore, Sirohi and Barmer. A total of 152 farmers, 158 gaushalas from 34 blocks were interviewed to record information on dairy performance traits using structured questionnaire. Fat and SNF% were recorded manually from randomly collected 566 Sanchori cattle milk samples using milk analyzer. First lactation daily milk yield, peak milk yield, lactation milk yield, lactation length, fat% and SNF% were reported as  $6.07 \pm 0.56$  kg,  $11.36 \pm 0.35$  kg,  $262.85 \pm 3.54$  days,  $1521.42 \pm 53.68$  kg,  $4.04 \pm 0.10\%$  and  $9.20 \pm 0.05\%$ , respectively. Overall lactation daily milk yield, peak milk yield, lactation milk yield, lactation length, fat% and SNF% were reported as  $5.93 \pm 0.11$  kg,  $11.81 \pm 0.09$  kg,  $283.61 \pm 1.10$  days,  $1755.41 \pm 13.42$  kg,  $4.07 \pm 0.02\%$  and  $9.07 \pm 0.01\%$ , respectively. Reproductive performance traits i.e. age at first oestrus, oestrous cycle duration, oestrus duration, age at first mating, age at first calving, service period and calving interval were reported as  $37.40 \pm 0.2$  months,  $21.09 \pm 0.01$  days,  $24.45 \pm 0.06$  hrs,  $42.58 \pm 0.24$  months,  $52.02 \pm 0.24$  months,  $118.35 \pm 0.88$  days and  $14.13 \pm 0.03$  months, respectively.

**Keywords:** Sanchori cattle, production and reproduction performance

**Introduction**

The total Livestock population is 535.78 million in the country showing an increase of 4.6% over previous livestock census. The total number of cattle in the country is 192.49 million in 2019 showing an increase of 0.8% over previous census. As per the 20<sup>th</sup> livestock census 2019, total milk production in country was 187.75 million tonnes and per capita availability of milk was 394 g/day in country. Rajasthan is contributing 12.6% (23.66 million tons), with 2<sup>nd</sup> rank in country, in total milk production. Per capita availability of milk was 870 g/day in Rajasthan which was more than double the national average and ranked 3<sup>rd</sup> in country. In Rajasthan, cattle contribute 37.46% to total milk production. In cattle milk production, 71.64% from indigenous/non-descript and 28.35% from exotic/cross breed (Anonymous 2019, GOI) [1]. Indigenous breeds with good milk productivity viz. Sahiwal, Gir, Rathi, Tharparkar and Kankrej are reared in Rajasthan state besides, the dual purpose breeds like Haryana, Mewati and Malvi and the good quality draught breed i.e. Nagori. Sanchori cattle population of south-west Rajasthan is adaptable to hot climatic region of Jalore, Barmer and Sirohi districts of Rajasthan. The Sanchori cattle belonging to the breeding tract lie between  $24^{\circ}64'$  to  $27^{\circ}05'$  N latitude and between  $71^{\circ}10'$  to  $73^{\circ}03'$  E longitudes in Rajasthan. The region is surrounded by Pakistan in west, by Gujrat in South, by Jaisalmer and Jodhpur districts of Rajasthan in north and by Pali district of Rajasthan in east. Detailed study of dairy performance of the Sanchori cattle is lacking. Sanchori has recently been registered as the indigenous cattle breed by the ICAR-NBAGR (2022). Conservation of such germplasm is the need of time because it is well suited in desert areas. Due to indiscriminate breeding there is no improvement in the production performance of this breed. For planning any breed improvement programme and for designing strategies for their improvement and conservation it is pre-requisite to know the production and reproduction performance of that breed in detail.



**Fig 1:** The production and reproduction performance of that breed in detail

### Material and Methods

Survey for the present study was conducted in three districts of the Rajasthan state i.e. Jalore, Sirohi and Barmer. A total of 152 farmers, 158 gaushalas from 34 blocks were interviewed to record information on dairy performance traits like daily milk yield, peak milk yield, lactation milk yield and lactation length. Animals were randomly selected in different parities on the basis of availability of Sanchori cattle at farmers' herd and gaushala. Fat and SNF% were recorded manually from randomly collected 566 Sanchori cattle milk samples in different parity using milk analyzer. Data on reproductive performance like age at first oestrus (months), oestrous cycle duration (days), oestrus duration (hrs), age at first mating (months), age at first calving (months), Service period (days) and calving interval (months) were collected by conversing with the farmers from the surveyed villages using structured questionnaire. The above data were analysed by descriptive statistics using MS-Excel (2010).

