

# Perception of quality in certified organic pineapples by farmers in Kayunga district, Central Uganda: Implications for food security

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## Abstract

In East Africa, Uganda is one of the major producers of organic pineapples for export. These pineapples are mainly produced in central Uganda and have to meet stringent quality standards before they can be allowed on international markets. These quality standards may put considerable strain on farmers and may not be wholly representative of their quality interpretation. The aim of this paper is therefore, to determine the Ugandan organic pineapple farmers' quality perception, the activities they carry out in order to attain that quality and challenges (production, postharvest & marketing) faced on the same. Qualitative semi-structured interviews were carried out among 28 organic pineapple farmers in Kayunga district, central Uganda. Findings suggest that quality of organic pineapples is mainly perceived in terms of product attributes particularly appearance followed by food security provision. Certification plays a minor role in what farmers describe as organic quality. High production input costs (labour and coffee husks) coupled with a stagnant premium are some of the major challenges faced by farmers in attaining organic quality. The paper argues that currently there are concealed negative food security effects embroiled in these pineapple schemes. It is recommended that the National Organic Agricultural Movement of Uganda (NOGAMU) works with all relevant stakeholders to have the farmer premium price raised and an official organic policy enacted.

*Keywords:* organic, perception, pineapple, quality, Uganda

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## 1 Introduction

Uganda is one of the leading certified organic producers in Africa (UNEP, 2010) especially for fruits like pineapples (*Ananas comosus*). Organic pineapple production in Uganda is mainly driven by the premium markets in Europe (Taylor, 2006) and unlike the con-

ventional<sup>1</sup> pineapple sector where farmers apply synthetic chemicals and mainly supply the local urban markets, organic pineapple farmers utilise natural fertilisers (coffee husks) and don't spray chemicals. Certified organic pineapples are mainly produced in central Uganda in Kayunga, Masaka and Luwero districts. Of these

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<sup>1</sup> Traditional farming in Uganda can be defined as a farming system that has evolved through time, is quite adapted to the local cultural conditions and doesn't utilise synthetic chemicals but still does not meet the requirements of the organic standards and is prone to degradation (Scialabba & Hattam, 2002). So in this study traditional farming methods refer to production methods that do not utilise synthetic chemicals but also have few or no ecological intensification procedures.

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three, Kayunga currently produces the most pineapples because of the fertile soils, cheap labour (Muyanja & Turyagyenda, 2006), bimodal rainfall and an altitude of about 1200 m above sea level, that are suitable for pineapple cultivation (Bolwig, 2012). Certified organic pineapple production in these areas began as early as 2004 with most farmers seeing it as an opportunity to benefit from premium prices in the lucrative organic export markets. However on individual basis, the farmers cannot afford the high certification costs so have been operating under internal control system arrangements (group certification schemes) run by export companies (Hine & Pretty, 2007; Bolwig, 2012). The farmers have an average pineapple plot size of one to five acres (Bolwig, 2012). In most cases, the farmers intercrop the pineapples with beans for the first two months after which they intercrop with bananas (*Musa*) and fruit trees like paw paws (*Carica papaya*). This offers them additional sources of income and food security thus reducing their risks in farming business. Food security in this paper refers to a situation where an individual has access to enough food supplies or income to purchase food and nutritionally adequate diets to enable a healthy and active life (McCalla, 1999). It comprises three dimensions namely: availability (in terms of production), access (ability to buy it) and utilisation (nutritionally correct diets).

The majority of certified organic pineapples in Uganda are grown for export markets where quality is a major prerequisite for access (Muyanja & Turyagyenda, 2006). Food quality is defined as comprising both physical (product) and process components (Grunert, 1995; Brunstø *et al.*, 2002). Product attributes of fruits include the physical and physiological components like colour, size and nutritional value (Barrett *et al.*, 2002) whereas the process aspects represent the specific manner in which food was produced and are a major basis of differentiation of organic from conventional produce (Trienekens *et al.*, 2012). In Uganda, organic food quality is mainly premised on global north quality standards that are the formal institutions or rules (Scott, 1994) determining market access for Ugandan pineapples. However, such formal rules may not necessarily be appropriate for the Ugandan farmers' socio-economic conditions (Taylor, 2006) and have been shown to raise production costs among organic pineapple farmers in Uganda (Bolwig & Odeke, 2007). International organic standards also come with increased certification costs (Barrett *et al.*, 2002) that derail some farmers from engaging in organic pineapple production yet this would have provided them with an opportunity to im-

prove their general livelihood. A recent survey by NOGAMU showed that a large number of the export companies complained of high certification costs and limited supply of products from the small scale farmers as major impediments to doing business (Namuwoza & Tushemerirwe, 2011). According to the same authors, even where group certification had been adopted as a means to curb the high certification costs, it was still costly to organise and manage the farmers. These trends show constraints arising from the international standards requirements.

