

MANGO JUICE/CONCENTRATE PROCESSING, QUALITY AND SHELF LIFE IMPROVEMENT

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FARMER TO FARMER VOLUNTEER

INTRODUCTION

I was asked to travel to Kitui to work with the Kitui Enterprise Promotion Company (KEP) on this important subject. I found that KEP has a new building, adequate for mango juice production, located on the outskirts of the town of Kitui. It is equipped with a receiving bay, scales, washing vats, stainless steel tables, a machine for removing the mango pulp from the stone and skin, a pasteurizer, hammer mill, sun drier, wood fired drier, and storage space.

The entire facility, being new, was clean and adequately laid out for juice processing and fruit drying. Power outages, either total or partial, are frequent and cause numerous delays in juice production.

MANGO PROCESSING

The intent was to actually process some mangos during my stay, but the trees of the growers are completely bare of mangos, and an attempt to purchase a few kilos in the local market was not successful. Therefore, I was able to evaluate the dilution and bottling of mango juice, which went very well. In time, KEP should purchase a bottle filler and labeler, which will speed up the process.

The factory was kept clean and sanitary at all times. The factory staff is to be commended on their willingness to do any job in the factory, including cleanup. This positive attitude is one important reason for the cleanliness of the factory.

PRODUCT LINE

The juice is diluted at the rate of 3 parts water to two parts juice, and preservative and sugar are added. This results in an excellent finished product, which has a very good acceptance in the few retail markets where it is being sold.

KEP is experimenting with dried mango slices. These slices are so thin that they curl and turn brown to black when dried. This product has very poor visual appeal, and probably little nutritional value. I suggest that dried slices probably have a market if they are prepared differently. I suggest that the mango be peeled, than one larger segment be cut down to the stone, making two segments or “cheeks” from one mango. The mango pieces should then be treated by burning elemental sulphur in an enclosed container, for one hour. The treated “cheeks” can then be placed in the sun drier or the wood-fired drier, until the fruit is dry enough to be packaged and sold.

I stress that burning elemental sulphur is dangerous to humans if not handled carefully. The treatment should be done in a closed container outside the factory. Do not allow anyone to come in contact with the sulphur smoke.

The result of this treatment should result in mango pieces which are bright yellow to orange, and they should be very palatable and attractive.

At this time, some of the present mango slices are either pounded to a powder or chopped into flakes. I doubt that the present product is palatable, or of high nutritive value. Analyses are now being done on the nutritive value of the powder. I believe this value will be low. If so, the idea of powder should be abandoned in favor of using that raw product for the manufacture of more juice, which is readily salable.

Juice is obviously the product of choice in the present line. I recommend that juice be developed to its fullest potential, and that product and managerial time for powder and flakes be kept to a very minimum, or abandoned.

BUSINESS PLAN

During my work with KEP, it became obvious that there is no viable business plan in operation. As an additional activity in my assignment, I gathered the management group together and we started on a business plan, by estimating annual costs, sales and profit for the next five years. At the end of about three hours, we had completed this important and revealing document. KEP management supplied all of the estimates, and I summarized them.

It appears that KEP can net about KSH 1,300,000 in the current year. With each succeeding year, the net is estimated to rise.

Please refer to this document, which I have appended to this report. I suggest that this document be updated every three months, either up or down, depending on how well the company is doing.

LABORATORY

Any well-run food processing facility needs an adequate laboratory, to take periodic samples of the finished product, and to sample each step in the process, to determine whether or not the product, containers or equipment could be or become the source of contamination. This laboratory should become one of the main attractions for visitors who are contemplating the purchase of the factory's products.

KEP has a room devoted to laboratory work. They also have a member of staff who is adequately trained in microbiology. However, this laboratory needs some work, and is easy to complete. It is dirty, and needs a thorough cleaning, which should be repeated as often as necessary. The ceiling is open to the roof, and serves as an entry point to any and all contaminants. There is also a pass-through window connecting the lab with the changing room. Both the ceiling and the window should be sealed, to prevent dust and other contaminants coming into the lab.

The lab should be supplied with a microscope, agar, a desk, buffer tablets, and a hot plate to prepare the agar. Once these supplies have been obtained, the laboratory technician can begin to function as a resource for bacteriological investigations.

SALES AND MARKETING

Some of the concentrated juice has been in stock since January of this year. So far as I could determine, there is no sales or marketing effort in place. KEP waits until someone comes to them to make purchases. As a result, very little is being sold, and the stock of concentrate continues to be stored.

KEP should begin an active marketing program, to develop interest in the purchase of juice and/or concentrate. Only in this way can cash come into the business, to pay bills and make the equipment purchases necessary.

APPRECIATION

I would like to express my gratitude to USAID for their continuing support of Farmer to Farmer, to Catholic Relief Services for organizing my trip to and within Kenya, and to the management of KEP for their on-the-job support and transportation during my stay in Kitui.

I wish KEP every success in the continued success of their business enterprise.