Studies on Udder Measurement Traits in Surti Buffaloes

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ABSTRACT

Data pertaining to udder measurement traits, test day and 100 days milk yield of 51 Surti buffaloes were recorded. The overall least square means for like udder length, udder width, udder depth, teat length front, teat length rear, teat circumferences front, teat circumferences rear, teat distance front, teat distance lateral, teat distance rear, test day and 100 days milk yield were 45.0±0.7, 49.4±1.4, 9.4±0.5, 6.9±0.3, 7.7±0.4, 8.1±0.4, 9.4±0.3, 16.4±0.7, 9.6±0.3 (cm), 5.0±0.3 (kg) and 523.2±43.1 (kg) respectively. Test day and 100 days milk yield increase up to 3rd lactation. Stage of lactation had significant effect on test days and 100 day milk yield while, non-significant on udder measurement traits udder length, udder width, rear teat circumferences and lateral teat distance were significant on lactation order. The correlation and regression among test day and 100 day milk yield with udder length, udder width and udder depth were positive and non-significant.

Key words: - Surti Buffaloes, udder legth,udder width,udder depth,tit legth and milk yield.

Animal is desirable only if it can achieve a high level of milk production and maintain that level throughout long life. The high milk production is expected to bring improvement in udder and teat characteristics, which can be utilized, for identification of high producing animals. Limited work on mammary system traits of Surti buffaloes has been reported and therefore, the present investigation was undertaken to estimate the measurement of certain udder characteristics and their relationships with milk production.

MATERIALS AND METHOD

The research data were collected on 51 lactating buffaloes maintained at Livestock Research Station, Vallabhnagar, MPUAT, Udaipur (Raj.). Data were classified according to lactation order (1st to 5th) and stage of lactation i.e. early (up to 7th week) mid (7-14 week) late (above 14th week). The data on various udder and teat characteristics like udder length (UL), udder width (UW), udder depth (UD), teat length (TL), teat circumference (TC) and teat distance (TD); shape of udder, teat and tip of teats were collected at 7th, 14th and 21st week of lactation. The first 100-day milk yield (100DMY) and test day milk yield (TDMY) were also recorded. Test day milk yield was computed as the mean of three consecutive days milk production. The least squares and maximum likelihood computer program of Harvey (1990) was use to analyze the data. Association in terms of regression and correlation between udder and teat characteristics with test day and 100 days milk yield was computed by standard statistics production (Snedecor and Cochran, 1968).

RESULTS AND DISCUSSION

A progressive increase in udder length (UL), udder width (UW), udder depth (UD), teat length (TL), teat circumferences (TC) and teat distance (TD) were observed up to 3rd lactation whereas, udder length, udder width, teat circumferences rear and front teat were significantly affected by the lactation order. Saini and Gill (1988) also reported progressive and significant increase in udder length and udder width in Murrah buffaloes. The udder length and udder width and teat distance traits were higher in early stage of lactation, whereas, udder depth and teat length front, were higher at mid stage of lactation. The effect of stage of lactation on under measurement traits was non-significant. Redekar et al (2003) also reported similar findings for Pandharpuri buffaloes. Rear teat length and circumference were higher in diameter than that of front teat length and circumference, a finding in agreement with the reports of Saini and Gill (1988). The distance between the front teat was almost twice than the distance between the rear and lateral teats. These results are in agreement with those reported by Sindhu (1974), Gotsiridge and Saakova (1980) and Saini and Gill (1988). The correlation of distance between front, rear and lateral teats were positive with TDMY & 100MY. The distance between teats plays an important role in determining the milk production of cattle and buffaloes (Singh and Bhatnagar, 1977).The test day and 100 day's milk yields also increase up to 3rd lactation. The stage of lactation had significant effect on TDMY and 100DMY. Buffaloes in early stage of lactation produce higher milk than that of buffaloes in mid or late stage of lactation. Sekerden (2001) had also observed similar findings for Black pied cow. The results shows that the effects of udder shape, teat shape and teat tips on TDMY and 100 DMY was non-significant, however buffaloes of bowl shape udder with cylindrical teats gave higher milk at test and 100 days as compare to the buffaloes of round/ flat shape udder with funnel teat (table 1).