Since organic standards (Peri, 2006; Lyons *et al.*, 2013) and international market standards (Allaire, 2010) represent how quality in organic products is perceived in the global north, it is prudent to investigate how the Ugandan farmers for whom the standards are intended but live in different socio-economic conditions perceive quality. This can help reveal the extent of the standards congruence with farmers' perception of quality and also provide a basis of harmonisation of quality standards with farmer needs but in line with the IFOAM organic principles as spelt out by IFOAM (2012). In addition, farmers' agronomic and post-harvest practices greatly influence the final product quality (Ruben *et al.*, 2005), therefore, investigating their field activities aimed at achieving quality also becomes essential.

Generally very few studies addressing quality perception among farmers have been done before. Moreover, these were carried out in the global north and didn't focus on the organic sector (Ilbery & Kneafsey, 2000; Kneafsey & Ilbery, 2001; Dimara *et al.*, 2004). To the best of our knowledge, quality perception of organic food among farmers in Africa is an area that has not been explored which reveals a big research gap which this study intends to fill.

This study will thus seek to answer the following questions:

- (i) What are the farmers' perceptions of quality in organic pineapples?
- (ii) What are the farmers' practices aimed at achieving organic pineapple quality based on international organic standards and market requirements?
- (iii) What are the main challenges farmers face in attaining organic quality that is specifically based on international organic standards and market requirements?

