

STUDIES ON THE TEMPERAMENT OF MURRAH BUFFALOES WITH VARIOUS UDDER AND TEAT SHAPES AND ITS EFFECT ON MILK YIELD

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ABSTRACT

A total of 200 buffaloes were utilized to study the temperament in Murrah buffaloes with various udder and teat shapes and its effect on the milk yield. Majority of the buffaloes with all udder shapes and with conical, pear-, cylindrical and funnel-shaped teats were with docile temperament. Slightly restless and restless temperaments were more frequent in buffaloes with bottle-shaped teats. However, there was no significant variation in the frequencies of buffaloes with different temperament scores among various udder teat shape categories. There were no significant differences among the temperament groups for various udder and teat measurements studied. The average milk yield in docile, slightly restless, restless, aggressive and nervous categories were 6.70 ± 0.15 , 6.50 ± 0.34 , 5.70 ± 0.26 , 4.90 ± 0.30 and 4.60 ± 0.34 kg, respectively. It may be concluded that udder and teat morphology has no influence on the temperament but that temperament has an influence on milk yield and so buffaloes with docile temperament must be preferred for use in breeding programmes.

Keywords: temperament, udder shape, teat shape, Murrah buffaloes

INTRODUCTION

Temperament of buffaloes is important from the management point of view, and it also plays a role in influencing the milk yield. There were many studies on the temperament of cows but literature on temperament of buffaloes is very scant. Similarly, there are very few studies on the udder and teat morphology of buffaloes. Hence, the present study was taken up to understand the temperament of Murrah buffaloes in relation to udder and teat morphology and its effect on milk yield under rural conditions of India.

MATERIALS AND METHODS

The study was carried out in the Krishna and West Godavari districts of Andhra Pradesh. A total of 200 Murrah buffaloes were utilized for the study.

Description of Temperament Score

Subjective scoring was done on a 1-5 scale by the investigator through visual assessment of the animal's reactivity during milking. Buffaloes were classified into five categories based on the

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milking temperament as docile (1), slightly restless (2), restless (3), aggressive (4) and nervous (5), respectively as per Tulloh (1961) and (Dogra 2002). The particulars observed for recording the temperament score of Murrah buffaloes are presented in Table 1.

Statistical analysis

Simple tabular technique of analysis using statistical tools such as frequencies and percentages was used to present the prevalence of various temperaments and udder and teat shapes in Murrah buffaloes. The chi-square test of contingency was used to study if there is any significant variation in the temperament of buffaloes according to the udder and teat shapes (that is to test if the frequency of animals with different temperament scores vary significantly among the udder and teat shape categories).

To test the significance of variation in milk yield among different temperament groups, analysis of variance with temperament as the source of variation was used (F- test). The means were compared for the significant difference ($P < 0.05$) using Duncan's multiple range test. The data obtained on various udder and teat parameters and milk yield were analyzed using an SPSS statistical package (version 15.0.1).

RESULTS AND DISCUSSION

Temperament in relation to udder and teat morphology

It was observed from the study that majority of the buffaloes with all udder shapes belonged to the docile category. The numbers of buffaloes in the nervous category were very few, indicating the attitude of the farmers and also the farm

manager preferring animals with calm behaviour. It was further observed through chi-square test of contingency that there was no significant variation in the frequencies of animals with different temperament scores among different udder shape categories (Table 2).

Regarding the teat shape, majority of animals with conical-, pear-, cylindrical and funnel-shaped teats were of docile temperament. In the case of the bottle-shaped teat category, maximum percentage of buffaloes were in slightly restless and restless categories of temperament with no animals in the nervous group. However, the chi-square test of contingency revealed that there was no significant variation in the frequencies of animals with different temperament scores among various teat shape categories (Table 3).

Thus, it may be understood that temperament is not influenced by udder and teat shapes of buffaloes.

Regarding the mean udder measurements, udder width was lowest in docile buffaloes (49.16 ± 0.43 cm) followed by those in the nervous, aggressive, slightly restless and restless categories. The udder length was also lowest in docile buffaloes followed by those in the nervous, aggressive, restless and slightly restless categories. The udder depth was lowest in slightly restless animals (15.45 ± 0.23 cm) followed by buffaloes in the docile, nervous, restless and aggressive categories (Table 5). The average teat length and diameter were lowest in slightly restless animals (Table 6). However, in view of the non-significant differences among the temperament groups for the various udder and teat measurements studied, udder and teat dimensions did not appear to influence the temperament in Murrah buffaloes. Lack of literature on these aspects necessitates further studies in this regard to find out if there is any relationship between the

Table 1. Particulars observed for recording the temperament score in Murrah buffaloes during milking.

