

2010

**Pre-Feasibility Study-Guava Pulping & Squash  
Making Unit**



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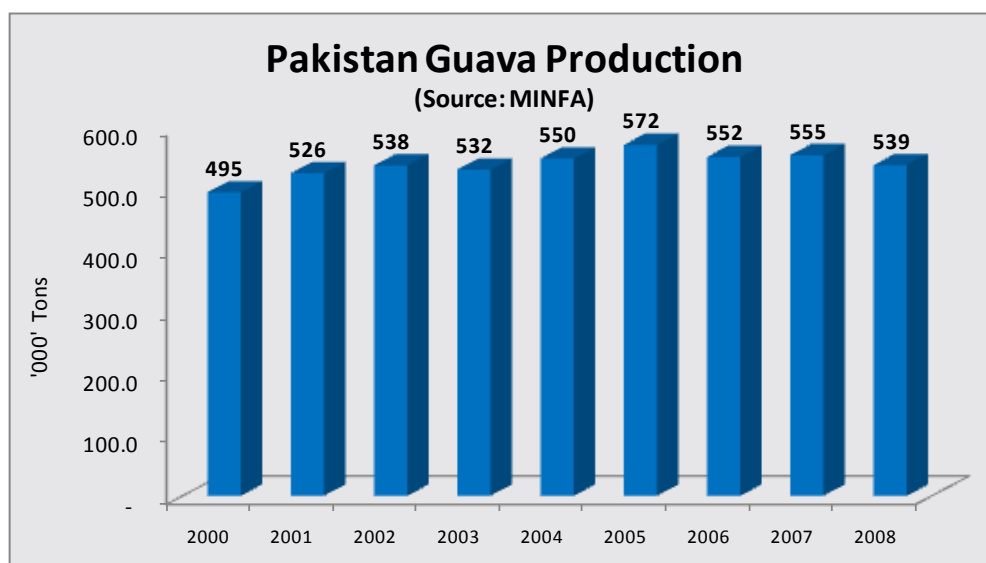
## 1.0 OVERVIEW OF GUAVA SECTOR

Guava is the third largest fruit of Sindh; grown in middle and upper districts of the province. In Sindh, in the year 2008, total cultivated area for guava was 24,000 acres; producing 70,000 tons of fruit.

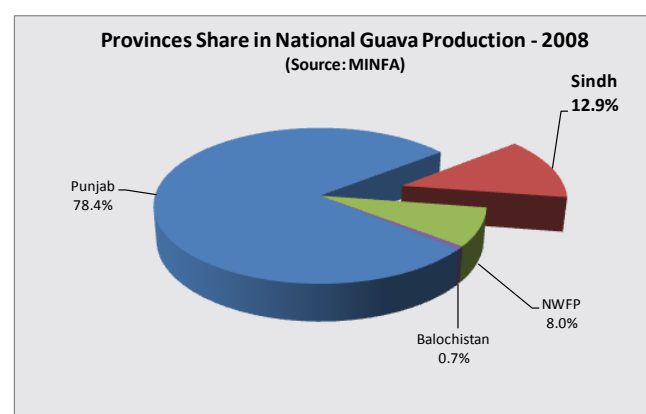
There are two seasons of guava fruit; winter and summer. The winter season starts in November and continues till March. The summer fruit is available from April to the middle of August. It is the winter fruit which is considered to be more valuable and a higher value crop by the farmers.

### 1.1 Guava Production

Guava is the third largest produced fruit in Pakistan. In Sindh also, guava is the third largest fruit after mangos and bananas. Pakistan's guava production increased from 19,000 tons in 1958 to 552,000 tons in the year 2008; an annual growth rate of 6.9%. Pakistan is the second largest guava producing country in the world; after India, which has a production of 1.8 million tons. Pakistan's guava production trend is shown in the following figure:

