



Effect of placement of teats of udder on bacterial quality of raw milk in cross bred cows

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ABSTRACT: The present study was undertaken on fourteen healthy crossbred cows (Jersey × Sindhi crosses) free from Mastitis were selected from herd of Sam Higginbottom Institute of Agriculture Technology and Sciences, Dairy farm, Allahabad. Cows were housed under similar management conditions. The measurements of distance between the teats on udder of cows were taken. Cows were milked by dry full hand method of milking. Two streams of fore milk from each quarter of udder were discarded before collection of samples. Milk samples were collected with respect to placement of teats on udder as $T_1 = 200$ ml milk from fore left (FL) and fore right (FR) teats, $T_2 = 200$ ml milk from FL and hind left (HL) teats of udder, $T_3 = 200$ ml milk from FR and hind right (HR) teats of udder, $T_4 = 200$ ml milk from HL and HR teats of udder, $T_5 = 200$ ml milk from FL and HR teats of udder, $T_6 = 200$ ml milk from FR and HL teats of udder. The study revealed that the distance between teats on udder as placement was significantly different in cows. The placement of fore left and fore right teats, fore right and hind left and fore left and hind right was at par but significantly more than placement of fore right and hind left, hind left and hind right, fore left and hind left. Milk samples were analyzed for determination of standard plate count, lactic acid bacterial count, proteolytic bacterial count, lipolytic bacterial count and coliforms in raw milk. The placement of teats had a significant effect on SPC which was significantly less in milk obtained from placement of fore right-hind left and hind left-hind right teats. The placement of teats had no significant effect on lactic acid bacterial count, proteolytic bacterial count, lipolytic bacterial count.

KEY WORDS: Placement of teats, Bacterial quality, Fore left, Fore right, Hind left and hind right

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INTRODUCTION

Relationship between the measurements of mammary system and milk yield is an important tool in selecting dairy cow particularly in the small livestock holding units, where the production records are not available. In the absence of complete and correct production records, cow may be judged on the

basis of physical parameters because the breeders assumed a close positive relationship between external forms and production of cows (Vijaykumar and Prasad, 1989). The size and placement of teats may be judged more accurately than the future development of the udder. The size, shape and placement of teats differ in different animals. If there exists a high degree of correlation between these external features of teats and milk production, it would be convenient to select cows of good producing ability. With this in view, the present experiment was planned.

MATERIALS AND METHODS

Fourteen healthy cross bred cows free from mastitis were selected from herd of Sam Higginbottom Institute of Agriculture Technology and Sciences Dairy farm, Allahabad. Cows were housed in tail to tail barn and under similar management condition. As a measure of cleanliness hair on the udder and flanks were clipped. The measurement of distance between the teats *viz.*, fore left (FL)- fore right (FR)

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Table 1 : Mean values of bacterial counts vs placement of teats on udder

Parameters	Placement of teats					
	T ₁ (FL-FR) 10.29 cm.	T ₂ (FL-HL) 7.34 cm.	T ₃ (FR-HR) 7.31 cm.	T ₄ (HL-HR) 6.69 cm.	T ₅ (FL-HR) 10.86cm.	T ₆ (FR-HL) 11.18 cm.
SPC (10 ⁴)/ml	125.19 ^{ab}	111.13 ^{abc}	126.43 ^{ab}	107.49 ^{bc}	127.25 ^a	104.71 ^c
LABC (10 ³)/ml	15.68 ^a	16.32 ^a	20.63 ^a	21.39 ^a	18.95 ^a	18.04 ^a
PBC (10 ³)/ml	27.09 ^a	23.84 ^a	23.88 ^a	21.13 ^a	23.61 ^a	24.11 ^a
LBC (10 ²)/ml	11.50 ^a	13.93 ^a	8.54 ^a	10.96 ^a	10.68 ^a	10.46 ^a

