

RESEARCH ARTICLE

Estimation of milk yield on the basis of linear type traits in Sahiwal cattle

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ABSTRACT..... The linear type traits are the body parts of a cow which makes her capable to produce milk. The milk producing ability of animals can be determined on the basis of their linear type traits. Thus, to predict the first lactation milk yield of Sahiwal cattle, a total of 101 lactating animals were randomly selected, out of which, only 37 were in first lactation, hence the linear type traits of 37 animals were used to develop the prediction equation. The type traits considered for present investigation were stature, chest width, body depth, rump angle, rump width, rear leg set (side view), rear leg set (rear view), foot angle, udder depth, rear udder height, udder balance, udder cleft, fore udder attachment, teat length, fore teat placement, rear teat placement and teat thickness. These traits were scaled and scored as per the guidelines of International Committee for Animal Recording, 2001. The multiple regression of first lactation milk yield on different linear type traits, taking each trait alone and in different combinations of step up and step down were fitted. The R^2 values (co-efficient of determination) were calculated to compare the accuracy of different prediction equations. The results showed that, the prediction equations developed on the basis of single variable, the R^2 values varied from 0.01 per cent to 28.9 per cent. In step up regression method, the R^2 value varied from 2.8 per cent to 85.2 per cent, while in step down regression method, the R^2 value varied from 85.2 per cent to 28.9 per cent. The highest accuracy of 85.2 per cent was obtained when all the traits were combined.

KEY WORDS..... Sahiwal, Prediction equation, Milk yield, Linear type traits

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INTRODUCTION.....

The type traits are body parts of dairy cow, which make her capable to produce milk and those traits which are directly or indirectly linked with each other are called as linear type traits. These traits have their own contribution on production performance of animal, Moreover, the milk producing ability of the animal can also be determined on the basis of their linear type traits. The type traits have been used as indirect selection criteria for improving the herd life of dairy cow (Cruickshank *et al.*, 2002). This is much important in field conditions of developing countries like India, where the progeny performance records are not maintained properly. Thus, these equations developed on the basis of linear type traits may act as a useful guideline for selection of dairy animals.

Hence, the present investigation was undertaken to develop such equations from linear type traits for prediction of first lactation milk yield in Sahiwal cattle.

RESEARCH METHODS.....

For present investigation in year 2010, 101 purebred Sahiwal cows available at premises of Veterinary College, Anjora, Durg were selected randomly to measure the various linear type traits as recommended by International Committee for Animal Recording (ICAR, 2001). Out of 101 animals, only 37 were in first lactation, hence the linear type traits of 37 animals were used to develop the prediction equation for estimation of first lactation milk yield. Out of 17 linear type traits considered, 15 traits are approved standard, while 2