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Draught and reproductive performance of Sanchori male cattle

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Abstract

The total Livestock population is 535.78 million in the country showing an increase of 4.6% over livestock census. Livestock have been used in agriculture for thousands of years supplying energy for crop production in terms of draught power. Among all livestock species cattle is used predominantly for draught power. Sanchori is a recently registered dual purpose indigenous cattle breed of Rajasthan. In present study for draught performance and reproduction performance total of 67 bullock and 68 breeding bull data were recorded respectively. Sanchori bullock mostly useful in agriculture, transport and related works like ploughing, carting etc. Duration of work ranges 5 to 9 hours and average duration of work was 7.22 ± 0.13 hours. Sanchori bullock can pull 7-8 Qtl. load using cart on road. Bullock has very good fatigue score. Rectal temperature before work was 99.1°F to 101.3°F and average rectal temperature before work was $100.09 \pm 0.05^\circ \text{F}$. Rectal temperature after work was 99.7°F to 101.4°F with average of $100.56 \pm 0.04^\circ \text{F}$. Respiration rate before work was 15 to 26 times per minute with average value of 20.73 ± 0.24 times per minute. Respiration rate after work ranges 24 to 34 times per minute and average respiration rate after work was 26.40 ± 0.22 per minute. Pulse rate before work was 47 to 65 per minute with average value of 53.91 ± 0.49 times per minute. Pulse rate after work was 53 to 72 times per minute with average value of 61.58 ± 0.44 times per minute. Age at first ejaculation in male ranges 18 to 25 months with average of 20.63 ± 0.21 months as reported by the farmers. Age at first mating ranges 24 to 36 months with mean value of 28.81 ± 0.33 months. Present study indicated that Sanchori male have very good draught power and heat tolerance so easily can survive in hot climatic conditions and low input management system in Thar desert.

Keywords: Draught, sanchori male cattle, livestock

Introduction

The total livestock population is 535.78 million in the country showing an increase of 4.6% over livestock census (Anonyms 2019) [1]. Livestock have been used in agriculture for thousands of years supplying energy for crop production in terms of draught power and organic manure. But due to mechanization in agriculture, the role of animals in crop production became less relevant. But in a country like India where 78% of farmers have less than 2 ha of area for cultivation, the question whether the use of tractors and tillers are economical or not put forward the importance of draught animals in agriculture. The use of animal power is inevitable in some conditions like slushy and water logged, hilly and narrow terraced fields, where tractors and tillers are not suitable. Animal drawn vehicle are suitable for rural areas under certain circumstances viz, uneven terrain, small loads for small distances where travel time is not important (Ramaswamy, 1985) [3]. In spite of high urge for mechanization among farmers, the energy for ploughing two-thirds of the cultivated area and two-thirds of rural transport are coming from animals in India (GOI, 2008) [4]. So the role of animal traction is still proved to be vital for food security and economy of small holder farming systems in India. Animal draught power was the first supplement to human energy inputs in agriculture. The draught power of an animal depends on the species, breed, sex, size, body weight, nutrition and health, environment, training for work and terrain conditions. Cattle and buffalo are the species predominantly used in agriculture operations to pull agricultural

implements and devices, Equines, camels and elephants are also used to a certain extent. Draught animal power refers to the muscle power of draught animals used for the various tasks like pulling agricultural implements, hauling carts, giving motive power to devices such as water pumps, cane and seed crushers, and electricity generation equipment, carrying loads on the back, as pack animals, handling, dragging and stacking timber logs in forests and hauling sledges in snow-covered regions (Ramasswamy, 1994) [5]. Draught animal power is one of the 14 renewable sources of energy listed by United Nations Conference on New and Renewable sources of energy held in Nairobi in 1981, as it can be replaced by breeding and rearing in the required number. It is sustainable too, because the animals derive their energy for work from feed and fodder made available from agricultural products. Though mechanization helps to increase the agricultural production in an accelerated way, it is also associated with emission of greenhouse gases like carbon dioxide and other trace gases due to burning of fossil fuels. So on environmental view point, working animals saves natural resources, fossil fuels and prevents emission of greenhouse gases (Dikshit and BIRTHAL, 2010) [6]. Indigenous breeds with good milk productivity viz. Sahiwal, Gir, Rathi, Tharparkar and Kankrej are reared in Rajasthan state besides, the dual purpose breeds like Hariana, 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 lies between 24°64' to 27°05'N latitude and between 71°10' to 73 ° 03' E longitudes in Rajasthan were taken into present study. The region is surrounded in West by Pakistan, in South by Gujrat, in north by Jaisalmer and Jodhpur districts of Rajasthan and in east by Pali district of Rajasthan. Detailed study of draught 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 indiscriminate breeding is going mandatory pre-requisite for planning any breed improvement programme and for designing strategies for their improvement and conservation.