## 2 Materials and methods

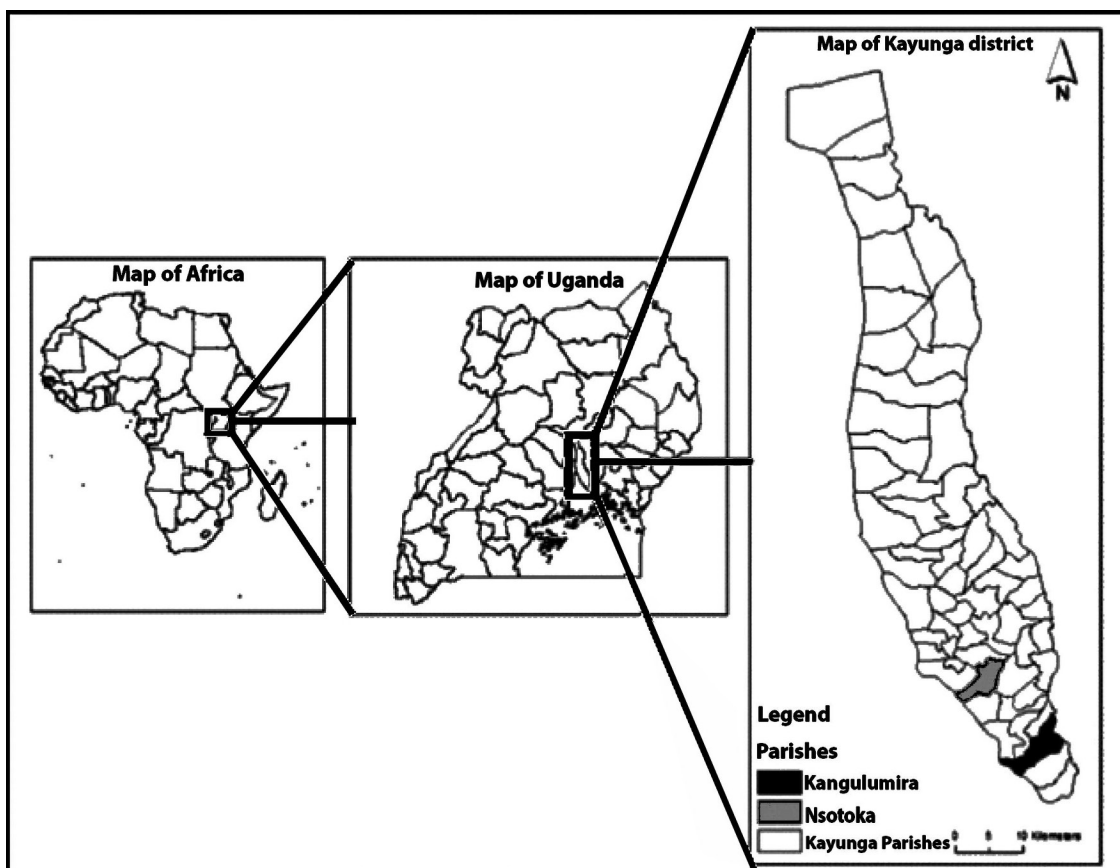
### 2.1 The study area and population

The study was carried out in Kayunga district located in central Uganda. This area is located between 00°42'09"N and 32°53'20"E and is approximately 58 km from Kampala, Uganda's capital city. It has a total area of 1,587.8 km<sup>2</sup> and a population of 294,613 inhabitants. Kayunga district alone produces over 31% of the total Ugandan pineapples (Muyanja & Turyagyenda, 2006). Pineapple farmers within Kayunga district are mainly located in Kayunga and Kangulumira sub counties (Chongtham *et al.*, 2010).

### 2.2 Study design: A qualitative approach

This study followed mainly a qualitative approach with some semi-quantitative analysis. This aimed to get deep insights into farmers' perceptions as seen from their own point of view (Bernard, 1998). Furthermore, we used a mixed methods design that involved both semi-structured interviews and structured observations in order to increase the validity of our research findings (Patton, 1999). Semi-structured interviews were

deemed appropriate for this study because they are most ideal if the objective of the research is to seek peoples' perceptions on certain issues (Mason, 2002). They have also been used before in studies dealing with farmer attitudes (Busck, 2002; Burton, 2004). The interviews and observations were done with the help of six research assistants during the period August, 2011 to December, 2013. The farmers interviewed were located in Nsotoka and Mataba villages in Kayunga sub county and Kangulumira town in Kangulumira sub county. By the time this study was carried out, there were about 33 organic pineapple farmers operating under two different export companies. Thus we purposively selected 28 farmers (out of a population of 33) with the advice of the exporting companies. This was meant to exclude some farmers who were still in the process of conversion to organic farming. We also purposively selected 14 men and 14 women farmers to avoid gender bias. The semi-structured interviews lasted for 40 to 60 minutes and were carried out in the local language luganda before being translated to English by a language expert from Makerere University located in Kampala, Uganda. The interviews were then transcribed using F4 program



**Fig. 1:** Map showing the location of Kayunga district

Source: Map based on data from DIVA-GIS (2013)

(Dresing & Pehl, 2012). Structured observations entailed observing the farmers routines for pineapple cultivation and were carried out on 10 farms in 2 sessions per day. The first session was carried out during the peak period for agronomic operations (6 am–12 pm) while the second session was carried out from 5 pm to 7 pm as this was the time when farmers harvested the pineapples and put them under shade. Key observations from the field were documented.

### 2.3 Data analysis

Initially the lead researcher analysed the data by carefully reading the transcripts and creating categories (Glaser & Strauss, 1967). This was done with the help of Atlas qualitative data analysis software (ATLAS.ti, 1999). The categorisation entailed grouping of data into distinctive sections that related to a wider analytical concept (Dey, 1993). The categories were then further scrutinized and compared to generate higher-level categories or main themes. Coding validity and reliability was ensured by harmonising the codes created by the lead researcher and those independently formulated by the research assistants (Patton, 1999; O'Connor & Gibson, 2003). We also carried out follow up discussions in February, 2014 with purposively selected five (key informant) farmers to confirm or disconfirm our key findings (as described by Corbin & Strauss, 1990; Creswell, 2000; Briz & Ward, 2009). Following this analytical strategy we were able to identify the key attributes used to define quality by the respondents and also contextualise why these attributes were pointed out.

## 3 Results

### 3.1 Farmers' production characteristics

The total acreage under certified organic pineapple production in the study area is approximately 30 acres. The majority of organic pineapple farmers in the area have landholdings ranging from 3–5 acres with 1.5 acres under organic pineapple production. In a typical 1 acre plot, farmers plant 12,445 pineapples and intercrop these with bananas. On the boundaries of the plot, they plant paw paws and cassava. The average yield of pineapples is  $\approx$  8660 fruits per acre with over 50 % of the harvest sold out to export companies and export quality rejects retained for home consumption (30 %) or sold to local markets (20 %). Other crops grown for commercial purposes in order of importance include paw paws, maize and beans. Because organic pineapple production is labour intensive, farmers usually hire external labour.

