

## **Measurement of proxy variables to measure livestock productivity in developing countries: experience in three countries**

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The quality and quantity of livestock data available to developing countries presents a continuing challenge to decisions makers in the public and private sectors. Enumeration and classification has remained the focus of much of the recent and welcome steps taken in the improvement of livestock data collection and presentation. However, measurement of livestock performance has received less emphasis due to the inherent difficulties of periodic production and sale, conversion rates between products at different stages of delivery, conventional avoidance of measurement, and the costs of equipment, staff, training and organisation. Similar comments apply to the measurement of pasture feed resources used by many developing country livestock systems and communities. In this paper, we report on trials of proxy measures of animal productivity in Tanzania (egg and milk production and productivity), Botswana (sheep and goat weight and growth, and pasture quality, quantity and sustainability), and Indonesia (milk production and productivity, and cattle and goat weight and growth). Trials entailed new questionnaire data collection methods' being compared to existing ones, and also to an objective measurement of the variables across a relevant sample. Results are compared, and conclusions are presented about the efficacy of some standard questionnaire-based methods as well as the technical and financial viability of using proxy measures. We also undertake an investigation and discussion of small sample methods in the estimation of lactation curves and age-indexed animal growth profiles, which are then employed as proxy measures of productivity.