Making Banana Wine at Home

Summary

Banana has a long history in Uganda and is a staple food in most communities in which it is grown. It is both a cash and food crop and most of it is consumed by the local market especially by the large populations in Kampala, the capital city. On a daily basis, large trucks of fresh banana are transported from the western region to Kampala due to high demand. Because of the bulky nature and perishability of the fresh banana and the long distance to the market, the margin between farm gate and the Kampala retail price is usually very high, most of the times being beyond 50%. In the western districts, it is common for farmers to discard or feed banana to animals during the pick harvest season due to lack of market. There is urgent need for interventions to add value to banana to overcome these challenges. Value addition can help to reduce bulk, increase shelf life and incomes earned by farmers and other players in the value chain. This document describes a local wine making process used by a farmer group, the Bushenyi Banana Wine Makers Association. The association started with four members in February 2011 and has grown to 12 members in September 2012 all involved in wine making using the procedure described below. The description has been prepared by one member of the farmer group with support of members of the Technologies and Practices for Small Agricultural Producers (TECA) Uganda exchange group.

Introduction

Banana is one of the major and widely grown crops in Uganda, majorly produced in the western and central regions of the country. In the west, banana is grown in the districts of Mbarara, Ntungamo, Bushenyi, Kiruhura, Ibanda, kabarole, Kasese and other surrounding districts. The area receives an average rainfall of 915-1020 mm per year and altitude ranges from 600-1,524 m above sea level and is characterized by rolling hills and some flat areas with moderate to poor soils. Cattle rearing is also another key activity in the area. In the central region, banana is grown at a smaller scale than in the western region and is grown in the districts of Wakiso, Mpigi, Mukono, Masaka, Mityana, Rakai and other surrounding districts. The area receives an average rainfall of 1,200-1,450 mm per year and altitude ranges from 1,000-1,800 m above sea level, with hilly and flat areas, some with wetlands and forest with moderately good and well drained soils. Banana is usually intercropped with Robusta coffee, vegetables, maize and, to a small extent, grown as a sole crop. Small scale dairy farming is also practiced alongside banana. A wide range of banana types are grown in Uganda including dessert, cooking and brewing type (FAO Crop Calendar, accessed September 2012)

Banana is a good source of sugars and fibers which make it a good source of energy. When consumed, it can reduce depression, anemia, blood pressure, stroke risk, heartburns, ulcers, stress, constipation and diarrhea. It confers protection for eyesight, healthy bones, kidney malfunctions, morning sickness, itching and swelling, improves nerve functions and is said to help people to quit smoking (Idise, O. E. and Odum, E.I. 2011)

About the Author Farmer

Mr. Wilson Mwebaze is a farmer from Mitooma district (formerly part of Bushenyi district) in western Uganda. In about his middle age, Wilson recalls how fluctuation in banana prices has been a challenge since he started engaging in banana growing. To respond to the banana market challenge, Wilson mobilized his fellow farmers to form a wine making group. He narrates how a banana bunch worth 5,000 Uganda shilling (UShs) can be turned into 20 litres of wine worth 100,000 Uganda shillings (UShs). This is shown in the table below.

Profitability of banana wine making in Bushenyi,September 2012 (*see note, below*)

Activity/Item	Quantity	Value (UShs)
Bunch of Banana	1 bunch	5,000
Sugar	8 Kg	24,000
Soybean	0.25 Kg	500
Baking powder (yeast)	3 teaspoons	500
Total cost of inputs		30,000
Selling price of 20 litres of wine		100,000
Gross profit		70,000

Note: other local materials like water, firewood and the farmer's labor are not valued in the above analysis

The wine making process

The wine making process involves a series of simple steps, each of which has to be done correctly for one to achieve good results. To make the final product safe and appealing to consumers, the processor has to maintain a high level of hygiene throughout the entire process. The banana and all the equipment used should be cleaned, the environment in which the wine is made should be clean and the person(s) involved in the process should be clean and free from communicable diseases. The key materials and equipment needed for the process are; Mature bananas, Sugar, Soy bean, Water, Yeast, Metallic cooking pans, Glass bottles, Nylon cloth, Plastic buckets, Firm wooded stirrer.

Below are the key steps taken to make banana wine.

1. **Selecting the right/suitable banana varieties**

Banana wine can be made from most banana varieties irrespective of whether they are cooking, brewing or dessert type. A few varieties like Apple banana that remain hard even after ripening are not suitable for wine making.

2. **Harvesting and ripening the banana fruit**

Harvest a mature banana bunch and hang it over a fire place to allow it to ripen. Placing the banana over a fire place quickens the ripening process. Ripening can also be achieved by heaping bananas in a dry warm place or in a pit lined with banana leaves. The heap is then covered with multiple layers of fresh banana leaves followed by a thick layer of dry banana leaves to allow heat to accumulate within the heap. When fully ripe, the banana husk turns yellow and the pulp soft. This usually takes 5 to 7 days depending on the level of maturity and variety of banana.

Fig 1: A ripe banana bunch ready for wine making

3. **Peeling and boiling the ripe banana**

Peel the ripe banana into a sack. As you peel, sort out and discard any split bananas since these may be contaminated. The husk will easily peel off if the bananas are fully ripe. Unripe bananas should not be used since these will not cook at the same rate as the ripe ones. Measure 10 kg of the peeled banana into a metallic pan (10-15 big or 25-35 small peeled bananas can make a kilogram) and add 10

kg of water. Boil the bananas on moderate fire while stirring with a firm clean stick until the bananas can easily break when the stick is passed through.

