



Mango Agribusiness Research Program

Agribusiness research and development opportunities
for tropical fruit processing in the Asia-Pacific region
AGB/2016/010

Session 1: Commercial Demand & Supply of Processed Mango

Presenter: Dr. Aasia Akbar Panhwar

Title: Conversion of waste produce of dropped unripe mangoes in to useable form

24 & 25 November 2018

Information
Markets
Biosecurity
Quality

Implementing Agency



Funding Agency



INTRODUCTION

- Mango (*Mangifera indica* L.) is one of the most cultivated tropical fruits in the World and among major fruits of Pakistan.
- Mango occupies the second position in Pakistan after citrus and stands fifth in ranking of mango producing and exporting countries.
- Mango is the valuable fruit not only for its taste but also nutritional values.
- Mango harvesting begins in Sindh in late May and finishes in Punjab in late August.
- Lower Sindh faces mainly the heavy wind flows as compared with Punjab and upper Sindh and substantial quantities of mangoes are wasted due to windy conditions from mid-March to end of June resulting in a massive premature fruit drop.

Continue

- In Pakistan, the latest figure of pre and postharvest losses during the year 2016-17 is above 40% due to poor farming practice, mishandling and poor awareness of technology.
- Heavy winds, other physiological and environmental factors play major role in these pre- and postharvest losses which contribute 20%.
- Keeping in view the perishable nature and limited seasonal availability, it was deemed necessary to develop value added products from these wasted dropped unripe mangoes which can be utilized round the year.

Continue

- Development and application of inexpensive preservation technology to produce high quality and acceptable mango products could be valuable assets leading not only for the better use of the fruit but also to control of poverty in the rural regions of Sindh and in the rest of Pakistan.
- With the financial support of AICIAR, various attempts have been made to utilize these wasted dropped unripe mangoes in to consumable products and successfully developed dried mango slices, mango chutney, mango preserve, various types of pickles and juices etc.
- In addition, the technology has also been transferred to rural communities in the vicinity of the Sindh Agriculture University, Tandojam through capacity building resulting development of the sustainable business of these women which is playing the major role in poverty alleviation.









THE SITUATION OF MANGOES IN WINDY SEASON



PACKAGING SYSTEM AND LOSES



FALLEN UNRIPE (WASTED) MANGOES

- Fallen unripe (wasted) mangoes were divided into four groups as follows:
- A  very Hard and good quality  mango slices and various types of pickle etc.
- B  medium hard  Jam and preserve (murraba) etc.
- C  soft small size  juice, nectar and squish etc.
- D  poor Quality  Discarded (No use)

FALLEN/GREEN UNRIPE MANGO PRODUCTS

A

- 1.Sweet Slices
- 2.Sweet and Sour Slices
- 3.Pulp powder
- 4.Peel powder
- 5.Pulp powder (sweet for drinks)
- 6.Pickle (oil)
- 7.Pickle (Vinegar)
- 8.Pickle (Shredded)
- 9.Pickle (sweet and sour).
- 10.Mango mix vegetable
- 11.Unripe mango pulp

