Milk production systems in Central Uganda: a farm economic analysis

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Abstract The Ugandan dairy sector is developing rapidly over recent years and is dominated by small-scale farmers owning more than 90 percent of the national cattle population. Due to market forces and higher competition for production factors, milk production systems are intensifying, necessitating proper understanding of the new production tendencies. Three intensive and four extensive production systems were identified and analysed, using TIPI-CAL (Technology Impact Policy Impact Calculations model). The results show that the production systems are very different in many respects but share similar development trends. Whereas intensive systems use graded animals and invest heavily into feeding, buildings and machinery, extensive systems use local breeds and invest minimally. Total cost of milk production falls with increasing herd size, while dairy returns vary among farms from 18 to 35 USD/100 Kg of milk. All systems make an economic profit, except the intensive one-cow farm, which heavily employs family resources in dairying. Due to better management of resources and access to inputs and markets, dairy farming closer to urban areas and using improved breeds is highly profitable, especially with larger herd sizes. Stakeholders should favour such practices as well as others which can improve productivity, especially in African countries where traditional systems dominate dairying.

Keywords Farm analysis · Milk · Production systems · Typical farms · Uganda

Introduction

Dairy production plays a vital role in Uganda in improving on people’s nutritional status, generating income to farmers and improving soil fertility through manure application (Nakiganda et al. 2006). It is also an important source of employment with many traders, processors and retailers intervening in the
dairy chain. Traditional smallholder dairy production systems still dominate dairying in Africa (Olaloku and Debre 1992, Ndambi 2006) and according to King in 2000 (Cited by Odhiambo 2006), 22% of Ugandans are closely associated to the pastoral farming system. Furthermore, up to 80% of the Ugandan population derive their livelihoods from subsistence agriculture and livestock production, producing 85% of the milk and 95% of the beef consumed in the country.

Milk production is growing very fast in Uganda, which falls among the group of African countries having the highest growth rates, between 1990 and 2004 (Ndambi et al. 2007). According to FAO statistics (FAOSTAT 2006), over the years 1996–2005, the annual growth in milk production in Uganda was 5.7%, which is double the growth rate for Africa as a whole (2.8%). An enormous growth in dairy production was noticed between the years 1991 and 2004, where production increased threefold (Dobson 2005). This has been attributed to favourable climate with two rainy seasons, presence of foreign support institutions and a potential export market favoured by the lowering of export tariffs to Kenya and Tanzania in 2005 (Dobson 2005).

Home consumption is also increasing in Uganda, and as in most other developing countries, milk consumption is higher in the cities than in rural areas where production is cheaper. Kampala, the capital city of Uganda with a population of more than 900,000 inhabitants (Kimeze 2003), is the major consumption centre (Bunoti 1996). Most of the milk produced in nearby areas is transported mostly as raw milk through either formal or informal channels.

Milk production systems in rural Uganda normally involve the use of local breeds and are primarily targeted on self subsistence. However, due to the high demand, milk production systems in areas closer to Kampala have a focus on milk marketing, cost minimisation and profit maximisation (Fonteh et al. 2005). Thorpe et al. (2000) postulate that market-oriented smallholder dairy systems have a tendency of operating in the vicinity of large cities because the presence of a market overrides other production factors. Unfortunately, land scarcity is a major constraint to expansion of such systems and has been for a long time responsible for several ownership conflicts, even among brothers (Sekitoleko 1993).

It is presumed that farming systems around Kampala have been adopting various management patterns of farm resources in order to adapt to the increasing market demand. In this way, economic production parameters are becoming more and more important, not only to farmers, but also to the government and other stakeholders of the dairy sector. At present, there is lack of knowledge on detailed economic parameters of milk production systems, especially at the farm level. It is for this reason that this study sets out to provide an in-depth economic characterisation and comparison of the major milk production systems in central Uganda. The analysis is based on a typical-farm approach. Each of the most common milk production systems is represented by a typical farm constructed and validated by a panel of dairy experts.

This paper is organised into five further sections covering: a review on the importance of dairying in Uganda, description of the methodology applied, presentation of results, discussion of key findings, and a conclusion.

Methodology

The methodology applied for data collection, economic analysis and results validation was developed by the International Farm Comparison Network (IFCN) and utilises the TIPI-CAL (Technology Impact Policy Impact CALculations) model. This model was developed by Hemme (1999) and has since been refined to suit its applicability on a global scale. The TIPI-CAL model is a production and accounting model which can simulate farm (dairy, beef and crop) data for up to 10 years. This model is a think tool for better understanding farming systems and is based on the concept of typical farms. In this study, a typical farm represents the most common farm type within a production system which has an average management and performance and that produces the largest proportion of milk. Typical farms were built and validated by a panel of dairy experts consisting of two dairy farmers, one local veterinary officer, one representative of the Ugandan Dairy Development Authority, one representative of the Ugandan Agriculture Ministry and two external