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# Profiling and Capacity Need Assessment of Pulping Units *(Final)*

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## Data Page

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### **Key Words**

*Apple, aseptic packing, citrus, cold store, export, fruit, import, juice, juice concentrate, human resource, kinnow, machinery, mango, marketing, processing, pulp, puree, USAID, vegetable*

**Abstract**

The report presents a situation analysis of fruits/vegetables pulping sector of Pakistan. Processing units all across Pakistan producing industrial products like pulps/purees and/or juice concentrates have been surveyed using a structured questionnaire to develop their profiles and conduct their capacity need assessment. The profiles and need assessment covered technology, quality assurance, marketing and human resource functions of the surveyed units. Based on the information collected, possible areas of support were identified where USAID support can bring in improvements in operations and marketing of the surveyed units.

**Abbreviations**

<b>Abbreviation</b>	<b>Description</b>
AFP	Agro Food Processing
APEDA	Agricultural & Processed Food Products Export Development Authority (India)
CEO	Chief Executive Officer
FCKJ	Frozen Concentrated Kinnow Juice
HACCP	Hazards and Critical Control Points
INR	Indian Rupee
KP	Khyber Pakhtunkhwa
OJT	On Job Training
PD	Project Director
PKR	Pakistani Rupee
PSIC	Punjab Small Industries Corporation
QA	Quality Assurance
SMEDA	Small and Medium Enterprise Development Authority
USA	United States of America
USAID	United States Agency for International Development
VCD	Value Chain Development

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## 1.0 EXECUTIVE SUMMARY

USAID-FIRMS Project had undertaken this study on “Profiling and Capacity Need Assessment of Pulping Units in Pakistan” with an aim to assess the capabilities of existing pulping units and evaluate their needs for capacity enhancement. The scope of work included exploring the areas of possible USAID intervention and support to strengthen agro based industry for a sustained economic growth of the country.

Pakistan grows around 7 million tons fruits and 6 million ton vegetables annually, most of which is consumed in fresh form. The rest is used to make value-added derivative products. Fruits & vegetables are converted into pulps & juice concentrates and preserved & stored. These industrial products are used by consumer product manufacturing industry as base raw materials for the production of value added consumer products like juices, jams and ketchup etc. Some of the consumer product companies have their own fruit and vegetable processing plants to produce pulps and concentrates to cater to their in-house needs while other fruit processors produce pulps and concentrates on commercial scale for the consumer products industry or possible exports.

Of the 23 Industrial units engaged in Fruit and Vegetable Pulping, five have State-of-the Art production facility catering for the needs of high end domestic and export markets. Their production is in line with the international standards including aseptically processed and frozen pulps and concentrates. Rest of the units producing chemically preserved pulps mostly cater for the needs of low end domestic markets. Many of such units have old plants comprising some local machinery and scrap components. Adherence to Food laws and regulations is virtually nonexistent. Punjab has the biggest fruit and vegetable processing cluster having 16 pulp producing units followed by Sindh with 6 pulping units. KPK owns just one unit and Baluchistan does not have any. With 140 tons fruit per hour processing capacity, mango ranks on top for pulping. Almost all the processing units are equipped with mango processing machinery. Having 85 tons per hour processing capacity, kinnow stands next to mango. Apple is the third largest fruit processed. Two processing units having a gross capacity of 20 ton fruit per hour, produce apple juice concentrate while different processing units possess 31 tons per hour capacity to produce apple pulp.