### Result and Discussion

Data received using structured a questionnaire was analysed by MS-Excel to study the production and reproduction performance.

#### A. Production performance

Dairy performance traits like daily milk yield, peak milk yield, lactation milk yield, lactation length, fat% and SNF% were reported. Data on production performance were categorized into two groups i.e. first lactation and overall lactation as presented in Table 1.

#### 1. First Lactation

Sanchori cattle was medium to high milk producer and normally give 2 to 12 kg of milk daily and the average daily milk yield was  $6.07 \pm 0.56$  kg. The peak milk yield was medium to high with average peak milk yield of  $11.36 \pm 0.35$  kg (ranges 6-16 kg). The lactation length ranged from 240 to 280 days and the average lactation length was  $262.85 \pm 3.54$  days. The lactation milk yield ranged from 1200 to 2000 kg and the average lactation milk yield was  $1521.42 \pm 53.68$  kg. Fat% was 2.9 to 5.1% and the average fat% was  $4.04 \pm 0.10$ . SNF% was 8.2 – 9.6% and the average SNF% was  $9.20 \pm 0.05\%$ .

Higher lactation milk yield than present investigation was reported by Ekka *et al.* (2014) [6] in Kankrej cattle and Hussain *et al.* (2015) [8] Choudhary *et al.* (2019) [4] in Tharparkar cattle in first lactation. The lower lactation milk yield than present investigation was reported by Kaushik (2000) [9] and Singh *et al.* (2011) [17-18] in Hariana cattle in first lactation. Lower daily milk yield than present investigation was reported by Hussain *et al.* (2015) [8] and Choudhary *et al.* (2019) [4] in Tharparkar cattle in first lactation. Higher peak milk yield than present investigation was reported by Ekka *et al.* (2014) [6] in Kankrej cattle. The higher lactation length than the present study was reported by Hussain *et al.* (2015) [8] and Choudhary *et al.* (2019) [4] in Tharparkar cattle. The lower lactation length than the present study was reported by Singh *et al.* (2011) [17-18] in Hariana cattle.

#### 2. Overall lactation

The overall daily milk yield in Sanchori cattle was reported to be ranged from 1 to 16 kg and the overall average daily milk yield was  $5.93 \pm 0.11$  kg. The higher daily milk yield than present investigation were reported by Singh *et al.* (2015) [16] in Sanchori cattle, Chand *et al.* (2011) [2] and Kishore *et al.* (2012) [10] in Tharparkar cattle. The lower daily milk yield than present study were reported by Dangi *et al.* (2013) [5] in Rathi cattle, Vohra *et al.* (2016) [19] in Belahi cattle and Singh *et al.* (2007) [15] in Gangatri cattle.

The peak milk yield was ranged from 6 to 19 kg with the average peak milk yield of  $11.81 \pm 0.09$  kg. The higher peak milk yield than the present study was reported by Gahlot *et al.* (2001) [7] in Tharparkar cattle.

The lactation length was reported to be ranged from 200 to 360 days and the average lactation length was  $283.6 \pm 1.10$  days. Almost similar lactation length than the present study was reported by Pareek *et al.* (2016) [13] in Kankrej cattle and Gahlot *et al.* (2001) [7] in Tharparkar cattle.

The lactation milk yield ranged from 800 to 2900 kg and the average lactation milk yield was  $1755.40 \pm 13.42$  kg. The higher lactation milk yield than the present study was reported by Pareek *et al.* (2016) [13] in Kankrej cattle and Choudhary *et al.* (2019) [4] in Tharparkar cattle. The lower lactation milk yield than the present finding was reported by Dangi *et al.* (2013) [5] in Rathi cattle.

The overall Fat% ranged 2.5% to 5.3% and the overall average fat% was  $4.07 \pm 0.02\%$ . The SNF% ranged 8.2 – 9.6% and the overall average SNF% was  $9.07 \pm 0.01\%$ . Almost similar fat% than the present study was reported by Patel *et al.* (2021)<sup>[14]</sup> in Dagri cattle. The higher fat% than present finding was reported by Singh *et al.* (2008) in Maland gidda cattle. Higher SNF% than the present study was reported by Patel *et al.* (2021)<sup>[14]</sup> in Dagri cattle. The lower SNF% than the present study was reported by Singh *et al.* (2008) in Maland gidda cattle.

