

Effect of Seasons on Nutrients Intake and Milkability of Lactating Kankrej Cows

HD Chauhan, HA Patel, Sanjay Joshi, Ashok P Patel, RB Makwana , AK Srivastava, BN Suthar, KB Prajapati, MM Pawar and SR Bhagwat

Department of Livestock Production and management
College of Veterinary Science and Animal Husbandary
Sardarkrushinagar Dantiwada Agricultural University
Sardarkrushinagar (BK) Gujarat- 385 506

(Received on 05.04.2013; Accepted on 10.04.2013)

Abstract

An experiment was conducted on 20 lactating Kankrej cows divided in four groups according to lactation number one to four and initial stage of lactation with almost same production. Highly significant ($P < 0.01$) difference was observed for let down time in cold and dry season (61.54 sec.) as compared to hot and humid season (68.13 sec.), milking time in hot and humid season (245.72 sec) as compared to cold and dry season (260.02 sec.) and milk yield/ milking in cold and dry season (4.300 Kg) as compared to hot and humid season (3.860 Kg) while, significant ($P < 0.05$) difference was observed in milk flow rate in cold and dry season (0.990Kg / minute) as compared to hot and humid season (0.950 Kg / minute).

Keywords: Milkability; Lactation; Cattle.

Corresponding author: Dr. S.R. Bhagwat, Professor & Head, Dept. of Animal Nutrition, College of Veterinary Science and Animal Husbandry, SDAU, Sardarkrushinagar – 385 506, Gujarat.
Email: shekhar.bhagwat@gmail.com.

Introduction

Milk and milk products are widely accepted source of animal protein. Milk plays a major role in economic significance in cattle and buffaloes. India has emerged as leading milk producing country in the world (FAO, 2002). Milk harvesting is an art and science as well as it is the most important aspects on a dairy farm management (Bhagat *et al.*, 1992). Full co-operation of the milch animal is required for harvesting clean and maximum milk. In flush season higher milk production is seen while reverse trend is observed in lean season. Thus, the present experiment was conducted to find out effect of season on different milking attributes in Kankrej cow.

Materials and methods

The experiment was conducted on twenty lactating Kankrej cows. Animals were divided into four groups according to number of lactation one to four (L_1 to L_4). The research work was carried out at Livestock Research Station, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar. Individual feed and water consumption was recorded by providing measured quantity of roughages, concentrate and water to each cow at fortnightly interval every month. All animals reared under semi-loose housing system and two times (Morning & Evening) milking was done with full hand milking in RCC milking parlour. All the animals were allotted routine feeding and management practices followed at Livestock Research Station. The experiment was conducted for six months. The experimental period was divided in to following seasons.

Hot and Humid season : 1st August - 2003 to 31st October - 2003

Cold and Dry season : 1st November-2003 to 31st January-2004

Let down time and milking time were recorded with use of stop watch in seconds while, milk yield was recorded by electronic weighing balance in Kilogram. Milk flow rate

(Kg/ minute) was calculated by dividing total milk yield by total milking time per cow at each milking. The data so obtained were analyzed using standard statistical methods (Snedecor and Cochran, 1994).

Results and discussion

Feed intake

The overall average daily feed intake (kg/ animal/day) recorded in T_1 , T_2 and T_3 were 12.41 ± 0.17 , 11.65 ± 0.19 and 10.64 ± 0.14 , respectively and was significantly ($P < 0.05$) higher in T_1 , T_2 and T_3 .

Water intake

The overall average water intake recorded under T_1 , T_2 and T_3 were 40.0 ± 0.23 , 36.28 ± 0.17 and 36.10 ± 0.26 litre / animal / day, respectively and the differences were statistically significant.

Let Down Time

Season-wise let down time is presented in table 1. The average let down time was observed 64.83 ± 3.5 seconds with a range from 51.75 to 86.30 seconds. It was lower than previously reported (73.19 Sec.) by Shiralkar and Dave (1975) in same breed. The difference due to season was highly significant. The let down time was reduced significantly in cold and dry season (61.54 sec.) as compared to hot and humid season (68.13 sec.) This might be due to more stress on animals in hot and humid season.

Milking Time

Milking time according to season is presented in table: 1. The average milking time was observed 252.87 ± 14.01 seconds with a range from 222.74 to 268.87 seconds. milking time was less in hot and humid season (245.72 sec) as compared to cold and dry season (260.02 sec.). The difference due to season was highly significant. The milking time recorded was lower than Gir (390 Sec.), Red Sindhi (390 Sec.)