In 2011, Pakistan processed 2.28% of its fruits and 0.3% vegetables into pulps and concentrates. About 177,000 tons of fruits and vegetables were processed into 52,000 tons of different pulps and concentrates. Around 26,400 tons of mango pulp was produced from 45,000 tons of fruit and 9,000 tons kinnow juice concentrate from 95,000 tons of fruit. Similarly, 5,800 tons pulp was retrieved from 6,100 tons of apples and 1,300 tons apple concentrate from 7,200 tons of fruit. Among vegetables, 17,000 tons of tomatoes were processed into 4,050 tons of puree and paste. The other fruits and vegetables processed, relatively in smaller quantities, included guava, peach, strawberries, falsa, apricot, banana and carrots. Pineapple is not grown in Pakistan while grape is produced in small quantities. Concentrates of these fruits are imported by the consumer product manufacturers to meet the demand for pine apple and red grapes based consumer products. Beyond the scope of this study are significant fresh fruit and vegetable juice shop markets, restaurants and hotels where freshly squeezed fruit/vegetable juices or shakes are served.

The fruit and vegetable pulping industry of Pakistan meets most of the local market requirements. However, its share in the global markets is insignificant due to a number of reasons like inadequate quality assurance measures and half hearted efforts to strengthen its currently weak linkages with the buyers. Though authentic trade data is not available, the industry experts and major players estimate that Pakistan’s annual exports are around 10,000

tons of pulp/concentrate as compared with Indian exports of 170,000 tons of mango pulp alone. While the demand for hi-end products increased significantly, the low-end consumer market also kept on growing with a steady pace. It is because Pakistan, primarily, remains a price market in the low to middle income groups. Production and market share of relatively cheaper and low quality pulps is more than that of high quality pulps produced by modern pulping plants.

Despite growing costs of processing and production, Pakistan's export potential looks promising. However, a stiff competition is expected from well placed exporters like India and China. Regardless of its lower quality in terms of aroma and flavor, especially in case of mango, India has succeeded in getting its pulps recognized in the world markets. Competitive advantages for Pakistan are diminishing due to ever rising costs of raw fruits, utilities and inputs while lack of product diversification has left the fruit and vegetable processing business to remain compromising.

The high end pulping sector along with its plants conforming to the international standards is managed by well qualified and experienced managerial and supervisory staff. But most of the factory owners refrain from hiring competent staff and imparting technical training to them. Unattractive wage and salary structure and make shift arrangement of hiring temporary labor force without any incentives is a significant bottleneck in quality production. The staff skills can be improved mostly, by way of hands-on and on-the-job training. The processors do not earmark budgets for skills development despite making good profits in a growing market.

The study of the pulping sector identifies the gaps and weaknesses of the individual processing units and recommends rectifications. It calls for the industry to enhance its potential (processing capability) by adding aseptic processing and freezing equipment in the existing lines. In some cases, addition of small machines in their existing production line will enable them to increase the range of fruits and vegetables they are processing. The study reveals that adding evaporating equipment in the existing processing units can increase the tomato processing capacity leading to control over post harvest losses of this valuable vegetable. Increase in tomato paste/puree production would also help decreasing imports. The study points out that significant number of processing units have been developed by using old and substandard machinery and components. It is of critical importance that such units can be modernized or upgraded by replacing the redundant plant components by new equipment. Dearth of skilled work force and qualified supervisory staff hinders their capacity building which calls for on-the-job training in processing, product testing, plant hygiene and quality assurance.

To boost up the productivity in terms of food safety and export potential of these units, the study recommends that the industry must obtain HACCP and ISO-22000 certifications and the technical staff is well trained to implement quality assurance standards.

Financial crunches, high costs of production and sales, shyness to invest in high end products, fair ignorance of desired quality assurance mechanism and disorganized effort for outreach to the world markets by both, the government and private sector have been constraints for Pakistan to make its presence felt in the world markets. The export houses and entrepreneurs face paucity of funds necessary for exploring the world markets. Therefore, USAID intervention and support can significantly help in establishing international market linkages for Pakistan's fruit and vegetable processing industry.

