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Feed utilizable resources availability and utilization in urban and peri-urban areas of Kampala and Mbarara districts, Uganda

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Abstract

A study was conducted in Kampala and Mbarara districts, Uganda to identify and document locally available feed resources for commercial beef production. A total of 72 respondents from each district were used for the study. Data were collected using structured questionnaires, observations, and interviews. Secondary sources of data were also reviewed.

Over 60% respondents used zero-grazing system for rearing cattle. Most cattle keepers in the urban and peri-urban areas kept cattle for milk other than beef production. Most respondents in Mbarara district kept more indigenous Ankole cattle than the dairy breeds, while those in Kampala kept more dairy breeds than the indigenous Nganda cattle. Major feed resources used in Kampala and Mbarara districts were agro-industrial by-products, commercial ingredients and crop supply residues. More respondents in Kampala district used both crop supply residues and agro-industrial by-products than their counterparts in Mbarara. In Mbarara district, production and availability of crop-based livestock feed resources heavily relied on the rainfall patterns but in Kampala, the feed resources were independent of the seasons because they were sourced from different parts of the country. The market crop supply residues were widely utilized feed resources in Kampala and Mbarara. Banana peels were the most widely used crop residues, while maize bran was the most widely used agro-industrial by-product. Commercial feed ingredients were the most ingredients utilized by respondents in Kampala (72%) and Mbarara (66%) due to their ability to provide most essential nutrients such as energy and protein. Kampala district had a greater variety and availability of the feed utilizable resources than Mbarara. There is a need to formulate low cost rations based on the available feed resources for testing under the semi-intensive beef production systems to identify most practical package for beef production in urban and peri-urban setting.

Keywords: *beef production, cattle breeds, investment, low cost rations, nutrients, profits*

Introduction

Among the key strategies for improvement of livestock productivity and its contribution to National Gross Domestic Product (GDP), is the strategic utilization of locally available resources to maximize profits, while conserving the resource base. Uganda Government aims at achieving self-sufficiency in meat and other livestock products as well as the promotion of meat processing and export. FAO (2010) estimated Uganda's annual meat production at just over 3.4×10^5 tonnes with only about 15% of its beef stocks slaughtered annually. Currently, animals for slaughter are transported over long distances from production areas in the mid-western areas of the country leading to increases in the cost of production and high price of beef to the consumer. This limits the potential of low income earners to access beef, hence low per capita meat consumption of 9.85 kg compared to the 50 kg annually recommended by the FAO.

The Government of Uganda is promoting investment into the sector by encouraging transfer of immature stocks for fattening and finishing near major market centres as well as enhancing strategic utilization of locally available resources to maximize profits (MAAIF 1998). In order to contribute to this goal, the National Livestock Resources Research Institute (NaLIRRI) with financial assistance of the World Bank and Uganda Government launched a project to design economical beef production packages through systematic research to guide potential beef producers in Urban and peri-urban areas of Uganda. The study seeks to address the rational management of locally available feed utilizable resources (FUR) within the urban/peri-urban social setting to provide additional cheap but quality beef for the ever-increasing population in these centres. It is hoped that the packages once developed will attract more investors into the sector on top of increasing beef supplies proximate to hot market centres.

Beef production systems in Uganda are predominantly based on traditional pastoral, agro-pastoral and communal grazing systems accounting for over 90% of the total cattle population (King 2002). Beef cattle population consists mainly of local Zebu, Nganda and Ankole cattle with low productivity (MAAIF 2010; MAAIF 2011). Smallholder dairy farms that offer another source of slaughter cattle in terms of undesired bull-calves and culled dams are scattered and far from the main consumption urban and peri-urban centres of Uganda. Production of beef near major market centres (Kampala and its confines) requires thorough exploration into availability of potential feed resources in these localities. Despite recommendations by the meat master plan study carried out in the late 90s there has been no work documented on testing the viability of feedlots in Uganda. However, other countries have long adopted this strategy to augment their National beef supplies and even produce surplus for export. Most of the documented works on the use of urban feed resources products in Uganda has centred on the use of local brewers waste and industrial by-products for feeding non-ruminant livestock, mainly poultry and swine (Okot et al1976). Little work has been conducted to address the management of locally available feed utilizable resources for beef production within the urban and peri-urban areas. Therefore, this study was conducted to identify and document locally available feed resources in Kampala and Mbarara districts that could be used in commercial beef production within the confines of the major beef market centres of Uganda.