Particulars	Class	Score
Very quiet; never gives any trouble, extremely docile during milking and preparation, the “ideal” milker	Docile	1
Stands quietly, not bothered by preparation or milking, but may move frequently, shifting weight from side to side, may flick tail occasionally, gives very little trouble.	Slightly restless	2
Generally quiet, but moves around a lot; may lift feet occasionally during preparation or milking, but does not kick, flicks tail frequently or appears restless occasionally.	Restless	3
Appears very restless during preparation or milking; kicks at handler occasionally; steps from side to side a great deal; quivers when a hand is placed on her.	Aggressive	4
Appears very restless during preparation or milking , kicks the handler and struggles violently, occasionally, quivers when hand is placed over the back	Nervous	5

Table 2. Frequency and percentage of different temperament scores in Murrah buffaloes with different udder shapes.

Udder Shape	Temperament (Score)					Total
	Docile (1)	Slightly restless (2)	Restless (3)	Aggressive (4)	Nervous (5)	
Bowl	59 (48.36%)	25 (20.49%)	19 (15.57%)	13 (10.65%)	6 (4.91%)	122
Globular	26 (76.47%)	1 (2.94)	5 (14.70%)	1 (2.94%)	1 (2.94%)	34
Goaty	13 (72.22%)	0 (0.00%)	2 (11.11%)	2 (11.11%)	1 (5.55%)	18
Pendulous	9 (34.61%)	6 (23.07%)	5 (19.23%)	3 (11.53%)	3 (11.53%)	26
overall	107 (53.50%)	32 (16.00%)	31 (15.50%)	19 (9.50%)	11 (5.50%)	200

Table 3. Frequency and percentage of different temperament scores in Murrah buffaloes with different teat shapes.

Teat shape	TEMPERAMENT (Score)					Total
	Docile (1)	Slightly restless (2)	Restless (3)	Aggressive (4)	Nervous (5)	
Conical	13 (59.09)	3 (13.63)	4 (18.18)	1 (4.54)	1 (4.54)	22
Bottle	5 (22.72)	8 (36.36)	8 (36.36)	1 (4.54)	0 (0.00)	22
Pear	24 (60.00)	3 (7.50)	5 (12.50)	5 (12.50)	3 (7.50)	40
Cylindrical	55 (57.29)	15 (15.62)	11 (11.45)	9 (9.37)	6 (6.25)	96
Funnel	10 (50.00)	3 (15.00)	3 (15.00)	3 (15.00)	1 (5.00)	20
Total	107 (53.50)	32 (16.00)	31 (15.50)	19 (9.50)	11 (5.50)	200

Table 4. Average daily milk yield (kg) in Murrah buffaloes with different temperaments.

Temperament	Docile	Slightly restless	Restless	Aggressive	Nervous
Average daily milk yield* (Mean \pm S.E)	6.70 \pm 0.15 ^a	6.50 \pm 0.34 ^a	5.70 \pm 0.26 ^b	4.90 \pm 0.30 ^c	4.60 \pm 0.34 ^d
N	107	32	31	19	11

* Means with similar superscripts do not differ significantly.

Table 5. Mean udder dimensions and distance between the teats (cm) in Murrah buffaloes with different temperament scores.