## 2.0 INTRODUCTION

### 2.1 Pakistan Fruits/Vegetables Production

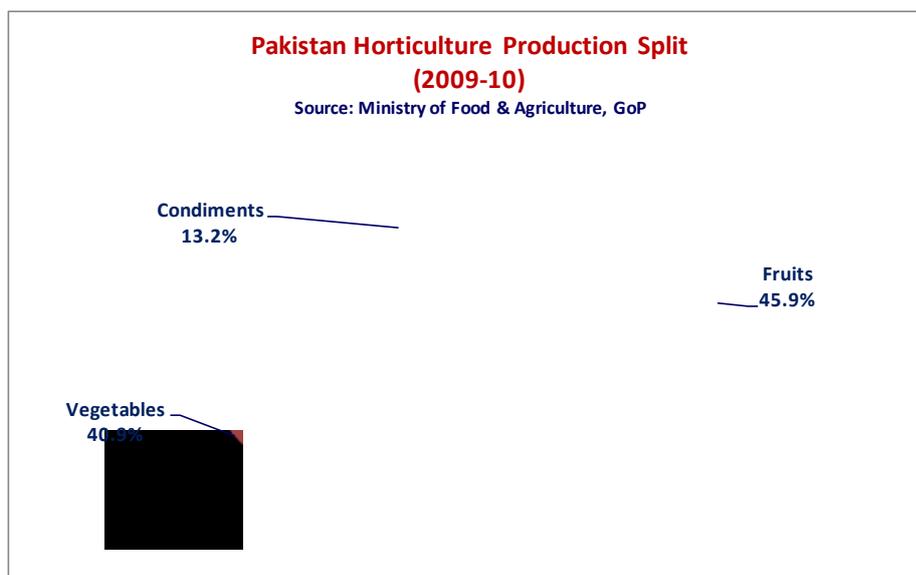
Pakistan is a large producer of fruits and vegetables and produces a wide range of horticultural crops. Diversity of climates in Pakistan allows growing variety of fruits and vegetables in different regions. The country is blessed with tropical, sub tropical and temperate climates. Vast areas are fed by irrigation channels which draw water from different rivers.

Total national horticulture production during the year 2009-10 was 15.1 million tons. Productions and relative shares of fruits, vegetables and condiments in the total horticulture production are shown in the following table:

**Table 1 - Pakistan's Horticulture Production**

	<b>Production (Tons) 2009-10</b>
Fruits	6,941,295
Vegetables	6,186,297
Condiments <sup>1</sup>	1,993,894
<b>Total</b>	<b>15,121,486</b>

*Source: Ministry of Food and Agriculture, GoP*



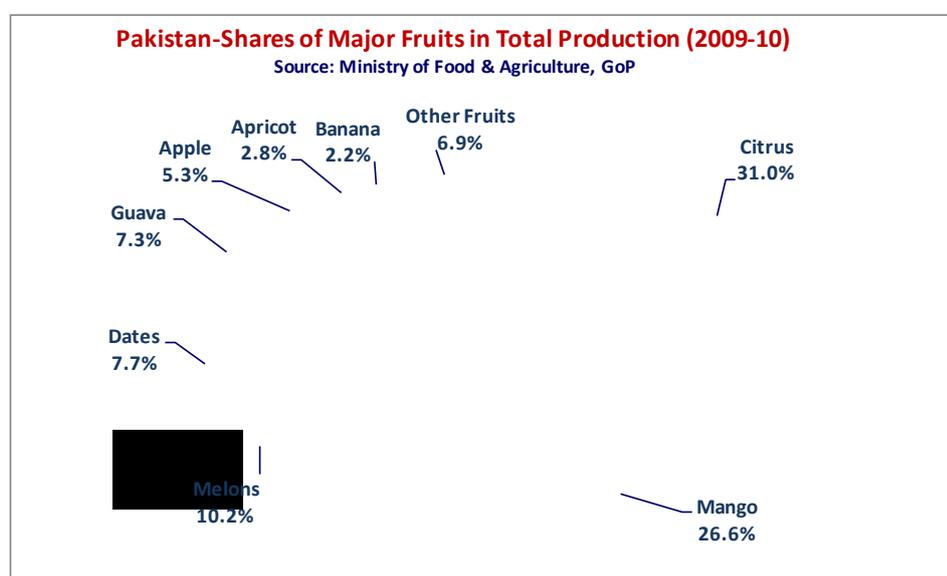
Among fruits, citrus has the largest share, followed by mango, date, melon and guava. Following table shows the production and cultivated areas of the major fruits produced in the country:

<sup>1</sup> Condiments include onion, garlic, chillies, turmeric and coriander

**Table 2 Pakistan Major Fruit Production 2009-10**

Fruits	Cultivated Area (Hectares)	Production (Metric Tons)
Citrus	198,380	2,150,054
Mango	173,731	1,845,528
Melons	48,214	710,326
Dates	90,584	531,191
Guava	62,052	509,204
Apple	111,597	366,360
Apricot	30,206	193,936
Banana	34,830	154,825
Other Fruits	102,928	479,871
<b>Total</b>	<b>852,522</b>	<b>6,941,295</b>

Source: Ministry of Food and Agriculture, GoP

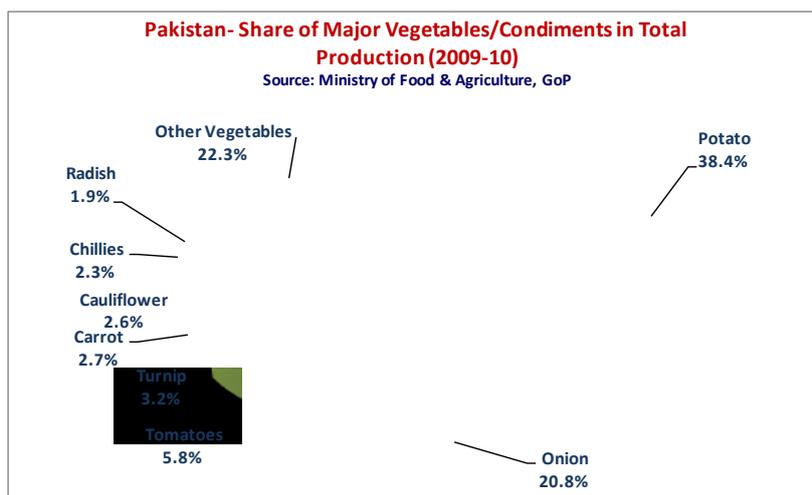


In vegetables/condiments, potato, onion and tomato are the largest grown crops.

**Table 3 – Pakistan Major Vegetables/Condiments Production – 2009-10**

Vegetable/Condiment	Cultivation Area (Hectares)	Production (Metric Tons)
Potato	138,538	3,141,439
Onion	124,781	1,701,069
Tomato	49,992	476,826
Turnip	14,994	259,837
Carrot	12,861	219,339
Cauliflower	12,637	213,414
Chillies	74,784	188,859
Radish	10,219	156,422
Other Vegetables/Condiments	165,880	1,822,986
<b>Total</b>	<b>604,686</b>	<b>8,180,191</b>

Source: Ministry of Food and Agriculture, GoP



## 2.2 Project Rationale

Major portion of the fruit and vegetable production of Pakistan is consumed in fresh form by the Pakistan's population. However, small quantity of the produce is processed for an ever growing market to make value-added consumer products like juice drinks, nectars, squashes, jams, chutneys, ketchups, etc. Pulp, purees and juice concentrates, the intermediate products of fruits and vegetables, are industrial products used by the consumer product industry as base raw materials for the production of value added consumer products.

Some of the consumer product companies have their own fruit and vegetable processing plants to produce pulps and concentrates to cater to their in-house needs. Majority of the consumer product manufacturing units source pulps from the fruit/vegetable processors. The agro-based pulping industry of Pakistan mostly meets the local market requirement but its share in the global markets is insignificant due to a number of reasons like inadequate quality assurance measures and weak linkages with the international buyers despite appreciation of superb aroma, flavor and taste of indigenous horticulture produce.