### 3.2 What are the farmers' perceptions of quality in organic pineapples?

The taxonomy representing the farmers' food quality perception following Grunert & Grunert (1995); Brunsø *et al.* (2002) and Peri (2006) is presented in Fig. 2. Farmers mainly described quality in organic pineapples in terms of product attributes (61 mentions) followed by food security (15 mentions) and lastly process attributes. The quality descriptions by farmers were classified into major categories and sub categories to enable the identification of key themes relevant to the study objectives (ATLAS.ti, 1999; Thomas, 2003).

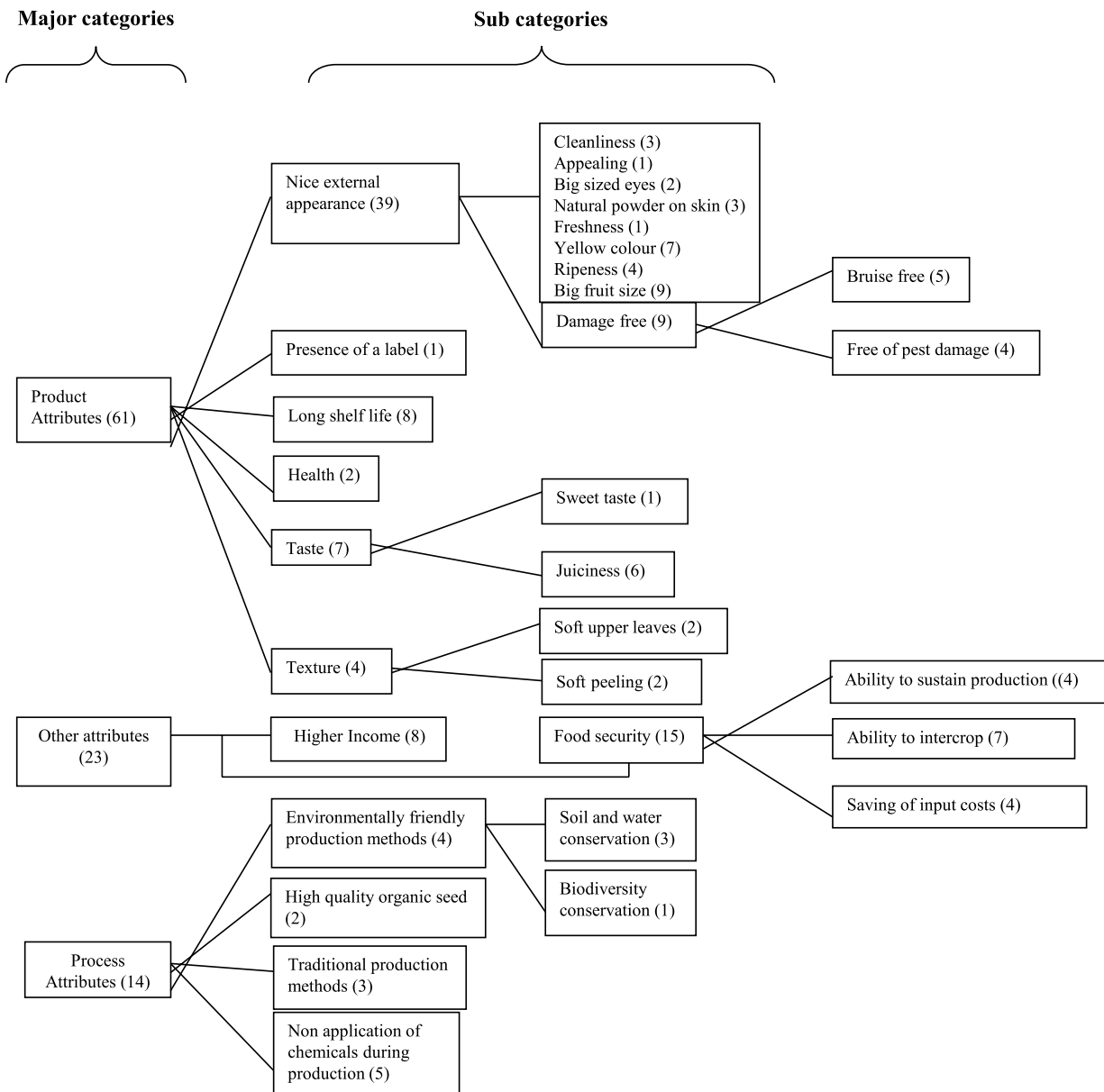
#### 3.2.1 Product attributes

Among the product attributes mentioned by the farmers, nice external appearance, long shelf life, and taste in that order were the most frequently mentioned items as depicting quality. The presence of a certification label had the least significance in terms of product attributes. As concerns appearance, the farmers mainly emphasized big fruit size and absence of damages on fruits as critical indicators of quality. They believed that big pineapples were capable of feeding more family members compared to the small sized ones. Farmers regarded taste as a key quality element stating that organic pineapples had a better flavour than conventional ones because they are grown under "natural conditions". Non damaged fruits were viewed as being less prone to rotting and thus possessed better quality.

