



Tropentag 2011
University of Bonn, October 5 - 7, 2011
Conference on International Research on Food Security, Natural
Resource Management and Rural Development

**Banana (*Musa* spp. AAA-EA) marketing in Uganda.
Should bananas be weighed in the future?**

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Introduction

Selling agricultural produce, not only banana, by volume or piece and sensory judgement without measuring weight is a common practice in East Africa. It has a long tradition and accordingly structures are in place to support this kind of evaluation. Most important in this context is expert knowledge both on the buyer's and the seller's side to enable grading and pricing of the produce. But, looks may be deceiving. If the results, estimations and conclusions of the two sides are incongruent, there is little chance for keeping the negotiations on an objective base and maintaining a good business relationship is hampered, even if a deal is made. One or even both of the parties are likely to feel cheated upon. Now, if they would weigh their produce, there would at least be one objective, informative value to reduce their uncertainty in negotiations.

Figure 1: Perceptions and individual cases: are these bunches small, medium or large?



Bananas are ubiquitous in the Lake Victoria region of East Africa. Though not always seen as a cash crop by farmers, it is a staple food crop, known mostly by the name of "Matooke" and closely related with the national heritage of many Ugandans. Increasingly marginal production systems will make it harder and harder to produce sufficient banana quantities in the future. Quality banana is usually sold by bunch. With a focus on the needs of scientists, WAIREGI et al. (2011) have come up with a non-destructive method for banana weight estimation in plantations. Sacks are also used in Uganda, especially for banana fingers of poor quality. Although sack-wise packaging can be seen as a way to quantify produce volume, it has the disadvantage of being a black box for buyers, especially in the case of banana, as only the upper produce layer quality can be evaluated sensorial without mayor circumstances. BARHAM and CHITEMI (2008,13f) reported agricultural produce sales in sacks from Tanzania, where they are commonly used for volume

measurement and transport. The authors give substantial evidence regarding the deep rootedness of this practice there, leading from local produce pricing all the way to governmental taxation. Opposition of many stakeholders to replace the practice by weighing is thus intense, they report, so that even a law enacted to make weighing mandatory on wholesale markets cannot be enforced. Rwanda, where banana weighing is already practiced on wholesale markets, is a contrary case. Anticipating results from this survey, Southwest Ugandan traders supplying Kigali report experience with the procedure and consider the trade worthwhile. A marketing cost calculation for cooking banana in Rwanda by FERRIS et al. (2002,51) includes costs for weighing at the wholesale value chain step, and they appear, compared with other marketing costs, practically negligible. Clearly, costs would rise if weighing was to be practiced at more value chain levels, but the ultimate question is, do the benefits (both social and financial) of produce weighing outweigh the additional costs? In this context another crucial issue must be mentioned: the price information systems. At the wholesale level it may be assumed that such intelligence is available, but what good is weighing out in the countryside, at the farm gate, if producers do not know the current prices per kilogram or pound? FERRIS et al. (2008,6) reported that market information via the radio was used by 68% of their respondents in Uganda. They recommend putting a focus on this kind of communication channel (FERRIS et al. 2008,11) and point out that 42% of respondents were unable to use market information systems effectively (FERRIS et al. 2008,12). Interestingly price information in newspapers and on cell phones is already based on weight, adoption of this information technology might consequently pick up, if bananas were in fact weighed. The latter circumstance can accordingly be seen as a missing link to make adoption of such information technologies or systems more likely, it will add a driving force, while at the moment there is hardly more than potential.

Material and Methods

Data has been collected by the University of Hohenheim which partners in an IITA led and BMZ financed project where it has been entrusted with the investigation of banana produce marketing channels of farmer groups in Uganda. In cooperation with banana farmers, banana marketing group leaders and bulk banana buyers, their knowledge and improvement suggestions regarding banana marketing were surveyed in Uganda. After explorative interviews and group meetings, a questionnaire survey approach was employed in order to assess the general situation of the marketing groups and their social environments. Empirical results discussed in this article have been selected and extracted from this survey to specifically discuss the issue of banana weighing. Within the framework of another banana marketing project and in cooperation with farmer groups in southwest Uganda, the organization Technoserve, which assisted in the data collection for this article, sparked the idea to investigate chances and constraints of banana weighing in this survey.

Results and Discussion

Banana group marketing activities could be verified in the south-western and the south-eastern regions. There, banana production is intense and the surveyed groups have established informal, but dedicated relationships with buyers who they work with on a regular basis. 56% of these buyers supply Uganda's capital Kampala. A minority of 7% exports to Rwanda. Currently prioritized grading characteristics are maturity, ripeness, size, and physical damages, while weight ranges last. Weighing is generally not practiced in the case of banana, except when produce is exported to Rwanda. Accordingly, bunch evaluation and pricing is subject to negotiations among experts, often called graders or sales managers, with respective tacit knowledge. They are, with their experience and their networks, in the position to make comparisons and are often needed by the stakeholders. Through weighing, their work could be further facilitated. They are however likely to see such a new procedure as a threat to their business. It would be vital for the success of a weighing trial to include the expertise of the

graders. Pricing solely according to weights would not function because, as elaborated above, the quality and price of the produce is subject to many different factors which must be considered. Although weight is an informative, objective value, it is not a “silver bullet”, meaning that, in some cases, characteristics other than weight may be more decisive (e.g. when the bunch is overripe) and annihilate the benefits of the weight information.