USAID-FIRMS Project had undertaken this study on “*Profiling and Capacity Need Assessment of Pulping units in Pakistan.*” in an effort to strengthen the agro-based industry to improve its productivity and competitiveness. The study aimed at assessing and evaluating the challenges being faced by fruit and vegetable pulping units, especially, in the areas of product and process standardization, enhancement of processing capacity, lab facility up-gradation, conversion of plants from single product processing into multi product finishing, quality certifications, provision of technical assistance and capacity building of work force and market linkages with export markets to the domestic players.

The study has endeavored to identify the existing capacity gaps and benchmark current practices and production system with the practices adopted by pulp producing/exporting regional and international competitors. The ultimate goal of the study was to support the agro-based industries for generating economic activities by improving manufacturing capabilities, enhancing sales (both, domestic and international), creating for new jobs, and reducing imports of high value products by improving management, plant and processing conditions, better quality control, storage and packaging and entering new global markets.

Owing to growing domestic demand and a significant export potential, fruit and vegetable pulps and juice concentrates manufacturing is a very promising sector that can be developed

at par with international standards. Therefore, there was a strong need to determine technical capabilities and skill levels of the workforce at each unit for a possible technical support in future. Pertinent information on raw material sourcing, marketing channels, available testing facilities and staff strength will help in addressing constraints of the production units and the needed support in this respect.

### **2.3 Methodology of the Study**

The study under review was accomplished in line with specified terms of reference. However, the consultant did try to go an extra mile to ensure productivity and future utility of this report. Realistic analysis and achievable benchmarks have been fixed to make this report actionable for achieving the aims and objectives defined by the Client.

Methodology for this study was devised keeping in view the required level of accuracy to assess the present status of fruit/vegetable pulping sector and the support required to strengthen it. For profiling and assessing the needs, emphasis was placed on gathering primary data. For better perception and further understanding, the project was discussed with the concerned members of FIRMS Lahore and Karachi offices. The suggested literature was also read to become fully aware of the dynamics of the sector including scientific knowledge of modern technologies and quality assurance techniques applied in the global markets.

#### **Deliverable-1 (Survey Tool)**

The consultant designed a simple but practical questionnaire format to extract necessary information and pertinent data from pulping unit's managements. This database tool (attached as annex "A") was presented to the FIRMS-VCD team and further improved as observed by them.

#### **Deliverable-2 (Survey Tool Pre-testing)**

Some minor changes were made after it was put to test while visiting and inspecting the first two pulping units namely, Best Industries (Pvt) Ltd. and Standards Fruits (Pvt) Limited, Lahore, under approval of the VCD team at Firms Project Lahore Office.

#### **Deliverable-3 (Survey)**

Twenty three pulping units, located in three provinces (Punjab, Sindh and KPK) were contacted for visits and meetings. Four of the selected units were found to be reluctant to share information even if offered to avail a gainful opportunity. Thus, information was collected from nineteen pulping units. Since Nestle is the largest player in fruit juice consumer products sector, and consequently one of the largest buyers of industrial products, a meeting was also held with it to further strengthen the analysis.

At the time of visit, almost all the units were in idle condition. After plant Inspection, detailed discussion was conducted on the past performance, problems encountered and current state of affairs, future plans and the support desired from Firms project. Notes of all deliberations were taken to incorporate the requisite information/data in the survey format. Most of the unit owners and managers showed interest in having guidance for the technical matters & issues and help in exploring export markets.

The data, thus collected, was compiled based on the consultant's experience and summarized in the format.

**Deliverable-4 (Report)**

Guidance for the report format and pattern was sought from the USAID Firms VCD staff and during the report writing a frequent liaison with the FIRMS VCD component was maintained to adapt the format as desired.

Necessary tables, available trade data, pie charts and bar graph have been included to bring in more clarity, stronger justification and realistic recommendations with a target oriented approach.

**Deliverable-5 (Presentation)**

Presentation is to be made to the Client after the approval of the report.