Note- similar alphabets on values indicate no significant differences between values within the column

teats, fore left (FL)- hind left (HL) teats, fore right (FR)- hind right (HR) teats, HL-HR, FL-HR, and FR-HL were recorded. Sanitary precautions like grooming of cows one hour before milking, washing of udder and teats, wiping teats with 2 per cent Dettol solution, dry clean utensils, tying tail with leg before milking were taken. Cows were milked by dry full hand method of milking. Two streams of fore milk from each quarter of udder were discarded before collection of milk samples in sterilized conical flask of 250 ml capacity. The samples were analysed for determination of standard plate count (SPC), lactic acid bacterial count (LABC), proteolytic bacterial count (PBC), lipolytic bacterial count (LBC) and coliforms. Samples were collected with respect to placement of teats as treatments (T) viz., T₁ (FL-FR), T₂ (FL-HL), T₃ (FR-HR), T₄ (HL-HR), T₅ (FL-HR) and T₆ (FR-HL). The data were subjected to analysis of variance as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Mean values of placement of teats (distance between teats) on udder and bacterial counts in milk are given in Table 1. Mean distance between placement of fore left (FL)-fore right (FR), FL and hind left (HL), FR-hind right (HR) HL-HR FL-HR FR-HL was 10.29, 7.34, 7.31, 6.69, 10.86 and 11.18 cm, respectively. The differences in the placement of teats on the udder of cows were significant. The distance in T₁, T₅, T₆ was significantly more than observed in T₂, T₃, T₄. The differences in the placement of teat between T₂, T₃, T₄ were not significant. Similarly the placement of teats between T₁, T₅, T₆ were also not significant. These results are in line with the reports of Sadhukhan and Prasad (2002).

Placement of teats vs bacterial quality:

Lowest mean SPC/ml (10⁴) was recorded in milk from teats pertaining to placement in T₆ (104.71) followed by T₄ (107.49), T₂ (111.13), T₁ (125.19), T₃ (126.43) and T₅ (127.25). Differences in SPC due to placement of teats were significant. SPC in milk from T₅ placement compared to T₄ and T₆ and SPC in T₃ compared to T₆ was significantly more. The results with regard to average values of SPC in fresh raw milk are in agreement with Tyagi and Prasad (1987), Singh and Prasad (1987) and Neeraj and Prasad (1990).

Lowest mean LABC/ml (10³) in milk from teats pertaining to placement was recorded in T₁ (15.68) followed by T₂ (16.32), T₆ (18.04), T₅ (18.95), T₃ (20.63) and T₄ (21.39). The differences in these were not significant. Nevertheless the population densities of lactic acid bacteria in aseptically drawn milk observed in the present study tally with the results of Pandey and Prasad (1991) and Dey and Prasad (1991).

Lowest mean PBC/ml (10²) in milk from teats pertaining to placement was recorded in T₄ (21.13) followed by T₅ (23.61), T₂ (23.84), T₃ (23.88), T₆ (24.11) and T₁ (27.09). The differences in these values of PBC were not significant indicating there by no significant effect of teat placements on these bacteria in milk. These results are in agreement with Pandey and Prasad (1991), Shadhukhan and Prasad (2002).

Lowest mean LBC/ml (10²) in milk from teats pertaining to placement was recorded in T₃ (8.54) followed by T₆ (10.46), T₅ (10.68), T₄ (10.96), T₁ (11.50) and T₂ (13.93). The differences in these values of LBC were also not significant which showed effect of placement of teats on LBC in milk. Average values of lipolytic bacteria in aseptically drawn raw milk observed in the present study are agreement with Dey and Prasad (1991).

Coliforms were determined in raw milk directly obtained from teats of the cows but their presence was not found in aseptically drawn milk samples

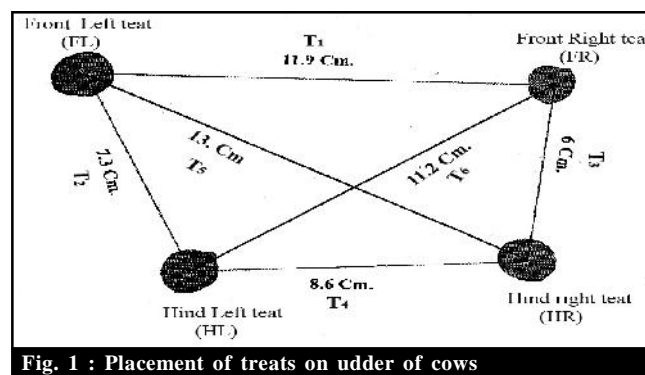


Fig. 1 : Placement of teats on udder of cows

Conclusion:

The study revealed that the placements of teats on udder of cows was significantly different. The placement of fore left

and fore right teats, fore right and hind left and fore left and hind right was at par but significantly more than placement of fore right and hind left, hind left and hind right, fore left and hind left. The placement of teats had a significant effect on SPC which was significantly less in milk obtained from fore right-hind left teats and hind left-hind right teats. The placement of teats had no significant effect on lactic acid bacteria count, proteolytic bacterial count and lipolytic bacterial count in milk.

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