Neutral price information systems are mostly based on weights and often have entry barriers. Examples are cell phones and internet platforms, which require energy and hardware, but also recent newspapers which are hardly available beyond urban centres. Consequently, they are rarely used, while information asymmetry and word of mouth communication prevail. 96% of the group members surveyed, 87% of the non-group members and 74% of the buyers think it would be good to weigh banana bunches. Critics among the farmers argue that through weighing new ways of beguilement in banana trade may be introduced. Possible manipulations of scales and cheating in the weighing process may cause severe problems they say. But the current total dependency on trust also hampers business transactions, while weighing is at least an option to reconfirm sensory estimations. Moreover, the Uganda National Bureau of Standards (UNBS) has recently improved on the certification system for scales by replacing stamps through stickers which are harder to forge (UNBS 2011). But, another factor is apt to decrease the likelihood of adoption. The professionals, 78% of the group leaders and 90% of the buyers, are largely satisfied and see the current grading procedure as unproblematic. Consequently there is little problem pressure to suggest change. But although group leaders say that timely payment is the most important determinant for good relations with buyers, both group leaders and buyers thereafter prioritize mutual honesty, mutual trust and mutual knowledge of the market price. For the latter, weighing could add a crucial factor to enable this mutual knowledge and reduce the dependency on trust.

Table 1: Balancing challenges and opportunities

Arguments for banana weighing (potential driving forces)	Arguments against banana weighing (potential inhibiting forces)
Gate opener to more calculable agriculture (nutrient exports, input need, yield predictions)	Learning and adaptation process takes time
Transfer of the procedure to/from other crops or products (e.g. grain is often weighed)	Feasibility esp. for small, local (bicycle) traders → quantities and weighing tools (scales)
Market information systems may be used more efficiently	Current grading experts will oppose
Comparable quantification/measurement	Current grading works, low problem pressure
Less cheating/more transparent grading	Instrument (scale) manipulation
Eases taxation and freight traffic regulation	Weak institutions/enforcement difficult
Labor is relatively cheap	More work for traders (longer trade process)
Bunch “culture”, sacked banana inferior	Sacks available for volume measurement

Infrastructural problems, nutrient exports and input scarcity put severe strain on most banana production systems in Uganda, but weighing could provide for improvements by enabling farmers and their advisors to calculate estimations regarding the degree of biomass extraction from their agro-ecosystems. The values from weighing may provide a first step towards quantifications in general and provide for a convincing incentive for farmers to keep records and later books. An increased demand for training and extension is likely to result from this activity, as thinking about agricultural produce weights automatically leads to questions regarding soil chemistry and physics, plant physiology and biomass management. More specifically this relates

to yield predictions, field site evaluations and fertilization practices. The related calculations can be made rather easily and they are likely to have a very high relevance for the farmers concerned. Apart from potentially more sustainable agricultural management, better consumer products can be a consequence of weighing. As harvested fruits lose weight with age, freshness would suddenly pay. Ultimately weighing also is an aid for haulers and traffic planners in avoiding road damages and thus in the preservation of infrastructural public goods. Overall it can be said, that the benefits of weighing go notably beyond market organization and fair price finding, potentially helping to recover and preserve such banana agro-ecosystems in Uganda which have over decades of intensive, unsustainable use become effete.

Answering the call and considerations beyond

Speaking in the words of the conference call for “*Development of the margin*” (TROPENTAG 2011), a pan-Ugandan introduction of banana weighing would be a massive “*reorganization*” of marketing procedures, but would offer “*perspectives for further development*”. For the banana farmer groups surveyed, it would be an option to “*shape development in the circle of their influence*” and they are at least willing to try it out. If farmers knew the weight of their bananas, “*resource use and ecosystem services*” could be better calculated. In the realm of an “*increasingly globalized resource use*” the weighing procedure provides a gateway to international markets as well.

Now, may it become a reality? Weighing pilots in the field could test feasibility issues on a small scale, with the existing and motivated banana marketing groups and their buyers. This process would likely be accepted by the partners. But what should happen then? Even if a trial succeeds, further adoption boils down to enforcement pressure (to save public goods such as ecosystems and roads). A nationwide acceptance is only possible through authoritative innovation and strong institutions. On the contrary, large groups may gain enough power to dictate usage of weighing scales in their own, immediate banana trade, even without much political support. If they are not too greedy, they could make weighing a model on the way to much less insecure marketing and improved agricultural practices.

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Acknowledgements

Primarily I wish to thank Mr. Edward Agaba and Mr. Bartholomew Kabalega of Technoserve, Uganda for encouraging me to include their idea of banana weighing into my research. It was, and still is, hugely interesting to work on it. Thanks! My work has been financed by the German Federal Ministry for Economic Cooperation and Development (BMZ) and was practically enabled through the project leadership of the International Institute of Tropical Agriculture (IITA) in Uganda. Thanks also go to the people of the two other survey partners: Uganda National Agricultural Advisory Services (NAADS) and Volunteer Efforts for Development Concerns (VEDCO).