### 3.0 SECTOR OVERVIEW AND KEY FEATURES

The following discussion provides an overview and key features of fruit and vegetable pulping sector of Pakistan. The analysis has been based on the survey of the pulping units conducted as part of the study.

#### 3.1 Types of Fruits/Vegetables Processing Units

The fruit/vegetable based value added product industry can be broadly classified into three types of units:

1. The ones processing fresh fruits to produce industrial products like pulp and juice concentrates to be used as raw material for making consumer products. The product is sold to the local consumer product manufacturers, or exported.
2. The others, processing fruits/vegetable to meet their in-house requirements of consumer product manufacturing. These also sell the surplus stuff to the consumer product industry.
3. The consumer product manufacturing units consuming industrial product of fruit/vegetable processors. They don't have their own fruit processing facilities.

The present study has focused the first two types of units; the ones engaged in processing fruits and vegetables to produce pulps, either to meet their in-house requirements of producing consumer product or supply to consumer product manufacturing industry.

#### 3.2 Estimated Production Volumes

Based on the primary research carried out by the team, production of pulps/purees and juice concentrates were estimated.<sup>2</sup>

Mango and citrus are the two largest fruits produced in Pakistan. In 2009-10, these two fruits, together, accounted for 57.5% of the total national fruit production. By virtue of availability and market demand, these two are the two main fruits processed by the local pulping sector. Apple is the other commonly processed fruit.

Mango based consumer products are the most popular in the local market. Thus, mango pulp is the most demanded and processed industrial product in the country. Apple based consumer products are the second most popular product in the local market. Citrus (mostly kinnow) is the other large fruit processed by the local sector. Along with the local consumption, the frozen juice concentrates of the local citrus fruits have a demand in international markets as well. In terms of production of final product, mango is the largest fruit but in terms of the processed fruit, citrus is larger than mango. The reason for this is that mango pulp is prepared and marketed in single strength form; while kinnow juice is folded (concentrated) six times to be marketed in frozen concentrate form.

In vegetables, tomato is the most commonly processed product. The most common use of tomato is for making tomato ketchup. Along with this, tomato paste is another product having

<sup>2</sup> The production estimates has been developed by the team are aligned with the following considerations:

- The information quoted is mainly based on the primary data collected from the units visited during the survey.
- Market intelligence collected is the source of data for the few units those could not be visited.
- Fruit processed at fresh fruit juice shops is not included. These juice shops squeeze fresh juice from citrus, apple, mango, falsa, pomegranate, strawberry, banana, and carrots.
- Data for fruit/vegetable processed by very small pulping units of the informal sector is not included.

a smaller presence in the local market. Apart from tomato, carrot is the other important vegetable which is processed. Carrot pulp is mostly used as filler for reducing the cost of other products; such as tomato ketchup.

### 3.2.1 Fruit and Vegetable Pulp Production in Pakistan

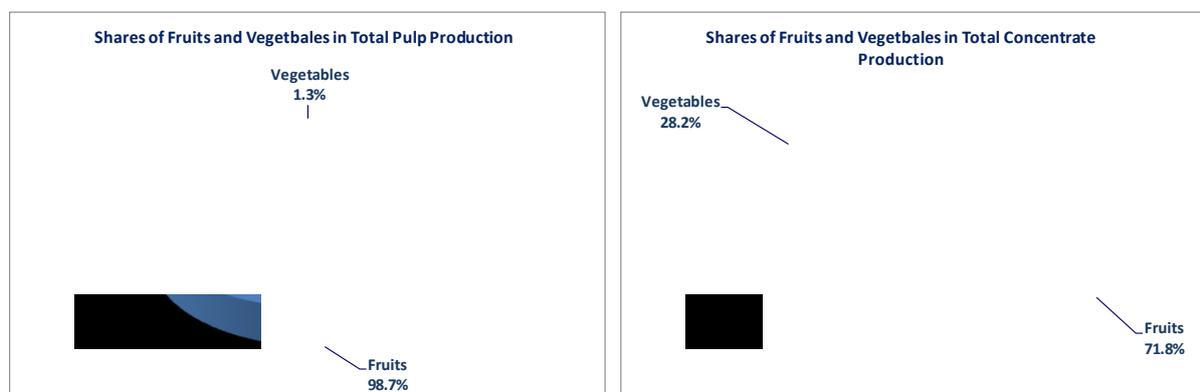
As per the estimates developed by the Consultant, during the year 2010-11, about 2.3% of the total fruit production and 0.3% of the total vegetable production were processed into pulps/concentrates.

