ASSOCIATION OF UDDER BIOMETRY AND SKIN THICKNESS WITH MILK YIELD IN KANKREJ AND CROSSBRED COWS

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ABSTRACT

Relationship between biometry of udder and skin thickness with milk yield was studied in 22 Kankrej and 26 crossbred (¼ HF x ¼ Jersey x ½ Kankrej) cows. Average evening milk yield on the test day was nonsignificantly higher in crossbred cows (3.52 kg) than the Kankrej cows (2.84 kg). Average udder length, width and depth in crossbred cows were 20.73, 23.31 and 8.00 inches, respectively. Corresponding values in Kankrej cows were 21.45, 23.09 and 7.77 inches. The skin thickness at all the three sites i.e. at neck, behind elbow and at flank was higher in Kankrej (7.86, 6.59 and 8.77 mm) than the crossbred cows (7.23, 5.46 and 7.00 mm, resp.). Correlation coefficients of milk yield with udder length, width and depth were positive and highly significant ($P<0.01$) in both the genetic groups. Highly significant negative correlations ($P<0.01$) were found between skin thickness at all the three sites and milk yield in both the genetic groups. It was concluded that both biometry of udder and skin thickness were related to milk yield and therefore could be considered as one of the criteria for selection of dairy cows.

KEY WORDS: Cows, Udder biometry, Skin thickness, Relationships to milk yield.

INTRODUCTION

Kankrej is a dual purpose breed of cattle native to Gujarat and is well adopted and sustained by local professional breeders. Bullocks are well known for their graceful gait (Sawai Chal) and cows are good milk producers. Crossbreeding of Kankrej with Holstein Friesian and Jersey has been undertaken to achieve high milk production. As the local breeders do not keep records, it is customary to effect purchase or sale transactions of the cows based on mammary gland's size. Udder size is the first sight judgement of local brokers about milkability of the animal. In judging of dairy cattle, mammary system is assigned 30 points score (PDCA, 1971). Similarly skin thickness is also given due weightage by scientists in deciding dairy temperament of cows. Therefore an attempt was made to study the relationship between udder measurements and skin thickness with milk yield in Kankrej and crossbred cows.

MATERIALS AND METHODS

The present study was undertaken on 22 Kankrej and 26 crossbred (¼ HF x ¼ Jersey x ½ Kankrej) cows maintained at Livestock Research Station of Veterinary College, Anand. The cows were kept in loose housing condition under uniform feeding and management in two separate sheds.. The length, width and depth of udder (inches) were recorded before commencement of evening milking (Manik *et al.*, 1981). Skin thickness (mm) was measured after carefully shaving by sharp razor at 3 sites, viz. at neck, behind elbow and at flank. The skin was folded, slightly stretched and thickness of the fold (mm) was measured by using vernier calliper. Evening milk yield (kg) was recorded on the day of udder measurements. The data were analyzed according to Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Average milk yield, udder measurements and skin fold thickness are presented in Table 1. Average evening milk yield on the test day was nonsignificantly higher in crossbred cows (3.52 kg) than the Kankrej cows (2.84 kg). Average udder width and depth in crossbred cows were 23.31 and 8.00 inches, respectively, which were higher as compared to Kankrej cows (23.09 and 7.77 inches). However the length of udder was higher (21.45 inch) in Kankrej than the crossbred cows (20.73 inch). The skin thickness at all the three sites was higher in Kankrej (7.86 mm at neck, 6.59 mm behind elbow and 8.77 mm at flank) than the crossbred cows (7.23, 5.46 and 7.00 mm, resp.). Minimum skin thickness was found behind elbow in both the genetic

groups. Prajapati *et al.* (1995) reported higher values of udder length (23.83 inch), width (25.27 inch) and depth (9.98 inch) in Kankrej cows than those observed in the present study.

Table 1. Average milk yield, udder measurements and skin fold thickness in Kankrej and crossbred (¼ HF x ¼ Jersey x ½ Kankrej) cows

Genetic Group	N	Evening Milk Yield (kg)	Udder Measurements (inch)			Skin Thickness (mm)		
			Length	Width	Depth	Neck	Behind elbow	Flank
Kankrej	22	2.84 ±0.24	21.45 ±0.84	23.09 ±0.76	7.77 ±0.36	7.86 ±0.29	6.59 ±0.23	8.77 ±0.22
Crossbred	26	3.52 ±0.43	20.73 ±0.89	23.31 ±0.85	8.00 ±0.34	7.23 ±0.28	5.46 ±0.23	7.00 ±0.33

Table 2. Correlation coefficients between milk yield and udder measurements & skin thickness in Kankrej and crossbred (¼ HF x ¼ Jersey x ½ Kankrej) cows

Genetic Group	Udder Measurements			Skin Thickness		
	Length	Width	Depth	Neck	Behind Elbow	Flank
Kankrej	0.918**	0.860**	0.851**	-0.720**	-0.661**	-0.506*
Crossbred	0.811**	0.857**	0.778**	-0.556**	-0.755**	-0.641**

*(P<0.05) level of significant, **(P<0.01) level of significant.

Correlation coefficients between evening milk yield under twice a day milking schedule with udder measurements and skin thickness at 3 sites are presented in Table 2. Correlation coefficients between milk yield and udder length, width and depth were positive and highly significant (P<0.01) in both the genetic groups. Thus good prediction of cows' milk production can be made from udder dimension itself. Similar results were reported in zebu and its crosses with Friesian (Sinha, 1968), Ongole and Zebu x Jersey crossbreds (Rao, 1968), and *Bos taurus* x Gir crosses (Mali *et al*; 1986). Further, significant to highly significant negative correlations (P<0.01) were found between skin thickness at all the three sites and milk yield in both the genetic groups. This showed that in high yielding cows skin tends to remain thinner as compared to low yielder. This also reflected dairy temperament of high yielders of not depositing fat but converting nutrients into milk on priority ground. Mali *et al.* (1986) also reported negative association between skin thickness and milk yield in *Bos taurus* x Gir crosses.

It was concluded that both biometry of udder and skin thickness were related to milk yield and therefore could be considered among the criteria for selection of dairy cows.

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NEWS

Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, a state Agriculture University, has started a College of Veterinary and Animal Science as one of its constituent college, w.e.f. academic session 2007. First and Second Year B.V.Sc. & A.H. batches are in progess. The college is situated near Udaipur Chittorgarh four lane highway about 40 Kms from Udaipur. The address is as follows :

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