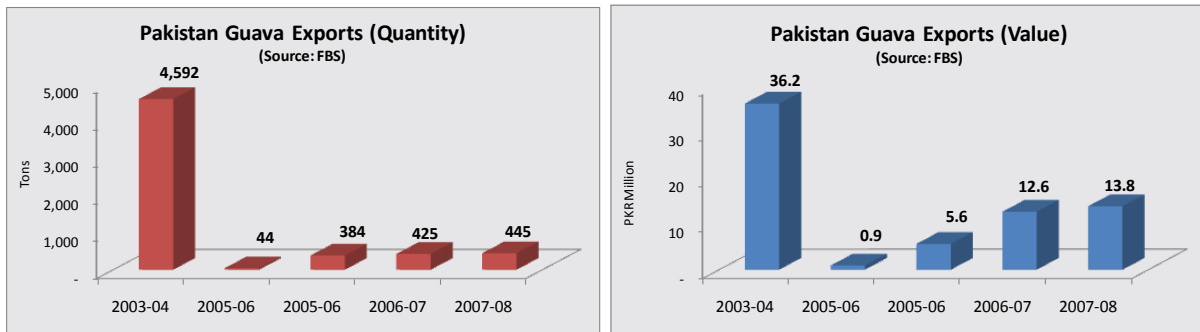


Guava is primarily grown in three provinces; Sindh, Punjab and NWFP. In 2008, Sindh contributed 13% to the national guava production. In Sindh, Larkana is the largest guava producing district accounting for 45% of the total provincial production. It is followed by Hyderabad, Nausheroferoz, Nawabshah and Mirpurkhas.

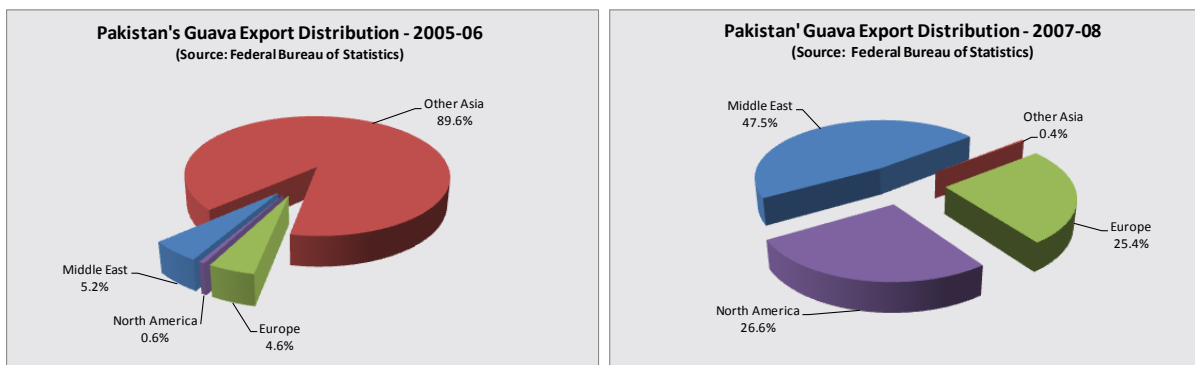


## 1.2 Guava Exports

Guava is not a very large export fruit in the world. Pakistan, being a large producer of guavas, is able to export guavas to different countries of the world. However, there is no regular trend followed by guava exports and mostly, it depends on getting individual orders for exports. Pakistan's exports of guavas for the past five years are shown in the following figures:



The export market mix of guava exports from Pakistan does not follow a consistent trend; due to small quantities of exports. Comparison of two years, 2006 and 2008 are shown in the following figures.



In 2007-08, Canada was the largest importer of guava from Pakistan accounting for 26% of the total exports. Other large buyers of Pakistani guava were UAE, UK, Saudi Arabia and Qatar.

## **2.0 POTENTIAL INVESTMENT PROJECTS IN GUAVA SECTOR**

Brief introduction to potential investment opportunities in guava sectors in Sindh is provided in the following paragraphs:

### **1. Guava Pulping Facility**

Guava pulps are important value added products having demand in both local and export markets. The local market of fruit juices, nectars and drinks has been growing at a very high rate during the past five years. Consequently, the demand for fruit pulps has also increased during this period.

The products will be sold in local and export markets. The proposed facility will contribute towards reducing the post harvest losses, increasing employment opportunities in the area and maximizing crop value for the farmers.

In order to improve the viability of this project, the possibility of adding tomatoes as one of the products for making pulp may also be considered.

### **2. Guava Pulping Unit**

One large guava pulping unit will be the part of the Guava pulping facility; which has been already listed. Apart from that, the possibility of having small guava pulping units in and around the orchards may also be evaluated. Guava pulp has demand in the local and international markets.