Table: 1 Milking attributes recorded during different seasons in Kankrej cows

Season	Milking attributes			
	Let down time (Seconds)	Milking time (Seconds)	Milk yield/milking (Kilogram)	Milk flow rate (Kg/Minute)
Hot & Humid	68.13	245.72	3.860	0.950
Cold & Dry	61.54	260.02	4.300	0.990
Average	64.83 ± 3.5	252.87 ± 14.01	4.080 ± 0.41	0.970 ± 0.04
SEM	1.114	4.112	0.113	0.0131
C.D.	3.467 **	14.013 **	0.391**	0.038 *

* P < 0.05, ** P < 0.01

and Crossbred cows (270 Sec.) as reported by Thomas and Anantkrishan (1949). Normally milking time is proportional to milk yield. The Kankrej is a dual purpose breed; it produces less milk than other milch breeds (Gir and Red Sindhi etc.

Milk yield per milking

The overall average milk yield (Kg) per milking in each season was recorded 4.080 ± 0.41 (Table: 1). It was significantly higher in cold and dry season (4.300 Kg) as compared to hot and humid season (245.72). This might be due to more stress on animals in hot and humid season. It was lower than Sahiwal (7.2 Kg), Holstein Friesian (7.5 Kg) and Jersey (6.0 Kg) as reported earlier by Agarwal *et al.*, (1995); Beck *et al.*, (1951) and Blake *et al.*, (1978) respectively. This might be due to the lower yield in Kankrej as dual purpose breed, while earlier observations were taken for milch breeds.

Milk Flow Rate

The overall average milk flow rate was recorded 0.970 ± 0.04 Kg/minute.(Table: 1). It was significantly higher in cold and dry season (0.990Kg / min.) as compared to hot and humid season (0.950 Kg/ min.). It was obviously more in cold & dry season due to more milk yield in aforesaid season. It was higher than reported earlier (0.890 Kg/Min.) by Shiralkar and Dave (1971) in same breed. While, it was less than Tharparkar (1.6 Kg/Min.) and Sahiwal (1.6 Kg/

min.) as reported by Sundaresan *et al.*, (1964). Earlier workers (Bhagat *et al.*, 1992) also found significant difference in milk flow rate due to different milkers.

Conclusion

Milking attributes of lactating Kankrej cows were recorded during different seasons .The difference due to season in all parameters were found highly significant(P<0.01) except in milk flow rate (P< 0.05). This might be due to more availability of green and dry fodders in flush season and vice versa. Also in cold and dry season the animals remain more healthy and comfortable as compared to hot and humid season. There is no menace of wet conditions in house, flies etc also play important role in clean and higher milk production.

References

1. Agarwal SB, Singh B, Tomar OS and Sharma DD. A study on daily milk yield and intake of feed nutrients in bovine. *Indian J Dairy Sci.* 1995; 48(6): 395-398.
2. Beck GH, Fryer HC and Atkenson FW. Variations in the responses of cows to a standerd method of machine. *J Dairy Sci.* 1951; 34: 598-605.
3. Bhagat SS, Sastry NSR and Yadav MS. Studies on the efficiency of milker in relation to milk

- ability of Murrah buffaloes. *Indian J Anim Prod Mgmt.* 1992; 8(4): 240-245.
4. Blake RW, Mc Daniel BT and King RA. Labour and milking machine inputs to milk harvest in dairy cattle. Implications for direct selection. *J Dairy Sci.* 1978; 61: 474-488.
 5. FAO (2002). Food and Agricultural organization production year book, Food and Agricultural organization of United Nations, Rome.
 6. Shiralkar GV and Dave AD. Time studies on milking of Kankrej cows. *Indian Vet J.* 1975; 52: 593-594.
 7. Snedecor GW and Cochran WG. Statistical Methods. 8th edn. New Delhi: Oxford and IBH Publishing Co; 1994.
 8. Sundaresan D, Malik SS and Tiwari MP. Milking by machine under Indian farm conditions. *Indian J Dairy Sci.* 1964; 17: 75-82.
 9. Thomas SP and Anantkrishan CP. Investigations on machine milking. *Indian J Dairy Sci.* 1949; 2(2): 70-76.