Methodology

The study was conducted as a survey in the two districts of Kampala and Mbarara where the "Urban/ peri-urban Beef project" was being implemented in Uganda. In Kampala, the study was conducted in all the five divisions (Kampala central, Makindye, Nakawa, Rubaga and Kawempe); Mbarara in three divisions (Kikoba, Nyamitanga and Kamukuzi), reflecting the full urban /peri-urban picture. The survey was conducted using structured questionnaire and direct interview techniques. Respondents were selected purposively targeting major value chain-actors. The study specifically targeted categories of stakeholders involved in the generation, utilization, marketing and/or disposal of locally available resources (market crop suppliers, abattoirs, crop-residue dealers, feed mixers, produce-millers, cattle and poultry farmers, brewers and bar-operators) that could potentially be utilized for profitable commercial beef production. Feed resources availability was determined based on a scale from 1-10 (1= very scarce; 2 = little; 3= moderate; 4 = plenty; 5 and above = excess). Data analysis was conducted using Statistical Package for Social Studies, SPSS (16.0).

Results and discussion

Cattle production systems

Over 60% respondents used zero-grazing, while the least used free range systems for rearing cattle (Figure 1). This trend was attributable to the current purpose of livestock production (and thus the breeds kept by the respondents) and limited land in urban/peri-urban areas for cattle production. Most cattle keepers in the urban and peri-urban areas keep cattle for milk other than beef production.

Figure 1. Major cattle production systems in Kampala and Mbarara districts.

Cattle breeds

While more respondents in Mbarara kept indigenous Ankole cattle than the dairy breeds, the reverse was true of Kampala with most respondents keeping dairy breeds than the indigenous Nganda cattle (Figure 2). This observation could be explained by the fact that more Kampala respondents used Zero-grazing system compared to their counterparts in Mbarara (Figure 1). In addition, and on the reverse side, more respondents from Mbarara practiced open grazing compared to their counterparts in Kampala implying the likelihood of the later having more open land for grazing than the former. The observation also has a direct implication on the extent to which the indigenous breeds, which by and large are beef breeds (though kept as multi-purpose). This also partly explains why Mbarara was most likely adequately supplied with beef cheaper stocks in addition to being at the center of the cattle corridor.

Figure 2. Cattle breeds kept in Kampala and Mbarara districts.

Feed resources

Major feed resources in Kampala and Mbarara are summarized in Table 1 and Figure 3. The most widely used feed resources were agro-industrial by-products, commercial ingredients and crop supply residues respectively (Figure 3). More respondents in Kampala district used both crop supply residues and agro-industrial by-products than their counterparts in Mbarara probably due to the higher level of availability of these resources in Kampala compared to Mbarara. This trend was characteristic of Zero-grazing production systems that dominated the urban and peri-urban centres. Although brewers' and livestock production wastes were the cheapest of the resources utilized, the Zero grazing system attached very low value to them because of the limited availability, high toxic risks and their effect on product quality as well as processing requirements involved before their utilization.

Table 1. Major feed resources in Kampala and Mbarara

Feed category	Kampala	Mbarara

	Banana leaves	Banana peels
	Banana peels	Bean haulms
	Banana pseudo-stems	Cassava leaves
	Bean haulms	Cassava peels
	Cassava leaves	Nakati market rejects
Crop supply residues	Cassava peels	Sweet potato vine
	Jack fruit residue	
	Nakati market rejects	
	Sweet potato vine	
	Sweet potato peels	
	Yam leaves	
	Cotton seed cake	Maize bran
	Maize bran	Sunflower seed cake
	Rice bran	Cotton seed cake
Agro-Industrial by-products	Wheat pollard	
	Soybean seed cake	
	Sunflower seed cake	
	Cotton seedcake	
	Wheat spent grains	Kwete residue
Brewers' waste	Kwete residue	Marwa residue
	Marwa residue	

	Dried cassava chips	Fish rejects (Mukene)
	Fish rejects (Mukene)	Lake shells
	Lake shells	Fish meal
Commercial feed ingredients	Fish meal	Sorghum grain
	Sorghum grain	Mineral lick/powder
	Soya bean meal	
	Mineral lick/powder	
	Broiler litter	Broiler litter
Livestock production waste		
	Layers litter	Layers' litter

Figure 3. Feed resources utilization in Kampala and Mbarara districts.