#### 3.2.2 Process attributes

Among the process attributes, non-application of chemicals<sup>2</sup> during the production process was perceived as the most crucial indicator of quality in organic pineapples. For instance one farmer stated: "*Organic pineapples possess quality because they have been grown without the use of chemical inputs*" (Female farmer, 27 years old). Chemicals were seen as poisonous to human beings and the environment. Other process attributes in order of frequency of mention by the farmers included environmental friendly and traditional production methods. The environmentally friendly methods focused mainly on soil and water conservation practices like mulching with coffee husks. Farmers believed that such practices conserved soil fertility and eventually improved the quality of the environment. Traditional farming methods were viewed as organic quality signals because according to the farmers, both traditional and organic production systems didn't involve the application

<sup>2</sup> Chemicals include synthetic herbicides, pesticides and fungicides



**Fig. 2:** Taxonomy of attributes representing quality perception as mentioned by the pineapple farmers in interviews  
The numbers depict the number of mentions attributed to a particular quality attribute

of chemicals and thus would end up with products of the same quality. For instance, they argued that for pest control both systems used cultural methods (e.g. intercropping) whereas for soil fertility enhancement both approaches used organic fertilisers (manure, coffee husks). One farmer stated: “Organic quality is all about growing good pineapples by traditional means as practiced by our grandparents i.e. without applying chemical fertilisers” (Male farmer, 43 years old).

### 3.2.3 Other attributes

This category includes attributes that neither represent product nor process attributes. These include food

security provision and income. Provision of food security as a quality characteristic was based on two factors; ability to intercrop with food crops and food production longevity. With regard to intercropping one farmer stated: “When I farm pineapples organically, I’m able to get food especially bananas in addition to the pineapples within the same field” (Male farmer, 37 years old). As concerns longevity, farmers believed that organic pineapple production excludes reliance on synthetic chemicals which spoil the soil and hence reduce the life span of soil’s natural fertility. By natural fertility, farmers meant the capacity of the soil to produce adequate crop yields without synthetic or non-natural

external inputs. They argued that in organic banana-pineapple intercrop systems, food would be produced more cheaply (since locally available inputs would be used) and for a longer time. Chemicals were believed to shorten the soil's natural fertility. With a reduced span of soil fertility, conventional systems reduced the ability of the plot of land to produce food in the long term. In addition, farmers pointed out that in organic pineapple systems they had to plant banana intercrops at a closer spacing (15 ft instead of the recommended 20 ft) in order to provide more shade for the pineapples. This enabled them to get the smaller 'export size quality' pineapples demanded by the companies. With the closer spacing of 15 ft in organic plots, farmers can plant up to 300 banana plants compared to the close to 225 plants in conventional plots. However farmers noted that the banana bunches harvested from organic plots were smaller in size compared to those from conventional plots. Because of the smaller size, the farmers fetched a lower price of  $\approx 2.68 \text{ €} / \text{ bunch}$  compared to  $\approx 4.02 \text{ €} / \text{ bunch}$  from conventional systems.

Income also played a key role in the farmers' quality perception as one farmer stated: *"To me a quality pineapple is one which I can reap high income and profits to cater for my household needs"* (Female farmer, 30 years old). This was reinstated by farmer pleas to have the pineapple sale price raised. Conspicuously, farmers didn't at all describe organic quality in terms of organic certification standards.

### 3.3 What are the activities farmers carry out to attain quality in organic pineapples?

The majority of farmers singled out proper agronomic and post-harvest practices as the main activities aimed at attaining quality (Table 1).

Firstly, farmers pointed out that to attain quality they had to get good planting material from an organic field and also carry out proper ploughing of the field. The next steps entailed ensuring that the garden is weed free and the application of organic fertilisers. Proper harvesting and postharvest practices had to be followed through a number of sequential steps. First of all the pineapple had to be ripe, then it had to be cut and transported carefully to a shade while being careful to avoid damage. Indeed field observations confirmed that farmers carefully cut the pineapples and placed them on banana leaves or under a tree to create a cool environment for quality maintenance.