Table 1 Least Square means for udder measurement traits, test day and 100 days milk yield of Surti buffaloes

Parameters	N	Udder Length (cm)	Udder Width (cm)	Udder Depth (cm)	Teat Length (cm)		Teat Circumferences (cm)		Teat Distance (cm)			TDMY (kg)	100MY (kg)
					Front	Rear	Front	Rear	Front	Lateral	Rear		
μ	51	45.0±0.7	49.4±1.4	9.4±0.5	6.9±0.3	7.7±0.4	8.1±0.4	9.4±0.3	16.4±0.7	9.6±0.4	9.6±0.3	5.0±0.3	523.2±43.1
Stage of Lactation													
1. Early	17	46.4±1.0	51.1±1.8	9.1±0.7	6.7±0.3	7.6±0.5	8.3±0.6	9.0±0.4	17.6±0.9	10.4±0.5**	10.1±0.4	6.1±0.3**	638.0±56.6**
2. Mid	14	44.5±1.0	48.5±1.9	9.5±0.7	7.0±0.4	7.7±0.6	8.2±0.6	9.7±0.4	16.3±1.0	9.6±0.6**	9.4±0.4	4.9±0.3**	500.4±59.3**
3. Late	20	44.0±1.0	48.5±1.9	9.6±0.7	7.0±0.3	7.8±0.6	7.8±0.6	9.6±0.4	15.2±1.0	8.7±0.5**	9.4±0.4	3.8±0.3**	431.2±57.7**
Udder Shape													
1. Bowl	25	45.1±0.7	48.8±1.3	9.1±0.5	6.7±0.2	8.3±0.4	7.6±0.4**	9.1±0.3	16.8±1.0	9.1±0.4	9.1±0.3	4.7±0.2	475.8±40.0
2. Round	22	46.1±0.9	48.5±1.6	9.5±0.6	7.0±0.3	7.7±0.5	9.2±0.5**	9.2±0.3	16.3±0.8	9.9±0.5	9.8±0.3	5.2±0.3	559.3±51.3
3. Flat	4	43.8±1.6	50.7±3.1	9.6±1.2	7.1±0.6	7.1±0.9	7.5±0.9**	9.9±0.6	16.0±1.6	9.7±0.9	9.8±0.6	5.0±0.6	534.5±96.2
Teat Shape													
1.Cylindrical	39	44.6±0.7	48.6±1.4	9.6±0.5	6.7±0.3	7.5±0.4	7.9±0.4	9.1±0.3	16.0±0.7	9.2±0.4	9.6±0.3	4.9±0.2	538.1±43.5
2. Funnel	12	45.3±1.0	50.1±1.9	9.2±0.7	7.1±0.4	7.9±0.6	8.3±0.6	9.7±0.4	16.8±1.0	9.9±0.6	9.6±0.4	5.0±0.3	508.2±59.1
Teat of tip													
1. Round	8	42.2±1.1	48.9±2.1	9.8±0.8	6.7±0.4	7.0±0.6	7.6±0.7	9.3±0.4	17.9±1.1**	9.1±0.6	9.3±0.4	5.1±0.4	509.5±65.9
2. Pointed	7	45.0±1.3	51.0±2.4	9.7±0.9	6.9±0.4	7.6±0.7	8.3±0.7	9.2±0.5	16.4±1.2**	10.5±0.7	10.1±0.5	5.3±0.4	566.7±74.8
3. Concave	36	44.7±0.7	48.1±1.4	8.8±0.6	7.1±0.3	8.5±0.4	8.5±0.4	9.7±0.3	14.9±0.7**	9.1±0.4	9.4±0.3	4.5±0.3	493.3±44.3
Lactation Order													
1	17	42.2±0.8**	44.2±1.5**	8.6±0.6	6.5±0.3	6.8±0.5	7.7±0.5	9.1±0.3**	15.3±0.8	8.3±0.4**	9.5±0.3	4.1±0.3**	438.9±47.6
2	11	43.4±1.2**	48.6±2.2**	9.4±0.9	6.6±0.4	7.4±0.7	7.9±0.7	9.5±0.5**	16.7±1.1	9.1±0.7**	9.5±0.5	5.2±0.4**	498.1±68.9
3	6	48.1±1.4**	51.3±2.7**	10.5±1.1	8.6±0.5	8.9±0.8	8.8±0.8	10.3±0.6**	17.2±1.4	10.7±0.8**	10.5±0.6	5.7±0.5**	606.7±84.2
4	7	48.8±1.2**	52.1±2.4**	9.8±0.9	6.7±0.4	8.4±0.7	8.2±0.7	10.0±0.5**	14.5±1.2	1.04±0.7**	9.8±0.5	5.6±0.4**	545.6±73.6
5	10	45.4±1.2**	50.5±2.3**	8.7±0.9	6.1±0.4	6.9±0.7	7.9±0.7	8.2±0.5**	16.3±1.2	9.4±0.7**	8.8±0.5	4.1±0.4**	526.5±72.7