### **3. Guava Squash**

Guava juice has been launched in Pakistan by a major fruit juice manufacturer of Pakistan; about two years ago. The juice has gained good popularity and established its position in the product line of the company. This indicates towards the growing demand of guava drink in the local market. The project of making guava squash can be launched at small scale which can be sold as a specialty product of Sindh.

### 3.0 PRE-FEASIBILITY STUDIES OF THE SELECTED PROJECTS

#### 3.1 Multi Fruit Processing Facility (Guava)

##### 3.1.1 Market Demand

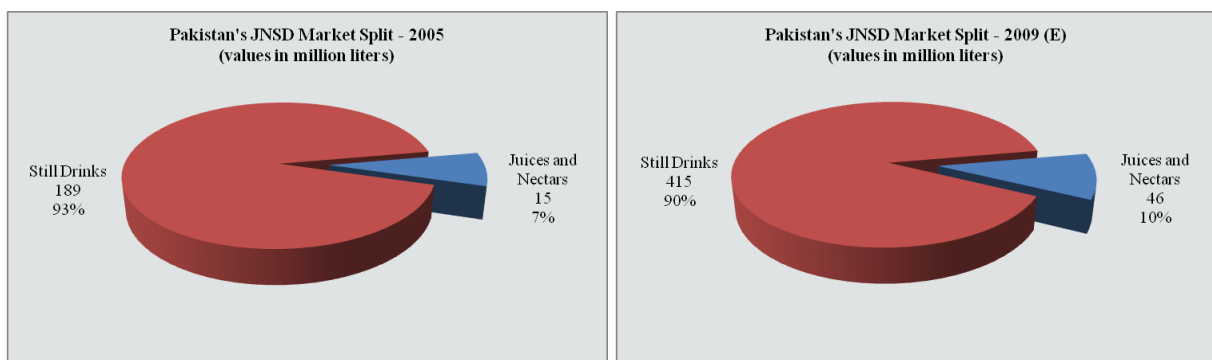
There is a growing demand of Guava pulp in local and international markets. Pakistan is an important exporter of Guavas in the international market but it is not recognized as an important supplier of Guava pulp.

Fruit pulp is the raw material for making ready-to-drinks and juices. Local market for fruit drinks and juices has grown at very high rates during the past years.

The market size of Juice, Nectars and Still Drinks for the year 2009 was 461 million liters. Overall market growth from 2005 to 2009 was recorded at 126%. Pakistan's JNSD market sizes from 2005 to 2009 are shown in the following figure:



Importance of fruit pulps for the local market is further substantiated by the fact that growth in juices and nectars market has been higher than that of still drinks. Juices and nectars require a higher percentage of fruit pulps than those for still drinks. Following graphs show the shift:



Therefore, establishment of Guava processing facilities in Sindh will have a receptive local market for pulps.