Figure 2: (a) Peeling ripe banana (b) a split banana sorted out during peeling (c) Peeled banana in a sack ready for weighing (d) Weighing peeled banana (e) Weighing water (f) Boiling the peeled banana

4. Filtering

While the bananas are still hot, filter out the juice using a clean porous sack or cloth. To ensure that as much juice as possible is obtained, suspend the sack containing the banana and squeeze out the juice into a clean pan using a clean rope entangled around the sack (Fig 3). Take care not to be burnt by the steam from the banana. The banana pulp will remain in the sack or cloth and can be used to feed animals like poultry and pigs.

Fig 3: Squeezing juice from hot banana with a rope entangled around the sack

5. **Addition of other ingredients**

After filtering, add 7 kg of sugar, juice from two medium sized lemons, 1 litre of soya milk and 3 teaspoons of yeast for every 20 litres of the juice. Stir the mixture thoroughly for the sugar and other ingredients to dissolve.

Note: To make a litre of soy milk, soak 0.5 kg of dry soy bean in water for 12 hours, pound the soy bean in a mortar, add 1 litre of clean water, squeeze the soybean pulp, filter and heat the liquid up to boiling (*Fig 4*).

Figure 4: (a) A glass of soy bean used to make soy milk (b) filtering soy milk from the pounded soybean(c) soy milk obtained after filtering (d) boiling the soymilk

Preparing yeast

Measure 3 teaspoons of yeast into a 2.5 litre container and add 0.5 litre of lukewarm water. Cover the container and let it stand under a roof or any secure shaded place until the yeast foams to cover about 2 litres of the container. Stir the foam and add the solution to the juice.


a)

b)

Fig 5: (a) Adding yeast into a 2.5litre Jar (b) Yeast foam covering about 2litres of the Jar

Changing wine color

From banana, one can make white or red wine. To make red wine, heat 1 kg of sugar while stirring until it turns to a liquid. Add 2 litres of water to this liquid, filter and then add this solution to the juice before the beginning of the fermentation process. To make white wine, this step should be omitted in the process.


a)

b)

c)

d)

Fig 6: (a) heating sugar crystals (b) brown solution from heated sugar crystals (c) Filtering sugar solution before using it to turn white wine red (d)white wine (from the Jerrycan) turning red as it joins heated sugar solution in the metallic pan

6. Fermenting and maturing

Put the juice in a covered bucket or Jeri can under a roof at room temperature for 3 days. Filter the juice through a fine white and clean nylon cloth to remove all the remaining residues that will have settled at the bottom of the bucket. If a large quantity of juice will be filtered at once, align a strong and clean porous cloth or sack on the lower side of the nylon cloth to reinforce it. Allow the juice to flow freely through the cloth without squeezing to avoid any sediment from passing through. To prevent the cloth from falling into the bucket during filtering, tie it firmly around the bucket. Keep the filtered wine in a covered bucket or Jerrycan in a room at room temperature for 2-3 months to mature. During the maturation period, make a whole on top of the cover of the container to allow for aeration and prevent bubbling. Because insects may find their way into the container through this hole, insert one end of a long thin plastic tube into this hole and put the other end in a bucket of clean water. This way, any insect that will try entering the wine through the tube will drown in the container of water.

Figure 7: (a) Squeezing juice from hot banana with a rope entangled around the sack (b) mixing soy milk, sugar and yeast with the filtered juice (c) Packing wine in a Jerrycan for fermentation (d) A Jeri can of fermenting wine with an aeration tube (e & f) Mature wine ready for marketing

7. Packaging and Preservation

The mature wine should be packed in clean containers for storage and marketing. Proper packaging is necessary if the wine is to have a long shelf life and be appealing to consumers. Glass bottles are very suitable for packing as they are easy to keep clean. The bottles in which the wine will be packed should be sterilized to ensure the microorganism load is reduced substantially. A simple steam sterilization method suitable for small-scale farmers is as below;

- Wash the bottles and their covers with plenty of cold water and detergent soap
- Get a large clean sauce pan and lay a clean cloth at its bottom
- Place the bottles on the cloth, one on top of the other
- Place the bottle covers in the same sauce pan but not fixed on the bottles
- Pour water in the sauce pan with the bottles covering 1/3 of its volume
- Cover the sauce pan containing the bottles with another clean sauce pan and boil on moderate fire for 20-30 minutes
- Remove the bottles from the sauce pan and cool them in a clean closed space like a room or glass cabinet
- Pack the juice and cover the bottles as soon as possible

Fig 8: Mature red wine packed in a recycled "Uganda Waragi" bottle

Other fruits for wine making

Wine can be made locally from other fresh fruits like mangoes, pineapples and Jambolan (*Syzygium cumini*), however the process might have to be modified.

Challenges faced by local wine makers

Market: Most local wine makers depend on market within their local areas. Expanding the scope of marketing will in some situations require certification of the product. This process is lengthy and expensive for the small holder processors.

Inappropriate packaging facilities: Small holder processors usually pack their wine in recycled bottles. This is not suitable and may not meet the requirements of some potential consumers.

Further investigations

Wine making is a promising venture for banana farmers though existence of a wide variety of wines on the market puts the local processors at a stiff competition. Competing favorably needs these farmers to maintain a high quality standard, ensure proper packaging and branding and maintain a low cost of production. There is need to invent simple but effective methods to enable small scale processors lower production costs, maintain high quality and meet proper packaging requirements.

References:

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