The lactation order had significant effect on TDMY, while non- significant on 100 DMY. The length of udder played an important role than the udder width as indicated by the analysis of variance and positive correlation of 100 day and test day milk yield with udder length and width. The reverse of it has been reported in Cattle (Singh and Bhatnagar, 1977).Regression coefficients revealed that the 100 day milk yield and test day milk yield would be expected to increase by 13.90 kg and 100 g, respectively, for every 1cm increase in udder length. Saini and Gill (1988) reported an increase of 93 gm in TDMY with one-cm increase in udder length. Similarly per unit increase in udder width resulted in an increase of 4.84 kg in 100 day milk yield and 50 gm in test day milk yield. Regression coefficients were negative for rear teat length front and rear teat circumference with TDMY and 100DMY. The correlation's among TDMY and 100DMYwith udder measurement traits under study were positive and non-significant whereas, rear teat length with TDMY and rear teat circumference with 100 DMY had negative correlation in Surti buffaloes (Table 3).

The distribution of buffalo's (%) with respect to stage of lactation, udder and teat shapes with teat tips are presented in table 2.

Table 2: Distribution of buffaloes according to stages of lactation, types of udder, teat and tips of teat

Parameters	Per cent
Stage of Lactation	
1. Early	33.33
2. Mid	27.45
3. Late	39.22
Udder Shape	
1. Bowl	49.02
2. Round	43.14
3. Flat	07.84
Teat Shape	
1. Cylindrical	76.47
2. Funnel	23.53
Teat of Tips	
1. Round	15.69
2. Pointed	13.72
3. Concave	70.59

The majority of Surti buffaloes had bowl and round udder, cylindrical teat with round / pointed teat tips. The buffaloes having funnel shaped teat had significantly lower incidence of mastitis as compared to the animal with cylindrical teats.

It may be concluded that buffaloes having higher udder length, udder depth bowl shaped udder, cylindrical teats, round teat tips prominent milk vain and soft udder texture apparently showed better performance.

Table 3 Correlation and regression of 100-day milk yield and test day milk yield different udder and teat measurements in lactating buffaloes

Parameter	Correlation		Regression	
	100MY	TDMY	100MY	TDMY
UL (cm)	0.39	0.38	13.90±8.47	0.10±0.06
UW (cm)	0.34	0.40	4.84±5.78	0.05±0.04
UD (cm)	0.14	0.13	5.02±13.37	0.07±0.09
TLF (cm)	0.18	0.03	46.95±27.09	0.04±0.19
TLR (cm)	0.3	-0.02	-8.81±17.66	-0.06±0.12
TCF (cm)	0.5	0.02	-1.48±16.24	-0.06±0.11
TCR (cm)	-.08	0.03	-32.19±22.19	-0.05±0.15
TDF (cm)	0.27	0.39	2.07±10.64	-0.02±0.07
TDL (cm)	0.16	0.37	-6.71±15.36	0.10±0.11
TDR (cm)	0.28	0.37	2.83±21.96	0.03±0.15
TDMY (kg)	0.62	-	-	-

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