### 3.1.2 Existing Players in Fruit Processing

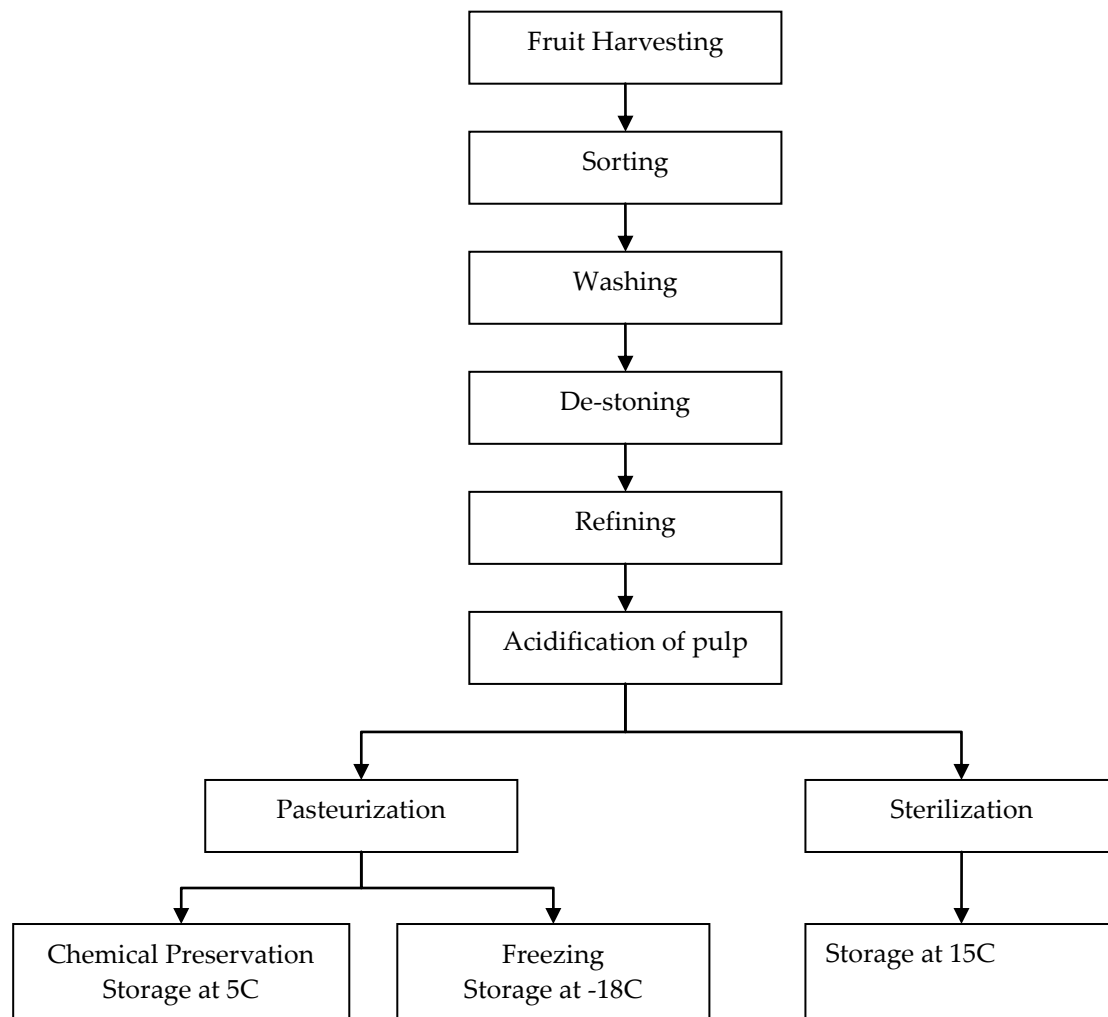
Sr. No	Name of company	Location	Processing Plant size
1	Indus, Bhai Pheroo Lahore	Lahore	5 tons/hr
2	Tops, Muree Brewery Co. Rawlapindi	Rawalpindi	1 tons/hr
3	Standard Fruits (pvt) Ltd. Lahore	Lahore	3 tons/hr
4	Shezan International, Lahore	Lahore	5 tons/hr
5	Popular Foods, Tando Adam Sindh	Tando Adam Sindh	5 tons/hr
6	Shakarganj Fruits, Lalyan, Chiniot	Chiniot	3 tons/hr
7	Iftikhar & Company, Karachi	Karachi	10 tons/hr
8	Mitchell's Fruit Farms, Renala Khurd	Ranala Khurd	5 tons/hr
9	Citro Pak	Sargodha	10 tons/hr
10	Agro Food Processing (SMEDA)	Multan	10 tons/hr
11	Anwar & Company, Faisalabad	Faisalabad	5 tons/hr

### 3.1.3 Project Description

Fruit pulping unit has to be developed with the aim of processing multiple fruits; so as to increase the number of operational days and increase the financial viability of the project. In line with this, the proposed unit has been designed for processing Guava. For further improving the returns from the Guava processing project the option of adding tomato processing may also be added. This will only require addition of evaporation facility in the setup developed for Guava and guava.

