

**Determinants of milk production in Nyabubare sub county, Bushenyi district,
Western Uganda**

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Abstract

This study was conducted to determine the factors responsible for low milk production in Nyabubare sub-county, Bushenyi district, Uganda. Dairy farming is a major activity in this sub-county, with communities almost entirely dependent on it for their livelihoods. A survey was carried in which stratified random sampling was used to select a study sample of 50 farms from four parishes; 17 farms from Nyabubare, 15 farms from Nyarugote, 10 and 8 farms from Kahungye and Kizinda, respectively. Data were collected using semi-structured questionnaires and personal observations. The data collected were analysed using SPSS computer package. The study revealed that the major constraints to milk production in the sub-county included: uneducated farmers (40%), keeping of local cattle breeds, practicing poor grazing systems such as continuous grazing, lack of supplementary feeding, and inadequate deworming of animals. Others included use of poor methods of insemination and use of poor breeding bulls. It is recommended that exotic breeds of dairy cattle be adopted, collective marketing be devised and that farmers be trained in improved dairy cattle management.

Key words: Cattle breed, cattle management, dairy cattle, milk production

Résumé

Cette étude a été menée afin de déterminer les facteurs responsables de la faible production de lait dans le sous-comté de Nyabubare, en Ouganda. La production laitière est une activité importante dans ce sous-comté, avec les communautés presque entièrement dépendantes d'elle comme leurs moyens de subsistance. Une enquête a été réalisée, celle dans laquelle l'échantillonnage aléatoire stratifié a été utilisé pour sélectionner un échantillon d'étude de 50 fermes de quatre communes : 17 fermes de Nyabubare, 15 fermes de Nyarugote, 10 et 8 fermes de Kahungye et Kizinda, respectivement. Les données ont été recueillies à l'aide de questionnaires semi-structurés et des observations personnelles. Les données recueillies ont été analysées à l'aide du logiciel SPSS. L'étude a révélé que les

principales contraintes à la production laitière dans le sous-comté comprenaient: les fermiers sans instruction (40%), le maintien des races bovines locales, la pratique des systèmes de pâturage pauvres tels que le pâturage continu, le manque d'alimentation supplémentaire, et le déparasitage médiocre des animaux. D'autres ont inclus l'utilisation de méthodes d'insémination pauvres et des taureaux d'élevage médiocres. Il est recommandé que les races exotiques de bétail laitier soient adoptées, la commercialisation collective soit conçue et que les fermiers soient formés à une meilleure gestion des bovins laitiers.

Mots clés: Race bovine, gestion du bétail, bovins laitiers, production de lait

Background

Dairying as a component of livestock is the major occupation of farmers in terms of food and source of cash income in Uganda (Muhumuza, 1995). Milk the major product of cattle keeping is a major source of food and cash income (Twine, 1992). According to Okello-Ouma (1982), milk is regarded as the most nearly perfect food because of its nutrient composition. Milk production in Uganda is unfortunately declining, contributing to substantially low per capita milk consumption in the country (Twine, 1992). According to Muhumuza (1995), milk ranked third, after matooke and coffee as source of cash income to the people of Nyabubare sub-county in Bushenyi district, Western Uganda. However, in the recent past this has changed greatly due to a number of factors. According to Muwanga (1994) and Mpairwe *et al.* (1998), the low milk production in Uganda is attributed to poor feeding, poor breeds of cattle, low prices of milk, poor insemination methods and prolonged drought. In fact, Boonman (1993) observed that the major problem among milk producers is feeding of the cattle on elephant grass alone which is deficient in nutrients that are required to sustain milk production. This study was conducted to ascertain the major determinants of milk production in Nyabubare sub-county, Bushenyi district in western Uganda. The generated information will facilitate development of measures to mitigate factors responsible for the low milk production in the sub-county and which in turn will improve the livelihoods of communities in the sub-county.

Literature Summary

Milk is considered the most near food because it contains all nutrients necessary for healthy human growth, bodily maintenance and reproduction. The major nutrients found in milk are proteins, fats, carbohydrates, mineral salts, and vitamins

especially A, D, E, K, C and B complex (Okello-Ouma, 1982). Milk production is influenced by many factors some of which include the environment under which the cow is raised, breed and management (Wilson *et al.*, 1987). For example, cattle in the tropics have on average lower milk yields and shorter lactations than cattle in temperate countries (Frandsen, 1974). High ambient temperatures and humidity depress the feed intake of all cattle whereas very low temperatures require more energy to maintain the animal body temperature and therefore less energy is available for milk production. During the dry season, pasture and water availability are reduced while during the rainy season, animals feed on abundant, young succulent pastures leading to a high level of milk production (Okello-Ouma, 1982).

The breed and age of the cow also influence milk production. Milk yield tends to increase with the age of the animal up to the seventh or eighth lactation. Larger breeds also produce more milk than small cows (Tekerli *et al.*, 2000). This could in part be explained by the fact that larger animals consume more feeds. The type of management under which cows are put influences how much milk they produce. Cows under intensive management lactate longer (Tucker, 1981) while confining animals at night result into reduced milk production (Twine, 1992). The quality of feed also influences productivity (Boonman, 1993). According to Grimaud *et al.* (2007), the average milk production in Ugandan cows is between 6.7 - 7.7 litres per cow per day compared to 25 litres per cow per day under improved management and adequate nutrition.

