

Effect of stage of lactation on pre and post milking udder, teat and milk vein characteristics in gaolao cattle

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ABSTRACT

An experiment was conducted to estimate the pre- and post- udder characteristics like udder length, udder width, udder depth, teat characters like length. The animals were selected on the basis of lactation number and stage of lactation. Lactation A includes animals 1 to 3 lactation and lactation B animal includes above 3 lactation numbers. Animals were divided in to three stages according to stage of lactation as early lactating, mid lactating and late lactating as up to 90 days (S_1), from 91 to 180 days (S_2) and above 181 days (S_3) respectively. It was observed that, the highest udder length (35.250 cm) was recorded in early stage (S_1) which gradually declined to 33.670 cm in S_2 and 32.475 in S_3 stage. Thus the result indicated that udder measurements would decrease with the advancement of lactation

KEY WORDS : Lactation, Teat, Udder, Gaolao.

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INTRODUCTION

Indian cattle breeds are described on the basis of colour, shape, body size, horn but very little information is available on udder characteristics. In India systematic data on type and confirmation on teat and udder is not available for different breeds. Stage of lactation is one of the most effective factors which is responsible for production traits of the milking animals.

MATERIALS AND METHODS

Sixty animals were selected at Government Cattle Breeding Farm, Hitikundi, Dist. Wardha, on the basis of lactation number and stage of lactation. Lactation A included animals 1 to 3 lactation and lactation B animal included above 3 lactation numbers. Animals were divided in to three stages according to stage of lactation as early lactating, mid lactating and late lactating as up to 90 days,

from 91 to 180 days and above 181 days, respectively.

Udder measurements was taken as per Saxena (1973 a and b). Udder length was measured with a cloth tape from rear attachment of the udder to front of udder along with sole, where fore udder blends smoothly with the body. Udder width was measured with a cloth tape as a distance between two lateral lines of attachment of the udder to the abdominal wall beneath the flank. The udder depth was obtained by taking difference of distance from barn floor to the base of udder and distance from barn floor to the lowest point of udder where teats are attached. Teat length was measured from its basal attachment to opening of teat. Teat diameter was measured at mid point of teat by vernier caliper. Teat distance between front rear and lateral was taken from base of one teat to base of another teat. The milk vein length was taken from udder where it is attached to the heart region till it is prominent and milk vein diameter was measured with help of vernier caliper.

RESULTS AND DISCUSSION

From Table 1 it is clear that udder measurements were significantly influenced by stage of lactation. The highest udder length (35.250 cm) was recorded in early stage (S_1) which gradually declined to 33.670 cm in S_2 and 32.475 in S_3 stage. Similar trend was noticed in a

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Table 1 : Mean values of pre milking udder characteristics (cm) as affected by stage of lactation

Sr. No.	Parameters	S ₁ (upto 90 days)	S ₂ (90-180 days)	S ₃ (above 181 days)	SE (m)±	CD at 5%
A. Udder measurements						
1.	Udder length	35.250 ^a	33.670 ^b	32.475 ^c	0.317	0.904
2.	Udder width	24.095 ^a	24.100 ^a	22.475 ^b	0.452	1.288
3.	Udder depth	7.405 ^a	6.665 ^b	6.215 ^c	0.148	0.423
4.	Udder circumference	36.500 ^a	38.650 ^b	37.475 ^{ab}	0.434	1.236
B. Teat characters						
5.	Fore teat length	6.865	7.020	7.165	0.118	NS
6.	Rear teat length	4.185 ^a	4.845 ^b	4.925 ^b	0.095	0.272
7.	Fore teat diameter	2.495 ^a	2.603 ^b	2.388 ^c	0.030	0.086
8.	Rear teat diameter	1.840	1.826	1.870	0.031	NS
9.	Fore teat distance	7.235 ^a	8.185 ^b	8.210 ^b	0.104	0.296
10.	Rear teat distance	6.805 ^a	7.320 ^b	6.375 ^c	0.087	0.250
C. Milk vein characters						
11.	Length	35.175	34.775	35.800	0.346	NS
12.	Diameter	2.482 ^a	2.341 ^b	2.443 ^a	0.020	0.058