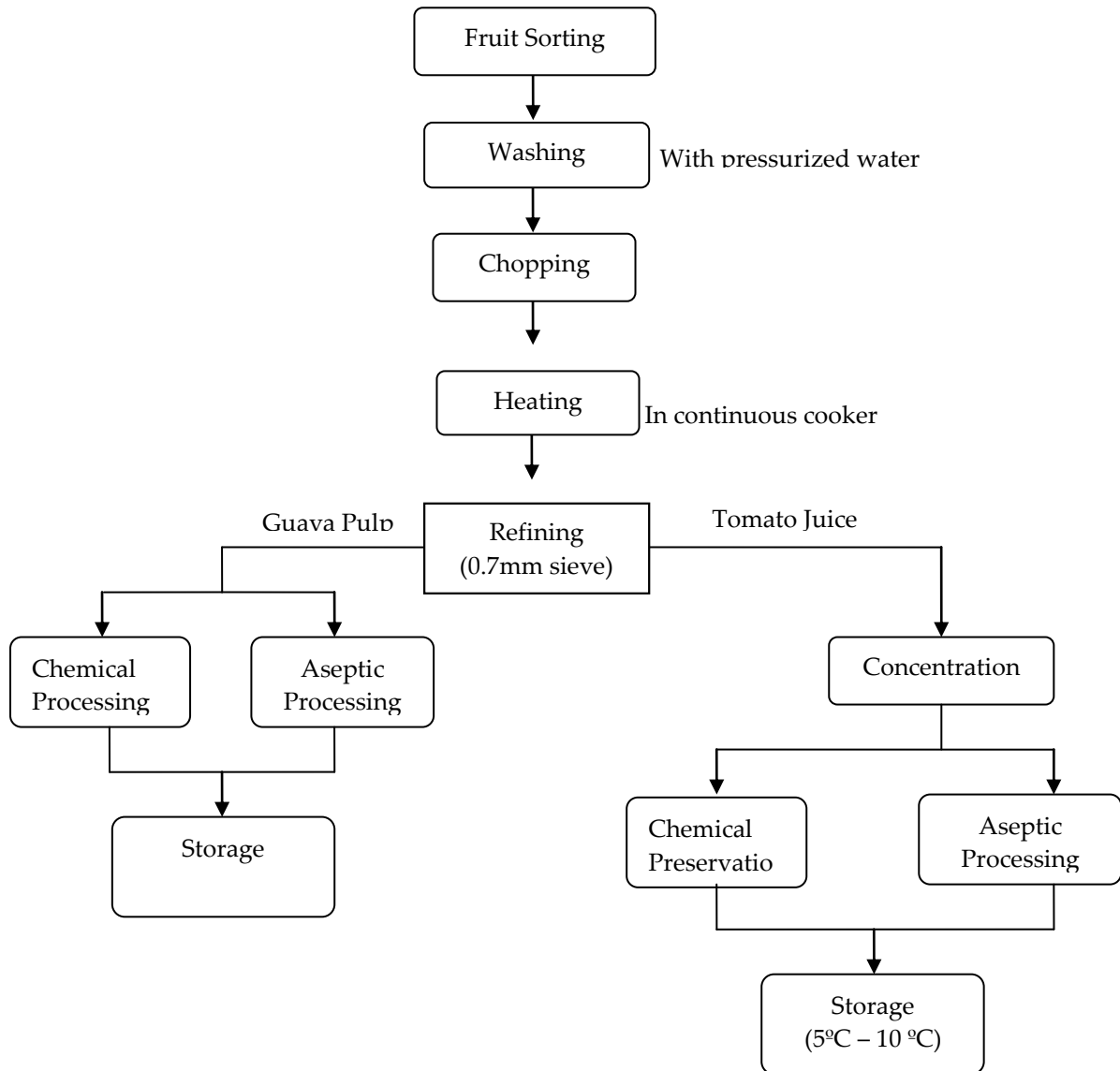
Process flow for Guava pulping unit is shown in the following figure:

### 3.1.3.1 Process Flow for Guava Pulping





### 3.1.3.2 Process Flow for Guava Pulp and Tomato Paste



### 3.1.3.3 Project Cost

#### Machinery and Equipment

Equipment	Rupees
Guava processing machinery <sup>1</sup> (10 ton fruit per hour)	125,000,000
Additional machinery for tomato paste (10 ton tomato per hour)	60,000,000
Utility and support machinery and equipment <sup>2</sup>	40,000,000
Cold storage (500,000 kg)	10,000,000
<b>Total machinery and equipment cost</b>	<b>235,000,000</b>

#### Land and Building

5 acre land @ Rs 500,000 per acre	2,500,000
Building (23,000 sq. ft. @ construction cost of Rs 1200 per sq. ft)	27,600,000
<b>Total cost of land and building</b>	<b>30,100,000</b>

### 3.1.4 Location

The processing facility can be set up in any of the Guava growing district. Location of the facility between Hyderabad and Tando Allahyar will ensure proximity to raw material as well as to sea port of Karachi.

