

## RWANDA JUICE

### AWARD - Improvement of microbiological and biochemical characteristics of pineapple juice from Rwanda

#### ABSTRACT

Pineapple fruit is a major horticulture crop in Rwanda. Recently, the government of Rwanda has put much effort into the cultivation of pineapple fruits. This because the fruit can be grown on all agro ecological zones of Rwanda and can resist to many fruit diseases. Thus, the increase in its production targets the export market of the pineapple fruit and its products and thus the improvement of the country's economy. To respond to the government call, about 27 small scale pineapple processors have entered into small business of processing different pineapple products such as juices, jam, jellies and dried pineapple slices. However, their processed products are only sold locally due to their limited quality standards including limited shelf life. One of the main constraints faced by these small scale pineapple processing plants is lack of knowledge of fruit processing techniques to produce quality products which may reach regional and international market. The aim of the present study was therefore to assess the processing techniques used by small scale pineapple processors and to determine microbial population present at raw pineapple surface and pineapple juice before and after sanitisation.

Small and medium enterprises were visited in June 2011. Informations on how they process the different pineapple products were collected from the enterprise managers. Raw pineapple fruits were collected from two different locations in Rwanda in eastern province and southern province, the most producing areas of Rwanda. Pineapple fruits were then washed with pure water or with a disinfection solution (200 ppm of sodium hypochlorite solution at 10% of Cl<sub>2</sub>) It was concluded that processing washed and disinfected pineapple fruits can successfully lead to production of pineapple products with an extended shelf-life. Small scale pineapple fruit processors in Rwanda should stick on the hygiene of processing equipment as well as the raw pineapple fruit to be processed. They need to make sure that disinfection of the fruits prior to processing will sensibly reduce the microbial load in the final product.). The same fruits were deepened in disinfected water for 15 minutes and were rinsed with pure water. The effect of the washing and disinfection of the fruits was therefore assessed through microbial population determination of the fruit surface, fresh pineapple juice and pasteurised juice. The laboratory experiments were performed at CIRAD laboratories (Montpellier).

Results showed that pineapples processors use a number of preservatives in the processed products to increase their shelflife. The packaging of juice and jam was done in polyethylenterephtalate (PET) and therefore the products were filled in the containers at 40°C while an appropriate step requiring a filling at 90°C for a one or two months of microbial stability. This leads to most of their products to be microbiologically unstable. Furthermore, it was not sure that the measurements of preservatives is properly done because most of the processors did not have the precision scale for small quantities. There was a very high microbial load in terms of total plate count and yeasts and moulds, comparing to the European and Codex Alimentarius Commission standards. The presence of gram negative enterobacteriaceae was also observed.

**Keywords :** Sustainability, Plant, Fruit quality, Organoleptic compounds

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## **PERSPECTIVES**

It was concluded that processing washed and disinfected pineapple fruits can successfully lead to production of pineapple products with an extended shelf-life. Small scale pineapple fruit processors in Rwanda should stick on the hygiene of processing equipment as well as the raw pineapple fruit to be processed. They need to make sure that disinfection of the fruits prior to processing will sensibly reduce the microbial load in the final product.