Annual feed resources availability

Most livestock feed resources were crop-based and therefore, their production and availability heavily relied on the rainfall patterns especially in Uganda where Agriculture follows the natural weather patterns. However, in the case of Kampala (commercial capital of Uganda), feed resources were sourced from different parts of the country and therefore, it was not surprising that the feed resources were never totally absent at any time of the year. This was also attributable to the variations in seasons across the country such that while the eastern and north-eastern parts of Uganda start receiving the first rains as early as February, the central region/lake Victoria crescent will be almost dry at this time with the first rains coming around March or early April and falling almost till June. The mid-western and western areas then receive their rains last, starting around April-May and falling through to around July. The northern and north-eastern parts of the country are often found wet when most other parts of Uganda are dry. June to August is sometimes very rainy in the Lango and Acholi and West Nile sub regions sometimes leading to floods and destruction of lives and property. This variation in weather patterns across Uganda provides for crop-production almost throughout the year though from different corners of the country. Traders then source these crops as part of their business activity and supply them to major market centres, top among them being Kampala. The most widely utilized feed resources included Agro-industrial by-products, crop residues and commercial feed ingredients. Brewers' waste and livestock production wastes (poultry litter) were not commonly used by the cattle farmers although observations from this study revealed that many poultry and pig farmers had adopted them as a means of reducing costs of feeds for their stocks.

Market crop-supply residues

The market crop-supply residues were widely utilized feed resources category in Kampala (61%) and Mbarara (43%). This was probably because crop residues were the cheapest available feed resource other than natural pastures; had the highest options (Table 1); least varied in availability (Figure 4). Of all the crop residues (Table 1), banana peels was the most widely used in Mbarara and Kampala probably because they were available almost all year round; sourced from an all-time maturing perennial banana crop; bananas were a staple crop.

Figure 4. Variation of crop supply residues availabilitywithseason in Kampala and Mbarara districts. Key: 1= very scarce; 2 = little; 3= moderate; 4 = plenty; 5 and above = excess

Agro-industrial by-products (AIBs)

The study showed that the most widely used agro-industrial by-product was maize bran. Respondents in Kampala district (83%) and Mbarara (72%) used AIBs most of the time. Other AIBs commonly utilized included cotton, soybean and sunflower seed cakes, and wheat pollard as well as rice bran (Table 1), often used as alternative for maize bran. Most of these resources were used as supplements for dairy animals rather than beef animals, which used mainly crop residues. While all these feed resources were used by respondents in Kampala, only maize bran, sunflower and cotton seedcake were utilized by respondents in Mbarara (Table 1). Most crop residues were utilized by the respondents except sweet potato peels, Jack fruit residues, yam leaves, banana pseudo-stems and banana leaves, which were popular among Kampala respondents but not those in Mbarara. Mbarara respondents claimed the banana leaves and pseudo-stems were most preferably used to mulch their banana fields or for covering the food during cooking. The variation of agro-industrial by-products with season is shown in Figure 5. There was low availability of agro-industrial by-products between May and August probably because of characteristic low rainfall (dry season period), hence low productivity of agricultural products.

Figure 5. Variation of agro-industrial by-products availability with season in Kampala and Mbarara districts. Key: 1= very scarce; 2 = little; 3= moderate; 4 = plenty; 5 and above = excess

Brewers' waste

The brewers' waste was the second least utilized feed resource in Kampala and Mbarara after livestock waste (Figure 3). This may be attributable in part to their low availability; high variability of supply (Figure 6); low nutritive value especially for dairy production, which dominate cattle production systems of the urban/ peri-urban setting. Respondents in Kampala reported that most of the brewers' residues from local brews were re-cycled as a measure to maximize profits from them. Only three types of brewers' residues were found utilized in Kampala: Wheat spent grains (from beer brewery); Marwa and Kwete residues from local brews consumed in the city. Respondents from Mbarara only utilized the local brew residues.

