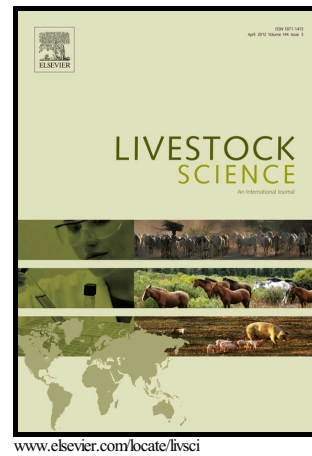


Author's Accepted Manuscript

Evaluation of alternative breeding plans for two indigenous cattle breeds of Ethiopia

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PII: S1871-1413(17)30286-X
DOI: <http://dx.doi.org/10.1016/j.livsci.2017.09.022>
Reference: LIVSCI3307

To appear in: *Livestock Science*

Received date: 25 December 2016
Revised date: 19 August 2017
Accepted date: 18 September 2017

Cite this article as: Ayele Mandefro, Gemedo Duguma, Tadele Mirkena and Hailu Dadi, Evaluation of alternative breeding plans for two indigenous cattle breeds of Ethiopia, *Livestock Science*, <http://dx.doi.org/10.1016/j.livsci.2017.09.022>

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Abstract

Different breeding strategies targeting two indigenous cattle breeds of Ethiopia (Borana and Horro) were evaluated with the objective of developing appropriate breeding programs that would maximize production and productivity of the breeds maintained on pastures using a deterministic approach. Borana was evaluated for beef, milk and both for beef and milk (dual purpose) while Horro was evaluated for milk and dual purposes. Two units, breeding unit and production unit, consisting of six selection groups were defined for both breeds. Selection criteria used were yearling weight, milk yield, age at first calving, calving interval and calf survival to yearling for dual purpose program and milk yield, age at first calving, calving interval and calf survival to yearling for milk production program. In addition, yearling weight, age at first calving, calving interval and calf survival to yearling were used to improve beef production in Borana breed. Three different levels of breeding bull selection proportions (5%, 10%, and 15%) were used. For all goal traits investigated, more genetic gains were obtained from bull selection groups than the cow selection groups. The bull selection groups also had the shortest generation interval compared to the cow groups (4.07 vs. 6.42 years). From the estimated annual genetic gains for the individual goal traits, all traits had favorable genetic gains except age at first calving. Genetic gains per year were highest for milk yield followed by live weight. Genetic gains were near zero for the other traits. Nearly comparable annual genetic gains were estimated for both Borana and Horro cattle breeds assumed for milk improvement program under different selection proportions. Estimated genetic improvements of about 291.96, 268.63 and 252.73 liter of milk were simulated for Borana in 5%, 10% and 15% breeding bull selection proportion. The corresponding improvements for Horro were 291.55, 268.31 and 252.43 liter. However, gains were higher in Borana when the two cattle breeds are assumed for dual purpose program (85.92

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