Study Description

The study was a cross sectional survey conducted to ascertain the determinants of milk production in Nyabubare sub-county, Bushenyi district between December 2006 and January 2007. A combination of methods including questionnaires, interview guide and personal observations were used to gather information from the respondents. A multi-stage sampling technique was used to identify the parishes, villages and respondents in the sub-county. From each parish, stratified random sampling was employed to select farms as follows; Nyabubare (17), Nyarugote (15) Kahungye (10) and Kizinda (8). A semi-structured questionnaire was used to gather information from the farmers and extension workers on the major constraints of milk production in the area. In total 50 farmers and two extension officers were interviewed. Data were analysed using descriptive statistics of the Statistical Package for Social Scientists (SPSS) computer package (Rees, 1987).

Research Application

The different breeds of cattle encountered in the sub county were Friesians, Guernsey, Jersey, Ayrshire, Boran and Ankole long horned (Table 1). Milk yield per cow per day varied with breed. The highest average milk yield per cow per day was obtained from the exotic cows; probably due to their high genetic potential. Cross breeds had moderate milk yield. There was a high correlation between feeding and milk yield. Milk production was also high among the farmers with proper grazing systems and who practice supplementary feeding. Similarly, the types of feeds used to feed the animal affected milk yield. The most commonly used feed supplement was a mixture of legume and grass mixture especially calliandra and elephant grass. A significant number of farmers did not provide supplementary feeds. Farmers with high level of education had the highest level of milk production compared to their uneducated counterparts. This could be because the latter do not easily adopt the innovations and may not interpret extension information easily. The study also revealed that a high number of farmers keep local breeds of cows. This is probably because local cows do not demand a lot in terms of management. In addition, exotic cattle are expensive for the resource poor farmers. Therefore, with such high numbers of local cows, it is not surprising that the milk yield is low.

Table 1. Breeds of cattle, body weight, and average milk yield per cow per lactation and milk composition, Nyabubare, Bushenyi district 2006/2007.

Breeds	Body weight (kg)	Milk yield (kg)	Fat (%)	Protein (%)	Lactose (%)	Ash (%)	Total solids (%)
Holstein	640	7360	3.5	3.3	4.7	0.72	12.2
Brown Swiss	640	6100	4.0	3.6	4.9	0.74	13.1
Ayrshire	520	5270	4.0	3.8	4.6	0.72	12.8
Guernsey	500	5060	4.7	3.8	4.7	0.76	14.0
Jersey	430	5370	5.1	4.0	4.8	0.77	14.4
Shorthorn	530	3300	4.0	3.3	4.9	0.73	12.9

Table 2. Price of milk per litre in Nyabubare sub-county, 2006/2007.

Price of milk/litre (UGX.)	Frequency	Percent (%)
200	35	70.0
250	8	16.0
300	7	14.0
Total	50	100.0

Recommendations

The study has shown that milk production is a function of many factors. However, the levels of management and breeds of the cattle were the key determinants of milk production. Therefore, it is imperative that farmers be encouraged to acquire exotic breeds. Since low milk prices was identified as a major constraints to milk production, there is need for farmers to explore marketing methods that allow them to bargain for better prices such as cooperatives. In light of the low level of education of the farmers, education and training of farmers will play a great role in boosting milk production thus making dairying a profitable venture.

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References

- Boonman, J. G. 1993. East Africa's grasses and fodders: their ecology and husbandry. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Frandsen, R.D. 1974. Anatomy and Physiology of farm Animals. 2nd Edition, Lea and Febiger, Philadelphia.
- Grimaud, P., Mpairwe, D., Chalimbaud, J., Messad, S. and Faye, B. 2007. The place of Sanga cattle in dairy production in Uganda. *Tropical Animal Health Production* 39(3):217-27.
- Mpairwe, D.R., Sabiiti, E.N. and Mugerwa, J.S. 1998. Effect of dried *Gliricidia sepium* leaf supplement on feed intake, digestibility and nitrogen retention in sheep fed dried KW 4 elephant grass (*Penisetium purpureum*). *Agroforestry Systems* 41:139 - 150.
- Muhumuza, E.B. 1995. An investigation into dairy production in Bushenyi District. Research Dissertation Makerere University, Kampala, Uganda.
- Muwanga, J.W. 1994. An economic evaluation of zero grazing dairy production systems in Uganda: A case study of Mpigi and Mukono Districts. M.Sc. Thesis, Makerere University, Kampala, Uganda.
- Okello Ouma. 1982. Milk Production and Processing. Department of Animal Science, Makerere University, Kampala, Uganda.
- Rees, D.G. 1987. Foundation of statistics. First Edition, Champson and Hall.
- Tekerli, M. Akinci, Z., Dogan, I. and Akcan, A. 2000. Factors affecting the shape of lactation curves of Holstein cows

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from the Balikesir province of Turkey. *Journal of Dairy Science* 83:1381 - 1386.

Tucker, H.A. 1981. Physiological control of mammary growth, lactogenesis and lactation, London, UK.

Twine, B.D. 1992. Costs and returns in dairy production in Bushenyi. Makerere University, Kampala, Uganda.

Wilson, R.T., Ward, P.M., Saeed, A.M. & Light, D. 1987. Milk production characteristics of the Kenana breed of *Bos indicus* in Sudan. *Journal of Dairy Science* 70: 2673-2679.