### 3.1.5 Profitability

#### Guava Pulp

(Based on 1000 kg aseptic Guava pulp)

#### Product Cost (Guava pulp)

Cost Item	Quantity	Rate	Cost (Rs/ton pulp)
Guava fruit	1615 kg	Rs 20 per kg	32,300
Aseptic bag	4.7 (no.)	Rs 700 per bag	3,300
Drum	4.7 (no.)	Rs 2100 per drum	9,870
Processing cost		Rs 8000 per ton pulp	8,000
Overheads		Rs 5000 per ton pulp	5,000
<b>Total</b>			<b>58,470</b>

<sup>1</sup> Machinery details provided in Annex 1

<sup>2</sup> Machinery details are provided in Annex 2

**Profitability**

Hours per day	16
Fruit processed per day (@ 10 tons per hr)	160 tons
Pulp yield	62%
Pulp produced per day	99.2 tons
Number of production days	50
Total pulp produced	4,960 tons
Guava pulp price	Rs 75,000 per ton
Revenues	Rs 372,000,000
Cost	Rs 290,011,200
<b>Gross Profit</b>	<b>Rs 81,988,800</b>

**Guava Pulp**

(Based on 1000 kg aseptic guava pulp)

**Product Cost (guava pulp)**

Cost Item	Quantity	Rate	Cost (Rs/ton pulp)
Guava fruit	1250 kg	Rs 15 per kg	18,750
Aseptic bag	4.7 (no.)	Rs 700 per bag	3,300
Drum	4.7 (no.)	Rs 2100 per drum	9,870
Processing cost		Rs 8000 per ton pulp	8,000
Overheads		Rs 5000 per ton pulp	5,000
<b>Total</b>			<b>44,920</b>

**Profitability**

Hours per day	16
Fruit processed per day (@ 10 tons per hr)	160 tons
Pulp yield	62%
Pulp produced per day	128 tons
Number of production days	20
Total pulp produced	2,560 tons
Guava pulp price	Rs 50,000 per ton
Revenues	Rs 128,000,000
Cost	Rs 114,995,200
<b>Gross Profit</b>	<b>Rs 13,004,800</b>

## 3.2 Guava Squash Making Unit

Guava squash making project is a small scale project which can be started by small capital base.

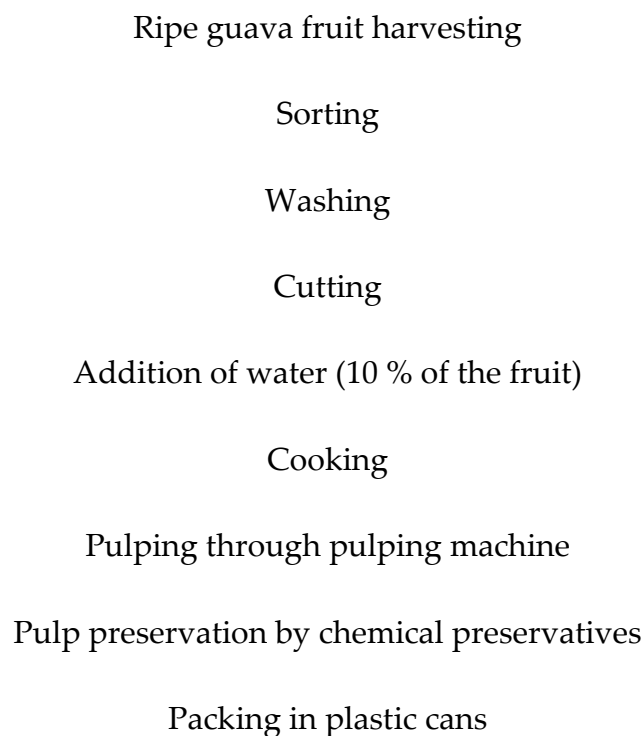
### 3.2.1 Market Demand

There are few value added products made from guava. During the past two years, guava nectar has been launched in the local market by a leading multinational company. The product has been successful in attracting the attention of the consumers which is an indicator of the demand of the value added products of guava in the local market. On the same pattern, there is a demand of guava squash in the local market. One successful example in this regard is the guava syrup which is developed and sold by Research Institute in Tarnab, NWF. The product has been able to gain good popularity in the local market.