**Table 1:** Productive performance of Sanchori cattle

Parameter	First lactation		Overall lactation	
	N	Average $\pm$ SE	N	Average $\pm$ SE
Daily milk yield (kg)	27	$6.07 \pm 0.56$	566	$5.93 \pm 0.11$
Peak milk yield (kg)	41	$11.36 \pm 0.35$	581	$11.81 \pm 0.09$
Lactation length (days)	14	$262.85 \pm 3.54$	554	$283.61 \pm 1.10$
Lactation milk yield (kg)	14	$1521.42 \pm 53.68$	554	$1755.41 \pm 13.42$
Fat%	27	$4.04 \pm 0.10$	566	$4.07 \pm 0.02$
SNF%	27	$9.20 \pm 0.05$	566	$9.07 \pm 0.01$

## B. Reproduction performance

Reproductive performance traits in terms of age at first oestrus (Months), oestrous cycle duration (Days), oestrus duration (Hrs), age at first mating (Months), age at first calving (Months), service period (Days) and calving interval (Months) were analysed and presented in Table 2.

Age at first oestrus was 25 to 52 months and average age at first oestrus was  $37.40 \pm 0.2$  months. Oestrous cycle duration was 20–26 days and average oestrous cycle duration was  $21.09 \pm 0.01$  days. Oestrus duration was from 20 to 32 hours and average oestrus duration was  $24.45 \pm 0.06$  hours. Age at first mating was from 26 to 60 months and average age at first mating was  $42.58 \pm 0.24$  months. The higher age at first mating than the present study was reported by Patel *et al.* (2021)<sup>[14]</sup> in Dagri cattle.

Age at first calving ranged 35 to 69 months and average age at first calving was  $52.02 \pm 0.24$  months. Singh *et al.* (2015)<sup>[16]</sup> in Sanchori cattle reported the lower age at first calving than the present study. The lower age at first calving than the present study was reported by Kuralkar *et al.* (2013)<sup>[11]</sup> in Deoni cattle. The higher age at first calving than the present study was reported by Chand (2011)<sup>[2]</sup>, Kishore (2012)<sup>[10]</sup> and Mishra *et al.* (2018)<sup>[12]</sup> in Tharparkar cattle.

Service period ranged 80 to 240 days and average service period was  $118.35 \pm 0.88$  days. In Sanchori cattle, Singh *et al.* (2015)<sup>[16]</sup> reported the higher service period than the present study. In Kankrej cattle, Ekka *et al.* (2014)<sup>[6]</sup> also reported higher service period. The lower service period than the present study was reported by Kuralkar *et al.* (2013)<sup>[11]</sup> in Deoni cattle.

Average calving interval was  $14.13 \pm 0.03$  months (ranges 12–19 months) in the present survey. Almost similar calving interval (14.4 month) than the present study was reported by Singh *et al.* (2015)<sup>[16]</sup> in Sanchori cattle.

**Table 2:** Reproductive performance of Sanchori cattle

S. No.	Parameter	N	Mean
1	Age at first oestrus (months)	622	$37.40 \pm 0.2$
2	Oestrous cycle duration (days)	622	$21.09 \pm 0.01$
3	Oestrus duration (hrs)	622	$24.45 \pm 0.06$
4	Age at first mating (months)	616	$42.58 \pm 0.24$
5	Age at first calving (months)	578	$52.02 \pm 0.24$
6	Service period (days)	575	$118.35 \pm 0.88$
7	Calving interval (months)	558	$14.13 \pm 0.03$

The present study specified the production and reproduction performance of recently registered breed by NBAGR Sanchori cattle in its breeding tract. The Sanchori cattle have a good milk production potential and draught power. This study will help the policy planners in the planning of breeding and conservation policies for genetic improvement of Sanchori cattle.

## Acknowledgement

The authors are thankful to Vice chancellor, Rajasthan University of Veterinary and Animal Sciences, Bikaner and Director, National Bureau of Animal Genetic Resources, Karnal for providing necessary facilities for the research and Shri Godham Mahateerth Pathmeda, Veterinary Officers of Jalore, Sirohi and Barmer for their help during the survey.

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