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“Development on the margin”

Climate Effects and Goat Adaptation in Arid and Semi-arid Lands: a Review

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Abstract

Climate variability is currently an issue of great concerns the world over and more pronounced in developing countries which are faced with many developmental challenges. At present, uncertainties about future climate trends are explored by analyses of past climates statistics and advances in climate change model simulation. The exact natures of any change in climate variables remains uncertain but the likeliest scenario projects increased variability in precipitation coupled with an increase in mean surface air temperature in the arid and semi arid lands (ASALs). These areas support quite considerable proportion of livestock found in the world. The majority indigenous goat populations in these areas have always coped with climate variability but their sustainability to this cannot be predicted with the current environmental trends. Climate variability will have both direct and indirect effects on the ecosystem goods and services and this presents need to address goat adaptation to environmental stress more coherently. Over several decades, indigenous goats have survived in these harsh environments with low stress compared to non-adapted goats and other ruminants. Interestingly, these goats have been under the custodian of livestock keepers with minimal technological and developmental inputs from researchers, policy makers and development partners. This study reviews some climate effects and adaptive traits of goats in the ASALs such as their feeding behaviour, small body size, ability to lower metabolism, efficient nutrient mobilisation, efficient water use, and their resistance or resilience to major diseases. It is concluded that sustainable goat improvement programmes will be realised in the ASALs through utilisation of the adaptation traits of the indigenous breeds and their inclusion in the formulation of breeding objectives.

Keywords: Adaptation traits, breeding objectives, climate variability, livestock keepers