Farmers also emphasized field hygiene at this stage. For example, within the packing shade, any pests or insects had to be removed. Finally, the farmers had to sort

and grade the pineapples based on appearance attributes. They would then pack them in boxes of a particular size given to them by the exporting companies. Field observations confirmed farmers packing small sized pineapples in boxes that would carry a maximum of six pineapples. These would then be picked up by a truck belonging to the export company.

### 3.4 What are the main challenges farmers experience in trying to attain quality?

The main challenges reported by farmers were related to production input issues (Table 2). Notably, although the challenge of weeds was mentioned less frequently than the challenge of profitability, it was mentioned by a greater number of farmers.

Farmers mentioned high costs of inputs particularly coffee husks, labour, protective clothing as their major hindrances in attaining quality. Labour and organic fertilisers combined accounted for over 70% of their total production costs. Farmers pointed out that in order to produce quality pineapples, one needed three lorries of coffee husks worth 1,800,000 Ushs (482 €) per acre (0.4 ha) which was quite expensive. Farmers also mentioned that labour costs per manual weeding were now approximately 55 € / acre which they deemed expensive. Moreover, a farmer had to weed once every month during the dry season and twice per month during the rainy season. The farmers also complained of an inadequate premium price which according to them had remained stagnant at  $\approx 0.21 \text{ €}$  per fruit for over 6 years. This put the farmers in a very difficult situation for business because of the reduced net disposable income they now got from organic pineapple cultivation. This was exacerbated by the current increase in living expenses (e.g. school fees). The high cost of living led to some farmers switching to conventional farming which also highlighted the importance of income as a quality attribute. One farmer narrated: *"The costs of growing pineapples are high because of the labourers who charge us a lot and as you know the cost of things has gone up now in Uganda. So the premium price is no longer enough, we beg that it is increased. Actually that is why you see some people have now switched to conventional pineapple growing because the production costs (time and labour) are lower and you can get ready market in Sudan"* (Male farmer, 29 years old).

Another challenge mentioned by the farmers was pricking in the pineapple fields especially during harvest time. Pricking was more intense in organic pineapple fields since they were more closely spaced. This attracted higher charges from the labourers.

**Table 1:** Farmers practices aimed at attaining organic quality

<i>Activity mentioned by farmers</i>	<i>Number of mentions by farmers</i>	<i>Number of farmers who mentioned attribute</i>	<i>Percentage of farmers who mentioned attribute</i>
Proper agronomic practices in the field	29	27	96 %
Non application of chemicals	20	17	60 %
Proper harvest and postharvest practices	27	25	89 %

**Table 2:** Main challenges faced by farmers in attaining quality

<i>Challenge</i>	<i>Mentions</i>	<i>Number of farmers who mentioned item</i>	<i>Percentage of farmers who mentioned attribute</i>
Production input issues (High costs, scarcity)	34	28	100 %
Decreased profitability	26	10	36 %
Weeds	25	24	86 %
Pricking in the field	09	07	25 %

## 4 Discussion

### 4.1 What are the farmers' perceptions of quality in organic pineapples?

Results show that product attributes (specifically appearance, taste, long shelf life) and food security play the most significant role in what is associated with quality by farmers. Prior studies have shown that appearance and taste are key quality attributes in fruits (Barrett *et al.*, 2010) and food products in general (Grunert, 1995; Grunert *et al.*, 2001, 2004; Grunert, 2005; Peri, 2006). Farmers would prefer nice appearing fruits because this is one of the first basic quality criteria any buyer would demand. Appearance attributes specifically colour and size exist in both farmers' quality perceptions and official regulations (Table 3). However, deeper probing and follow up discussions among farmers revealed differences in the specifications of what they viewed as quality and what the traders demanded as quality. For instance, the farmers viewed yellow coloured and bigger pineapples as having better quality than the small sized, moderately ripe ones that the company demands from them. Small pineapple size demands from the organic export companies in Uganda have been documented by earlier studies. For instance Bolwig & Odeke (2007) as well as Bolwig (2012) reported that organic pineapple farmers in central Uganda operating under Biofresh, an organic pineapple exporting company had to specifically produce small sized pineapples of 1–1.6kgs as a quality requirement. The farmers under this scheme had to plant the pineapples

