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## Skin thickness in relation to milk production in dairy animals: A short note

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### Abstract

The study on skin thickness of dairy animals is helpful in evaluation of their production potential. The skin thickness is measured at 7 sites i.e. neck, chest, dewlap, abdomen, rump, udder and hind quarter with the help of Vernier caliper or Beeston micrometer. Later, the measurements are categorised into thin, moderately thick and thick skin. It is concluded that milk production of thin skin fold dairy animals is higher than that of moderately thick and thick skin folds due to better heat dissipation and effective utilization of energy for milk production.

**Keywords:** skin fold thickness, vernier caliper, dairy animals, milk production

### Introduction

Dairy animals which can dissipate more heat would be more efficient producers in the tropics. Various genetic groups of dairy animals produce milk to different environmental conditions and show marked variations in the skin thickness. Skin thickness may be associated with selection and judging of these animals. It is commonly asserted that large animal with soft and thin skin produces more milk, and vice-versa. However, conflicting reports have been published regarding the relationship of skin thickness with the milk production. This paper, therefore investigates the variability of skin thickness in relation to the milk production in dairy animals.

**Measurement of skin fold thickness:** The skin fold thickness is measured using Beeston micrometer<sup>[6]</sup> or Vernier calipers at 7 sites namely, (a) Neck: At a point where 2 imaginary lines passing through length and width of the neck meet; (b) Chest: Where a vertical line at the level of the heart meets the middle one of three lines drawn horizontally to divide one side of barrel into 4 horizontal compartments; (c) Abdomen: Posterior to chest at the same level with umbilicus; (d) Rump: About 6 inches vertically below the hip point; (e) Udder: About 4 inch below the rear attachment of the udder; (f) Dewlap: Mid-ventral point of dewlap and; (g) Hind quarter: Parallel to haunch and about 3 inches below the pin bone<sup>[3]</sup>. However,<sup>[1]</sup> also measured skin thickness at flank region i.e. midpoint of the triangular flank area. The skin fold thickness is classified into thin, moderate and thick categories based on Struge's formulae<sup>[1]</sup>. Skin fold thickness is lower in the first than subsequent lactation's. The thickness of skin increase from upper to lower and anterior to posterior regions of the body and is thicker during the summer than in winter or monsoon season. Further, the skin thickness varies between sexes and is generally more in males than females<sup>[5]</sup>. Skin thickness varies at different sites and also with the breeds. In general, it is stated that, flank and udder have thin skin fold; neck, chest, dewlap and hindquarter regions have moderate skin fold; abdomen skin have moderately thick to thick skin folds; and rump region have thick skin folds<sup>[1, 3]</sup>.

**Effect of skin fold thickness on milk production:** A report states that tropical cattle have significantly thinner skin than temperate breeds<sup>[7]</sup> that effectively dissipates heat and enhances milk production. Moreover, this fineness of skin is considered as a trait positively associated with good dairy type<sup>[4]</sup>. Similarly<sup>[2]</sup>, observed a negative and significant influence between average skin thickness and milk yield, and reported that milk yield was higher in buffaloes having thin skin than medium and thick skinned buffaloes. It is also observed that the milk flow rate was higher in animals with thin skin of flank and udder regions showing negative effect of skin thickness on the milk yield<sup>[1]</sup>.

As reports suggests, skin thickness is responsible for 29% and 7-21% variability in milk yield of crossbred and Sahiwal cows, respectively <sup>[5, 3]</sup>. The results may vary depending on the management and climatic influences <sup>[5]</sup>.

### Conclusion

Based on the above reports, it is clear that milk production of thin skin fold dairy animals is higher than that of moderately thick and thick skin folds. This is due to the fact that dairy animals with thin skin fold did not deposit extra fat in their body and utilize most of their energy for milk production. Also, there is better heat dissipation and adaptability towards tropical climate, thus enhancing milk production.

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