Means with different superscript in same row differ significantly

udder width and udder depth. With regards to teat characters it was observed that fore teat length did not differ significantly between stages of lactation. However, fore teat diameter and distance was significantly more during S₂ stage as compared to S₁ stage. Whereas teat diameter decreased significantly from S₂ (2.603 cm) to S₃ (2.388 cm), while difference in fore teat distance between S₂ and S₃ stage was not significant. On their hand, rear teat length noted in S₁ (4.185 cm) was significantly lower than the length of 4.845 cm in S₂ and 4.925 cm in S₃ stage of lactation. The difference between S₂ and S₃ was non-significant. Similarly rear teat diameter did not differ

significantly between stages of lactation. However, rear teat distance was significantly lower in S₁ and S₃ stage as compared to S₂ stage. In respect of milk vein characters, the results revealed that stage of lactation had not influenced significantly the milk vein length. However, milk vein diameter was significantly lower (2.341) in S₂ stage as compared to S₁ (2.482 cm) and S₃ (2.443 cm) stage.

The post milking udder characters (Table 2) were significantly affected by stage of lactation. The udder length, width and depth showed a significant decrease with the advancement of lactation. The udder length of 31.050 cm in first stage decreased to 29.175 in second stages

Table 2 : Mean values of post milking udder characteristics (cm) as affected by stage of lactation

Sr. No.	Parameters	S ₁ (0 to 90 days)	S ₂ (90-180 days)	S ₃ (above 181 days)	SE(m)±	CD at 5%
A. Udder measurements						
1.	Udder length	31.050 ^a	29.175 ^b	28.050 ^c	0.385	1.099
2.	Udder width	20.970 ^a	21.162 ^a	19.125 ^b	0.307	0.875
3.	Udder depth	6.820 ^a	6.230 ^b	5.800 ^c	0.129	0.370
B. Teat characters						
4.	Fore teat length	5.885	6.110	6.270	0.132	NS
5.	Rear teat length	3.040 ^a	3.600 ^b	3.735 ^b	0.085	0.244
6.	Fore teat diameter	1.867 ^a	1.126 ^b	1.931 ^a	0.028	0.081
7.	Rear teat diameter	1.415	1.397	1.397	0.030	NS
8.	Fore teat distance	6.750 ^a	7.885 ^b	7.685 ^b	0.089	0.254
9.	Rear teat distance	6.305 ^a	6.450 ^a	5.580 ^b	0.079	0.226
C. Milk vein characters						
10.	Length	35.175	34.925	35.800	0.349	NS
11.	Diameter	2.080 ^a	1.950 ^b	2.050 ^b	0.028	0.081

Means with different superscript in same row differed significantly

and 28.050 in S_3 stage. While udder width was similar in S_1 and S_2 (20.970 to 21.162 cm) stages which was reduced to 19.125 cm in S_3 stage of lactation. The depth of udder was 6.820, 6.230 and 5.800 cm in S_1 , S_2 and S_3 stage, respectively, the difference being significant. Post milking fore teat length and rear teat diameter were influenced significantly by stage of lactation. Fore teat diameter was significantly lower (1.126 cm) in S_2 stage than that of S_1 (1.867 cm) in S_3 (1.931 cm) while S_1 and S_3 were at par. Fore teat distance was significantly lower in S_1 stage as compared to S_2 and S_3 stage of lactation. Post milking rear teat length was significantly lower in S_1 (3.040 cm) than that of S_2 (3.600 cm) and S_3 (3.735 cm) stage of lactation. The difference between S_2 and S_3 was non-significant. Similarly post milking rear teat distance was significantly lower in S_3 over S_1 and S_2 stages. Moreover, post milking milk vein length did not indicate significant difference between stages of lactation. However, milk vein diameter was significantly lower (1.950 cm) in S_2 stage than that of S_1 (2.080 cm) and S_3 (2.050 cm) stage of lactation.

Thus, the result indicated that udder measurements would decrease with the advancement of lactation. This trend appears obvious as maximum milk production is obtained up to 180 days of lactation and thereafter production starts declining. Baruah *et al.* (1991) also

reported greater udder measurements in early lactation. The pre milking teat characters also exhibited that teat measurements would be minimum in S_1 stage which would reach to maximum in S_2 stage and would again decrease in S_3 stage and would again decrease in S_3 stage of lactation. Sekerden (2001) also observed variation in teat measurement according to stage of lactation which support to the present values. In post milking udder characteristics, a definite trend not emerged out with regard to effect of lactation stage on post milking udder characters.

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