Figure 6. Variation of brewers' waste availability with season in Kampala and Mbarara districts.
Key: 1= very scarce; 2 = little; 3= moderate; 4 = plenty; 5 and above = excess

Commercial feed ingredients

Commercial feed ingredients were almost equally utilized by respondents in Kampala (72%) and Mbarara (66%). The popularity of these ingredients was due their ability to provide nutrients such as protein, minerals and vitamins to the animals. Among the commercial feed ingredients, fish meal, soybean meal, silver fish (Mukene) rejects, sorghum grains, mineral lick, lake shells and dry cassava chips were mostly used especially in Kampala. None of the respondents in Mbarara was found to utilize dry cassava chips or soybean meal probably because these crops were not commonly produced in the area.

Figure 7. Variation of commercial feed ingredients with season in Kampala and Mbarara districts.
Key: 1= very scarce; 2 = little; 3 = moderate; 4 = plenty; 5 and above = excess

Livestock production waste

Livestock production waste, also referred to broiler or layers' litter was generated from deep litter system. This waste was the least utilized feed resource (Figure 3) both in Kampala (3%) and Mbarara (0%). The waste was least utilized due to lack of knowledge about its nutritive value as well as the risk of utilizing them for cattle given that most cattle farmers were dairy farmers who kept highly valuable stocks. No respondent from Mbarara utilized the waste.

Figure 8. Variation of livestock production waste with season in Kampala and Mbarara districts.
Key: 1= very scarce; 2 = little; 3= moderate; 4 = plenty; 5 and above = excess

Conclusions

- The most dominant cattle production system in Kampala and Mbarara urban and peri-urban centres was Zero-grazing; leaned towards dairy production.
- Much of the beef stocks in Kampala and Mbarara were found in the peripheral (peri-urban) of the city center; kept as dual purpose breeds providing both milk and meat.
- Mbarara had largest number of respondents keeping both dairy and beef breeds compared to those in Kampala who kept mainly dairy cattle.
- The main feed utilizable resources in Kampala and Mbarara were market crop supply residues (banana peels and sweet potato vines); agro-industrial by-products (maize bran, rice bran, cotton seedcake, soybean seedcake, sunflower seedcake and wheat pollard); brewers' waste (wheat spent grains, marwa residue and kwete residue); commercial feed ingredients (fish meal, soybean meal, mineral lick, soybean grain, sorghum grain, lake shells and cassava chips); and livestock production waste (broiler/layers litter).
- Kampala had a greater variety and availability of the feed utilizable resources than Mbarara.
- There is need to test a variety of semi-intensive cattle production systems as options for beef production suitable for the urban/ peri-urban centres.

- There is a need to formulate low cost rations based on the available feed resources for testing under the semi-intensive beef production systems to identify most practical package for beef production in urban/ peri-urban setting.

References

Food and Agriculture Organization of the United Nations (FAO) 2010 Current World wide per capita meat consumption, on-line statistical service, FAO, Rome, http://faostat.fao.org/site/291/default.aspx

King A 2002 Joint Donor Agencies study on performance and growth prospects for strategic exports in Uganda, annex to case study on livestock and livestock products. Ministry of Agriculture Animal Industry and Fisheries (MAAIF), Republic of Uganda.

MAAIF 2011 Statistical Abstract, Ministry of agriculture, Animal Industry and Fisheries, Entebbe, Uganda. www.agriculture.go.ug/userfiles/Statistical%20Abstract%202011.pdf

MAAIF 2010 Statistical Abstract, Ministry of agriculture, Animal Industry and Fisheries, Entebbe, Uganda. www.agriculture.go.ug/userfiles/Statistical%20Abstract%202010.pdf

MAAIF 1998 The Meat Production Master Plan Study Vol. v. Socio-economics of meat production and marketing, Republic of Uganda, Ministry of Agriculture Animal Industry and Fisheries, Entebbe, Uganda.

SPSS 2012 Statistical Package for Social Studies, Student Version (16.0)

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