



## Risk attitudes, resource rationalization and dairy intensification in Uganda – Stochastic dominance with observed and optimal net farm benefits

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### Abstract

This study was motivated by the observation that despite policy and development focus promoting dairy intensification, dairy management in Uganda still exhibits a continuum stretching from intensive to extensive systems. This is due to de-intensification of zero grazing and open grazing dairy systems and also farmers willingly opting for extensive and intensive dairy management. The purpose of this study was to examine farmers' risk attitudes and its effects on enterprise choices and resource use under different dairy intensification systems. Longitudinal data used were obtained from 14 cattle farms drawn from Masaka, Mbarara and Jinja districts. Farms sampled were representative of the increasing levels of

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intensification, i.e. zero grazing, semi-intensive fenced, tethered, and herded dairy systems. Observed and profit driven farm plans were established by net farm benefit maximization using linear programming whole-farm modeling. Risk attitudes were examined by stochastic dominance techniques. Results of net farm benefit maximization show that all dairy systems are profitable under observed plans and that profit plans would lead to higher farm net benefits in all dairy systems. In addition, all systems except tethered ones have second order degree stochastic dominance (SSD). Tethered systems show first order stochastic dominance (FSD). Producers in zero grazed, semi-intensive, fenced and herded systems are therefore risk averse whereas tethered farms extravagantly utilized farm resources beyond optimal levels. Farmers' risk averting behavior resulted into raising multiple crop enterprises in all dairy systems. Optimal cattle herd sizes were, however, kept for fenced and herded systems, slightly larger than optimal herds were kept in the semi-intensive and tethered systems and slightly lower than optimal herd sizes were raised in the zero grazing system. In order to successfully adopt the more profitable alternative plans the management practices proposed include adopting fewer but bigger crop enterprises, maintaining traditional staple foods to cater for subsistence needs and preferences and to ensure gradual adjustment; reclaiming fallow lands into production in zero-grazed, semi-intensive, fenced and herded systems, releasing some land out of production in the tethered system, and using more hired labour. Land released from the tethered system could be rented out to other land constrained systems. The proposed plans would lead to more stable dairy livelihoods dynamics that are necessary for household subsistence needs, traditional food preferences and nutritional diversity as well as

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ensuring shifts towards the desired sustainable commercialisation of dairy systems under the Government's Plan for Modernisation of Agriculture (PMA) development policy framework. Intensification is the increase in use of inputs per dairy resource and improvement in management aimed at increasing dairy productivity

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