Materials and Methods

Survey for the present study was conducted in three districts of the Rajasthan state i.e. Jalore, Sirohi and Barmer. Draught performances like draught power, average duration of work were observed by conversing with the farmers from the surveyed villages using structured questionnaire. Respiration rate, temperature, pulse rate were measured before and after work of 67 bullocks. Reproduction trait of 68 breeding bull like age at first ejaculation and age at first mating were studied by conversing with the farmers from the surveyed villages using structured questionnaire. Data received using structured questionnaire and manual examination were analysed by MS-Excel.

Results and Discussion

Data received using structured questionnaire and manual examination were analysed to study the draught and reproduction performance of male.

Draught performance of Sanchori Bullock

Sanchori bullock was very good draught power, draught tolerance and heat tolerance and easily survives hot desert area. Sanchori bullock mostly useful in agriculture, transport

and related works like Ploughing, threshing, harrowing, carting etc. and average duration of work were from 5 to 9 hours and average duration of work 7.22 ± 0.13 hours. Sanchori bullock can pull 7-8 Q load using cart on road. (figure 1 & 2).



Fig 1: Bullock cart for transportation and loading



Fig 2: Bullock cart for transportation and loading

Bullock has very good fatigue score. Rectal temperature before work were from 99.1° F to 101.3° F and average rectal temperature before work was 100.09 ± 0.05 ° F. Rectal temperature after work were 99.7° F to 101.4° F and average rectal temperature after work was 100.56 ± 0.04 ° F. Respiration rate before work were 15 to 26 time per minutes and average respiration rate before work was 20.73 ± 0.24 time per minutes. Respiration rate after work were 24 to 34 time per minutes and average respiration rate after work was 26.40 ± 0.22 time per minutes. Pulse rate before work were 47 to 65 time per minutes and average pulse rate before work was 53.91 ± 0.49 time per minutes. Pulse rate after work were 53 to 72 time per minutes and average pulse rate after work was 61.58 ± 0.44 time per minutes (Table 1).

Higher duration of work than present study was reported by Sodhi *et al.* (2006) [7] in Kankrej cattle. Lower average duration of work than present study was reported by Sharma *et al.* (2013) [8] in Purnea cattle and Patel *et al.* (2021) [9] in Dagri cattle. Higher capacity to pull the load than present study was reported by Sodhi *et al.* (2006) [7] in Kankrej cattle. Higher rectal temperature before and after work than present study was reported by Patel *et al.* (2021) [9] in Dagri cattle. Lower pulse rate / minute before and after work than present study was reported by Patel *et al.* (2021) [9] in Dagri cattle.

Higher respiration rate / minute before and after work were reported by Patel *et al.* (2021)^[9] in Dagri cattle.

Table 1: Draught performance of Sanchori Bullock

Parameter	Average
Number	67
Average duration of work (hrs)	7.22±0.13
Rectal temperature° F (before work)	100.09±0.05
Rectal temperature° F (after work)	100.56±0.04
Respiration rate/ minutes (before work)	20.73±0.24
Respiration rate/ minutes (after work)	26.40±0.22
Pulse rate/ minutes (before work)	53.91±0.49
Pulse rate/ minutes (after work)	61.58±0.44

Reproductive performance of male

Age at first ejaculation (n = 90) were from 18 to 25 months and average age at first ejaculation was 20.63±0.21 months. Age at first mating (n = 83) were from 24 to 36 months and average age at first mating was 28.81±0.33 months (Table 2) (figure 3).



Fig 3: Sanchori Bull

Higher age at sexual maturity than present study was reported by Sharma *et al.* (2013)^[8] in Purnea cattle.

Table 2: Reproductive performance of male Sanchori cattle

Male reproductive traits		
Parameter	N	Average
Age at first ejaculation (months)	90	20.63±0.21
Age at first mating (months)	83	28.81±0.33

Conclusion

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

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