Looking from the perspective of international market, Pakistan is the second largest guava producer in the world. This strength can be developed to launch guava products in export markets also. Demand for these products have to be created since presently, there is no presence of such products in export markets.

### 3.2.2 Project Description

#### 3.2.2.1 Process Flow



### 3.2.2.2 Machinery and Equipment

Machinery/Equipment	No.	Unit Cost (Rs)	Total Cost (Rs)
Pulping machine	1	70,000	70,000
S/S cooking pans 125-kg	3	8,000	24,000
Filling machine	1	50,000	50,000
S/S Juice mixing tank	1	50,000	50,000
Gas burners	3	5000	15000
Knives , spoons etc		10,000	10,000
<b>Total</b>			<b>219,000</b>

### 3.2.2.3 Operational Cost

(for making 1000 guava squash bottles of 810 ml each)

Ingredients	Quantity	Unit price	Total cost ( Rs )
Guava pulp	350 kg	Rs 25 per kg	8750
Sugar	500 kg	Rs 70 per kg	35,000
Water	150 kg		
Flavor	100 gm	Rs 1000 per kg	100
PET bottles	1000 nos	Rs 10 per bottle	10,000
Caps	1000 nos	Rs 1 per cap	1000
Label	1000	Rs 0.5 per label	500
<b>Total</b>			<b>55,350</b>

### 3.2.2.4 Profitability

Production per day (bottles)	1000
Production per month (@ 5 days per month)	5000
Unit price of guava squash bottle	Rs 80
Revenues per month	Rs 400,000
Unit cost per bottle	Rs 55.3
Total Cost	Rs 276,500
<b>Gross Profit</b>	<b>Rs 123,500</b>

**ANNEX A****Guava Processing Machinery List**

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<b>Name of machine/equipment</b>	<b>No.</b>	<b>Origin</b>
Feeding/sorting roller conveyor	1	Imported
Fruit washing system	1	Imported
Guava de-stoning machine	2	Imported
Chopping machine/hammer mill	1	Imported
Thermo break	1	Imported
Two stage refiner	1	Imported
Monix pumps	5	Imported
Sterilizer/Pasteurizer	1	Imported
Conveyor / elevators	1	Imported
Aseptic filling system	1	Imported
Peach /apricot de-stoning machine	1	Imported
Stainless steel tanks	4	Local
SS screw conveyer for waste removal	2	Local
Brushing machine	1	Local

**ANNEX B****Guava Utility Equipment List**

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<b>Description</b>
Boiler (4 tons/hr, 150 psi)
Air Compressor
Water Chiller
Generator (250 KVA)
Cooling Tower
C.I.P System
Water Treatment
Fork Lifter (2.5 tons)
Deep well (0.5 cusec)
Weigh Bridge (60 ton)
Electric connection
Electrical wiring
Transformer
Effluent treatment
Waste hopper
Centrifugal pumps and pipes for water
Fuel gas connection

## IMPORTANT CONTACTS

<p>Sindh Board of Investment Government of Sindh 108 – F, PECHS-II Karachi, Pakistan Tel: 021 – 34300971 – 3 Fax: 021 - 34300974 Email: <a href="mailto:info@sbi.gos.pk">info@sbi.gos.pk</a> Website: <a href="http://www.sbi.gos.pk">http://www.sbi.gos.pk</a></p>	<p>Economic Wing MINISTRY OF FOOD AND AGRICULTURE 38-W, 3<sup>rd</sup> Floor, Khalid Plaza, Blue Area Islamabad Website: <a href="http://www.minfal.gov.pk">www.minfal.gov.pk</a> E Mail : <a href="mailto:secretary@minfal.gov.pk">secretary@minfal.gov.pk</a></p>
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