at closer spacing (1 ft by 1 ft) in order to attain the required small size demanded by Biofresh. Our study revealed similar sentiments of reduced pineapple spacing but unlike the previously mentioned studies, it highlighted reduction of the banana intercrop spacing as one of the farmer's strategies to meet the formal requirement of producing small sized pineapples. Farmers believe that organic pineapple-banana intercrop systems possess food security as one of their quality attributes. However, the formal requirement of small sized pineapples may have food security implications. For instance, the farmers' strategy of reducing banana intercrop spacing resulted in the harvest of small sized banana bunches which fetch a lower market price (section 3.2.3). In Uganda, big size is viewed as a quality element because urban markets normally prefer and actually pay more for larger sizes of agricultural produce (Edmeades, 2006). The gross revenue per acre from the sale of bigger sized banana bunches in conventional systems is  $\approx 905$  € compared to the  $\approx 805$  € from organic plots. From a "food access" perspective elaborated by Bolwig & Odeke (2007), these organic pineapple farmers hence indirectly experience a negative food security effect since they reported earning less income from the smaller bunches. Findings by previous authors (Bolwig & Odeke, 2007; Bolwig, 2012) that high incomes from crop sales in such schemes boost food security now come under scrutiny given the current rise in production and living costs as well as a stagnant premium. Moreover, the latter authors have also identified living costs (e.g. school fees) and produc-

**Table 3:** A comparison of farmers' quality perception with official quality requirements for organic pineapples

<i>Farmers quality perception attributes</i>	<i>Organic standards requirements</i>	<i>Codex Alimentarius standard for pineapples requirements</i>	<i>Importer requirements/ Export Markets</i>
Non-application of chemicals	✓	✓ <sup>a</sup>	✓ <sup>a</sup>
Health and safety (no contaminants)	✓	✓ <sup>a</sup>	✓ <sup>a</sup>
Environmental friendly production methods	✓	X	X
Appearance	X	✓	✓
High quality organic seed	✓	X	X
Juiciness	X	✓ <sup>a</sup>	✓ <sup>a</sup>
Taste	X	✓	✓
Traditional production methods	X	X	X
Texture	X	X	X
Label	✓	✓	✓
Food security provision	X	X	X
Long shelf life	X	X	X
Income	X	X	X

✓ implies that the attribute in question is present in that particular standard / quality requirement.

X Implies that the attribute in question is absent in that particular standard / quality requirement.

<sup>a</sup> Maximum residue limits specified.

Source: Adapted from Augstburger *et al.* (2001); FAO & WHO (2011); IFOAM (2012).

tion costs as the major expenditure items from pineapple revenues. Therefore the current rise in the prices of any of these items will reduce the net disposable income available to farmers to purchase food. We argue that despite the claims by Bolwig & Odeke (2007) that there are purely positive food security effects from organic pineapple farming, there are certain hidden negative food security elements within such schemes. Interestingly, the previous studies done on food security effects of organic pineapple farming (UNCTAD, 2008) followed predominantly qualitative approaches. Therefore, there is still need for more comprehensive inferential statistical based studies to quantify the net food security effects of organic pineapple farming. Such approaches would go a long way in accurately determining the real impact of organic pineapple schemes on food security among smallholder farmers. This is now even more paramount given that this study has shown that food security is recognised as a quality attribute among smallholder farmers.

The results further show differences and similarities between farmers' quality perception and official regulatory requirements (Table 3). Non application of chemicals and juiciness represent some of the attributes prominent in both official standards and farmers' perceptions.

Despite non-application of chemicals being a formal requirement in organic standards, Ugandan farmers have generally not been applying synthetic chemicals in their gardens overtime (Taylor, 2006). We argue along with Preißel & Reckling (2010) that this is not because they can't afford them. They just have concern and care for the environment, an assertion supported by the fact that they view non-application of chemicals and other environmentally friendly production methods as quality attributes of organic pineapples. For instance, a study by Sseguya *et al.* (1999) in central Uganda showed that farmers viewed organic inputs as the most appropriate for crop yield and soil fertility improvement while inorganic inputs were perceived to be harmful. Similar to this, results from a study by Chongtham *et al.* (2010) showed that Ugandan organic fruit farmers participate in organic fruit production schemes because they deemed them appropriate for the environment.

Unlike farmers, importers have limits on the amount of juiciness they regard as quality i.e. up to a maximum of 18% particularly for dried fruits (Augstburger *et al.*, 2001). This is probably meant to avoid rotting of the pineapple before it reaches its final export destination (FAO & WHO, 2011).



