Geographic distribution and environmental characterization of livestock production systems in Eastern Africa

Giuliano Cecchi a,*, William Wint b, Alexandra Shaw c, Andrea Marletta a,d, Raffaele Mattioli a, Timothy Robinson a

a Food and Agriculture Organization of the United Nations (FAO), Animal Production and Health Division, Viale delle Terme di Caracalla, 00153 Rome, Italy
b Environmental Research Group Oxford (ERCO), Department of Zoology, South Parks Road, Oxford, OX1 3PS, United Kingdom
c A P Consultants, Upper Cottage, Abbots Ann, Andover, Hants. SP11 7BA, United Kingdom
d Università degli Studi di Roma “La Sapienza”, Facoltà di Ingegneria, Dipartimento di Architettura e Urbanistica. Via Eudossiana, 18, 00184 Rome, Italy

Abstract

The central role played by livestock in the livelihoods of rural households in the developing world is seldom fully appreciated by policy makers, development agencies and donors. Knowledge gaps in the geographic distribution and environmental determinants of farming systems, especially if viewed through the livestock lens, compound this problem. We have produced a map of pastoral, agro-pastoral and mixed farming systems across Eastern Africa, by analysing datasets collected in the framework of livelihood analysis. Input data were gathered between 2000 and 2007 by various emergency and development agencies for Djibouti, Eritrea, Kenya, Somalia, Uganda and parts of Ethiopia and Sudan. A quantitative definition of the production systems is adopted, based on the ratio of livestock- to crop-derived income. The resulting livelihood-based map of livestock production systems was compared through correspondence analysis to an alternative livestock production systems map, produced independently from environmental data. Convergence between the two mapping approaches was evident. The geographic distribution of the livestock production systems was also modelled using multivariate analysis of remotely sensed and other geospatial datasets. Models show high statistical accuracy, and were thus used to fill the gaps in the observed distribution of livestock production systems. Finally, selected environmental factors underpinning the systems (agro-climatology, human and livestock populations and land cover) were analysed in detail, enabling the livestock production systems to be characterized in terms of them. The regional scope of the map, as well as its direct link with a vast amount of livelihood information, render it a valuable tool for a range of development and research applications, including those related to global change.

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