Prediction of milk yield from udder circumference and distance between teats in West African Dwarf and Red Sokoto goats

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Abstract

Udder circumference (Ue) and distance hetween teats (DBT) measured before and ajier milking were used to determin!!. eue (Ue bejore milking minus UC ajier milkiny.J and eDT (DBT hefore milking mil/Wi DBT ajler mi/king). All fuur part/meter.I' were utilized as independent variuhles in two standard regression models (linear and multiple lineQf) to develop equations jar predictiun of daily milk yield pam 202 weekly records of 17 lactating does, consisting of 8 West African Dwarf (WAD) and 9 Red Sakata (RS) goats. WAD and RS goats had similar mean values/or daily milk yield (270.34±12.47 ml vs 265.26±14.51 ml) and ue (28.49±0.J3 cm vs 28.81 ±O.39 cm), but differed very significantly (P<O.00 I) in DBT (7.33 ±O.ll cm and 5.82 ±O. 13 cm). Both models had significant (P<O.OOI) RJ values ranging from 0.244 to 0.757. ue was the best index ofmilk yield (W = 0.688) followed by eue (R^J = 0.476) in the linear regrl'ssion erillation while DBT and eDr yielded lower RJ vallle~ (0.244 vs 0.258). l'Iclusion 9f all four parQ/neters in the muliiple linear regression equation yielded the highest Rl (0.757). The predicti"'!!. equation was Y =- 441.443+25. 739X|+23.349X|-2 I. 265X_J +61.080X_4 oiñ which \`r\` is milk yield, X| ,X4 represent ue, eue, DBT and eDT respectively. Positive and significant (P<O.00 I) phenotypic correlations were observed oet\.veen ue and milk yield (0.759), eue and milk yield (0.690), DBT and milk yield (0.498), eDr und milk yield (0.508). In the current practice of collecting weekly records, early prediction oifuture milk production from udder circumference measured prior to milking will be afcurate using linear regression predictive equation. Alternatively, if more traits related to udder size such as ue, eue, DBT and eDT are incorporated as independent variables in multiple linear regression equation, milk productIOn could be predicted with better accuracy'.

Keywords: *Goats, Udder circumference, Distance between teats, Milk yield, Prediction*