



Tropentag, October 11-13, 2006, Bonn

“Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research”

Performance and Fitness Traits Versus Phenotypic Appearance: a Novel Approach to Identify Selection Criteria for Indigenous Breeds

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Abstract

Ankole cattle are well known for their massive white horns and red coat colour. These characteristics are attributed to centuries of cultural breeding practices. Two experiments with traditional cattle keepers were carried out at a governmental Ankole nucleus farm in South-Western Uganda to identify other phenotypic characteristics as well as production and fitness traits which are important indigenous selection criteria. Forty one body measurements, per animal, were taken from 15 bulls and 35 cows and phenotypic characteristics were described in detail. In the first experiment 12 groups of 6 to 8 cattle keepers were invited to rank animals according to their preference for a breeding bull or cow based on phenotype alone. While in the second experiment the ranking was done on the basis of phenotype in addition to a hypothetical history that was randomly assigned to each animal on each day of experiment. The latter history included milk yield (on own performance for cows and that of the dam for bulls), fertility of the animal and its sire as well as resistance to East Coast Fever. For analysis, Generalized Logit Models for Multinomial Logit Models were fitted. To compare different models the likelihood-based pseudo R-square measure was used. The results indicate that, in the selection of cows, performance and fitness traits are emphasised by the cattle keepers. While in the selection of bulls, the phenotypic appearance of the animal itself plays an important role. In cows the animals' milk performance turned out to be the main criterion for higher ranking while in bulls resistance to East Coast Fever was of highest importance. In both sexes a dark red coat colour was highly appreciated. The study portrays the potential usefulness of the methodology in capturing information which can be gainfully employed for an insight into indigenous selection criteria of stock owners else where.

Keywords: Ankole cattle, indigenous knowledge, selection criteria, Uganda