Other attributes namely food security, long shelf life, traditional production methods and high income (minimum adequate price to cater for inflation) are conspicuously absent in all official (formal) quality regulations. The absence of food security and income aspects in the official standards has two implications respectively: first although food security is considered as one of the elements of the core principles of organic farming (IFOAM, 2012), its absence in the organic standards depicts a slight contradiction between the values and actual practice of organic agriculture. Secondly, even if organic produce commands a premium price, there is no set minimum price farmers are supposed to receive for their produce which as a consequence makes them vulnerable to market forces of supply and demand. There have also been reports of farmers not receiving their premium at all (Chongtham *et al.*, 2010) which is contrary to the ethical quality claimed to be inherent in organic farming (Noe & Alrøe, 2011). The situation is aggravated by the high production input costs especially labour and organic fertilisers which have also been found to hinder organic farming by previous studies in Uganda (Bolwig, 2012) and even in some European countries like Norway (Flaten *et al.*, 2010). Farmers now require 3 lorries of coffee husks (per acre of pineapple plantation) now worth  $\approx 482$  € up from the 381 € reported by Chongtham *et al.* (2010). The costs of manual weeding per acre has gone up from 50 € reported by Preißel & Reckling (2010) to 55 €. This shows the increasing hardships and reduced profitability organic pineapple farmers are facing over the years. According to the farmers, this has led to some of their colleagues to abandon the organic pineapple schemes a few seasons after joining them although they still “wished to conserve the environment”. Therefore, overall income aspects need to be strongly mainstreamed in the formal values and practice of organic farming. This is even more prudent given that farmers also view it as a quality signal.

Farmers association of organic pineapple quality with longer shelf life can be explained by the immense difficulties smallholder fruit farmers in Uganda face in keeping produce fresh for the export market as most can't afford refrigeration facilities (Ndlovu, 2009). A fresh food product that would be able to stay longer in absence of refrigeration facilities would hence symbolise quality.

We have shown how farmers believe that both organic and traditional production systems end up with products of the same quality (section 3.2.2). This is a clear illustration of how tradition influences farmers' quality perceptions. Such interpretations are misleading because organic farming is not only about non-application of

chemicals (Scialabba & Hattam, 2002). It is about the fulfilment of all the four organic agriculture principles of Care, Health, Ecology and Fairness in their farming practice (IFOAM, 2009, 2013). Although Preißel & Reckling (2010) note that organic fruit farmers practice traditional production methods to a lesser extent, our results reveal that they still strongly value these traditional farming techniques.

This study has shown for the first time that Ugandan organic farmers do not define quality in terms of organic certification standards yet these standards represent the very rules or norms that govern their day to day organic production practices. Furthermore, the presence of a certification label on the organic pineapple package carries minimal significance in terms of what farmers appreciate as organic quality. Even in instances where they defined quality in terms of attributes that are part of the official standards (Table 3), they don't at all relate such attributes to the said standards. Farmers are trained and inspected for compliance to quality attributes inherent in the organic standards and yet they don't seem to relate organic quality to these standards. They view standards as checklist items/ requirements that they simply have to follow (Dimara *et al.*, 2004) in order to access the premium. This highlights the effects of the top down passive mode of training internal control system staff use to train farmers in Uganda (Preißel & Reckling, 2010). Giovannucci & Ponte (2005) have indicated that organic standards are not developed with farmers' active participation and as such they end up not fully appreciating the rationale behind them. It is a deviation from the original organic movement ideologies where decision making is removed from the farmers for whom the standards are meant (González & Nigh, 2005).

## 5 Conclusion

For the first time this study has shown that food security is a key quality attribute among Ugandan farmers engaged in organic pineapple farming let alone the conventional product attributes that are already well documented. However, caution needs to be exercised on the positive influences of food security in organic pineapple schemes as this study has provided preliminary evidence of negative food security effects concealed in organic pineapple farming. In addition, this study has shown that informal aspects in the form of traditional ideologies still play a key role in quality perception of farmers operating in schemes governed by organic “*formal quality rules or standards*” elucidated by Allaire (2010). Such “*formal quality rules*” appear to even play a lesser role in what farmers define

as quality. Farmers, therefore, seem not to be properly trained on the relationship between “organic standards” and “organic quality”. Consistently documented challenges facing Ugandan organic pineapple farmers’, namely high labour and organic fertiliser costs, have still not been addressed over a six year span. This calls for urgent remedial action from the organic agriculture promoters and business beneficiaries particularly exporters in Uganda. Such actions would include more intense promotion of coffee replanting in the area to counteract the scarcity problem that hikes the husks prices. The National Organic Agriculture Movement of Uganda (NOGAMU) should work hand in hand with its partners (donors, exporters, importers, organic agriculture advocates, consumer bodies in Europe) to ensure that farmers’ premium price is increased. NOGAMU should also continue lobbying government for the enactment of an official organic policy. With such a policy organic agriculture will be recognised as a core avenue for sustainable rural development and given financial backstopping by the government.

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