B

- 1.Chutney
- 2.Squash
- 3.Jam
- 4.Murraba

C

- 1.Juice
- 2.Nectar

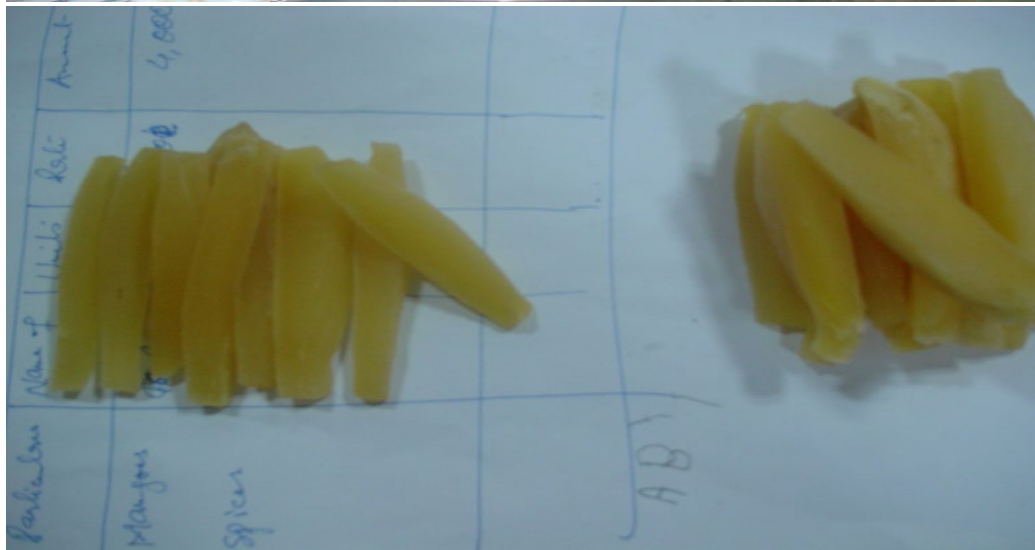
PICTORIAL VIEWS



UNRIPE MANGO SLICES



PROCESSING OF SLICES



UN RIPE FALLEN MANGO PEEL DRYING



RAW MANGO PEEL POWDER



RAW MANGO PULP POWDER





INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO POWDER (Saloti)
Date of preparation 17-05-2013

INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO WATER PICKLE (Shudhi)
Date of preparation 14-05-2013

INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO WATER PICKLE (Shudhi)
Date of preparation 14-05-2013

INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO PICKLE (Saroti)
(Oil + Vinegar)
Date of preparation 17-05-2013

INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO PICKLE (Shudhi)
(Shikarpur Water Oil + Vinegar)
Date of preparation 17-05-2013

INSTITUTE OF FOOD SCIENCES AND TECHNOLOGY
South Agriculture University, Tandojam
RAW MANGO PICKLE (Saroti)
(Tandojam style)
Date of preparation 19-04-2013

VINEGAR AND OIL MANGO PICKLE



SWEET AND SOUR MANGO PICKLE AND SWEET MANGO POWDER (RTS RINK)



SWEET MANGO POWDER AND AMCHUR (PEEL POWDER)



UN RIPE MANGO JAM



MANGO CHUTNEY AND MANGO JUICE



UNRIPE MANGO JUICE



UN RIPE MANGO SQUASH



UNRIPE MANGO GREEN CHILIES CHATTNY





Unripe mango Murabba (preserve)

RIPE AND SEMI RIPE MANGO PRODUCTS

A



1. Sweet Slices

B



**1.Chutney
2. Jam
3.Murraba**

C



**1.Juice
2.Nectar
3.Squash**

SEMI RIPE MANGO SLICES





RIPE AND SEMI RIPE MANGO SLICES

RIPE MANGO JAM



RIPE MANGO SQUASH AND JUICE





- After the completion of value added products development, another project was submitted to ASLP and after approval and directives, a village about 20 kilo meters far from our working place was selected.
- 10 women were selected and given training on “how to utilize these wasted mangoes into useable/marketed products to generate income and minimize poverty.
- They were also trained on preservation of these wasted mangoes round the year and also given training on marketing and selling of products.
- Wasted/fallen unripe mangoes were procured from mango orchard and brought to the women’s village. These mangoes were then cut by tools provided, washed and dumped in plastic drums with the support of salt and turmeric etc. (These mangoes are safe to use for one year).







PRESERVATION TECHNOLOGY OF UNRIPE MANGO





After processing packaging Process

- Later on, at the time of demand from market, these mangoes were taken from these drums, washed properly to remove salt and mixed with spices and oil and packed in bottles. They were then labelled and sealed.
- As per our statistics, the expenditure incurred on 425-gram bottles is PKRs. 40/-- and 850-gram bottle is PKRs. 80/-. Their selling prices are PKRs. 80/-- and 120/-- respectively.
- Since 2014, they have been running a very good business and every year the production has been increases double than previous year and enjoying the business activities.





Thank you for your attention