Temperament score	n	% of Total No.	Udder width	Udder length	Udder depth	Distance between front teats	Distance between hind teats	Distance between front and hind teats
Docile	107	53.5	49.16 ±0.43	53.40 ±0.47	15.52 ±0.13	8.70 ±0.22	8.69 ±0.24	8.71 ±0.21
Slightly restless	32	16.0	52.06 ±0.84	55.49 ±0.65	15.45 ±0.23	8.53 ±0.40	8.21 ±0.42	8.04 ±0.27
Restless	31	15.5	53.69 ±1.02	55.09 ±0.80	15.68 ±0.25	8.49 ±0.43	8.66 ±0.49	9.24 ±0.37
Aggressive	19	9.5	51.38 ±1.16	54.56 ±1.25	16.05 ±0.27	8.96 ±0.54	9.10 ±0.56	10.06 ±0.56
Nervous	11	5.5	50.80 ±1.58	54.45 ±1.69	15.60 ±0.41	7.84 ±0.51	8.25 ±0.50	9.33 ±0.65
Overall	200	100	50.63 ±0.36	54.16 ±0.33	15.59 ±0.09	8.62 ±0.16	8.62 ±0.17	8.85 ±0.15

Table 6. Mean teat dimensions (cm) in Murrah buffaloes with different temperament scores.

Temperament score	Teat Length			Average teat length	Teat Diameter				Average teat diameter
	Left fore	Right fore	Left hind		Right hind	Left fore	Right fore	Left hind	
Docile	7.13 ± 0.17	7.18 ± 0.18	7.81 ± 0.20	7.48 ± 0.18	2.63 ± 0.03	2.71 ± 0.03	2.82 ± 0.04	2.94 ± 0.04	2.78 ± 0.32
Slightly restless	6.74 ± 0.35	7.04 ± 0.41	7.70 ± 0.44	7.26 ± 0.39	2.64 ± 0.07	2.65 ± 0.09	2.70 ± 0.09	2.76 ± 0.10	2.69 ± 0.08
Restless	8.18 ± 0.43	8.60 ± 0.46	9.38 ± 0.57	8.81 ± 0.47	2.65 ± 0.73	2.71 ± 0.08	2.78 ± 0.09	2.87 ± 0.10	2.75 ± 0.08
Aggressive	8.00 ± 0.56	8.09 ± 0.54	9.16 ± 0.69	8.50 ± 0.56	2.76 ± 0.08	2.83 ± 0.09	2.90 ± 0.11	2.99 ± 0.12	2.87 ± 0.09
Nervous	8.33 ± 0.92	8.34 ± 0.90	9.03 ± 1.00	8.65 ± 0.93	2.76 ± 0.12	2.71 ± 0.17	2.79 ± 0.15	2.79 ± 0.19	2.76 ± 0.14
Over all	7.37 ± 0.15	7.53 ± 0.16	8.23 ± 0.18	7.81 ± 0.16	2.65 ± 0.02	2.71 ± 0.03	2.80 ± 0.03	2.89 ± 0.04	2.76 ± 0.03

temperament and udder and teat morphology in buffaloes.

Temperament in relation to the average daily milk yield

The average daily milk yields in the docile, slight restless, restless, aggressive and nervous categories were 6.70 ± 0.15 , 6.50 ± 0.34 , 5.70 ± 0.26 , 4.90 ± 0.30 and 4.60 ± 0.34 kg, respectively (Table 4). Thus, the docile and slightly restless buffaloes had significantly higher daily milk yield when compared to the other categories. These findings were in conformity with findings of Mishra *et al.* (1975), Dash *et al.* (1976), Nayak and Mishra (1984), Gupta *et al.* (1985), Dogra *et al.* (2002), Bharadwaj *et al.* (2007) and Lallawmkimi and Mahendra Singh (2009).

The difference in the temperament of buffaloes observed could be because of the individual variability in an animal's physical, hormonal and neuronal characteristics (Kilgour, 1975). The descending order of milk yield from docile to slightly restless, restless, aggressive and nervous cows could be because of the fact that under optimum conditions of milking the docile ones did not hold up any milk, while the other categories held up milk due to secretion of adrenalin. Thus a negative correlation existed between the temperament score and the average daily milk yield which is in conformity with Nayak and Mishra (1984).

The temperament of animals is generally considered innate and is the result of the animal's physical and nervous organization (Dickson, 1970) but is also affected by external factors (Gangwar, 1982). Thus proper handling and management are important for temperament and higher milk yield. Rushen *et al.* (1999) also stressed that proper care and handling by people responsible for the cows are

important to avoid fear in cows. It may therefore be understood that both genetic and managerial factors are important for the temperament of buffaloes.

It may be concluded from the study that temperament is not influenced by udder and teat morphology but that temperament has an influence on the milk yield of Murrah buffaloes and so animals with docile temperament must be preferred for use in breeding programmes.

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