During the year 2010-11, total production of pulps in the country was 37,845 tons and that of juice concentrates was 14,350 tons. More than 98% of pulps was produced from fruits while about 2% was produced from vegetables. In case of juice concentrates, the share of vegetables was 28%, the balance contributed by fruits. Tomato is the major contributor in vegetables juice concentrate production.

**Table 4 - Pulps/Purees and Juice Concentrates Production Estimates - 2010-2011**

	<b>Pulp Production (Tons)</b>	<b>Concentrate Production (Tons)</b>
Fruits	37,345	10,300
Vegetables	500	4,050
<b>Total</b>	<b>37,845</b>	<b>14,350</b>

*Source: Based on information collected from Processing Units*



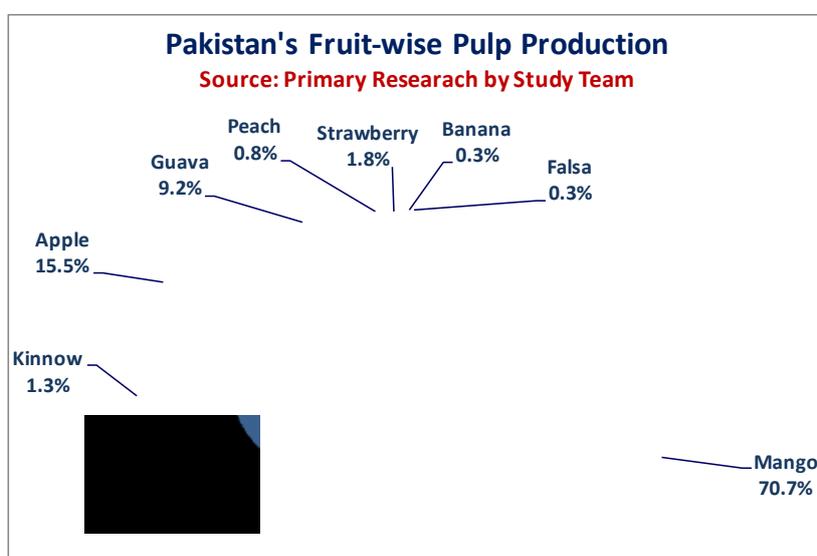
### 3.2.2 Fruit-wise Pulps and Concentrates Production

There are about eight types of fruits which are currently being used for pulp production; while juice concentrates are being manufactured only from two fruits. Based on the primary research conducted during the project, the Consultant developed production estimates for the production from each of these fruits.

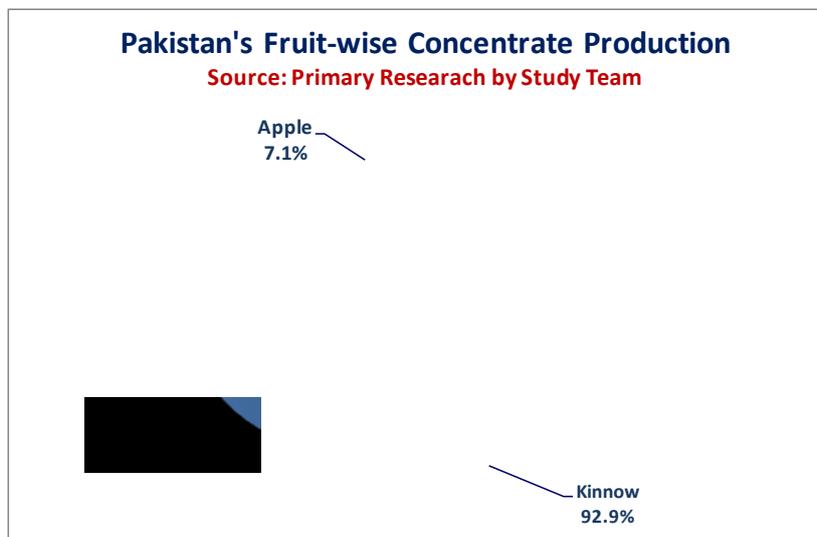
Mango claims the lion's share in the total pulp production of Pakistan. 71% of the total pulp is produced from mango. Apple is the second largest fruit in this respect accounting for 15.5% of the total production; while guava is the third largest fruit. Pulps production of different fruits and the shares in total production are shown in the following table and figure:

**Table 5 - Fruits Pulp/Purees/Concentrates Production - 2010-11**

Fruit	Pulp Production (Tons)	Concentrate Production (Tons)
Mango	26400	-
Kinnow	500	9,000
Apple	5800	1,300
Guava	3450	-
Peach	315	-
Strawberry	670	-
Banana	110	-
Falsa	100	-
<b>Total</b>	<b>37,345</b>	<b>10,300</b>



In juice concentrate production, kinnow is the main contributor. During 2010-2011, 9000 tons of kinnow concentrate was produced which accounted for 87% of the national concentrate production. Apple accounted for the balance 13%.



### 3.2.3 Vegetable Pulp and Concentrates Production

There are only two vegetables, tomato and carrot which are processed commercially to produce pulps, purees and concentrates. Following table shows the estimated production figures:

**Table 6 - Vegetables Pulp/Concentrates Production - 2010-11**

Vegetable	Pulp Production (Tons)	Concentrate Production (Tons)
Carrot	500	-
Tomato	-	4,050
<b>Total</b>	<b>500</b>	<b>4,050</b>

*Source: Based on information collected from Processing Units*

Carrot is used for making pulp while tomato is processed to make 4-fold tomato puree or 7 fold tomato paste.

### 3.2.4 Fruits/Vegetables Consumption by Pulping Sector

Corresponding to the production volumes of pulps/concentrates, consumptions of fruits and vegetables were also calculated; using the average yield figures of pulps/concentrates from different fruits and vegetables. These yields are provided in Table II-A in Appendix II. Tables 7 and 8 show the volumes of fruits and vegetables processed by the pulping units of Pakistan.

**Table 7 – Fruit Pulp/Concentrates Production and Fruit Processed**

Fruit	Pulp Production (tons)	Fruit Processed for Pulp (tons)	Concentrate Production (tons)	Fruit Processed for Concentrate (tons)	Total fruit Processed (tons)
Mango	26,400	45,000	-	-	45,000
Kinnow	500	1,000	9,000	95,000	96,000
Apple	5,800	6,100	1,300	7,2 00	13,300
Guava	3,450	4,050	-	-	4,050
Peach	315	370	-	-	370
Strawberry	670	750	-	-	750
Banana	110	220	-	-	220
Falsa	100	125	-	-	125
<b>Total</b>	<b>37,345</b>	<b>57615</b>	<b>10,300</b>	<b>102,2 00</b>	<b>159,815</b>

**Table 8 – Vegetables Pulp/Concentrates Production and Vegetables Processed**

Vegetable	Pulp Production (Tons)	Vegetables Processed for Pulp (Tons)	Concentrate Production (Tons)	Vegetables Processed for Concentrate (Tons)	Total Vegetables Processed (Tons)
Carrot	500	555	-	-	555
Tomato	-	-	4,050	17,000	17,000
Total	500	555	4,050	17,000	17,555

### 3.3 Key Features/Trends of Pulping Sector

#### 3.3.1 Location of Processing Facilities in Fruit/Vegetable Production Clusters

Processing facilities located within fruit/vegetables production clusters have a significant competitive edge; since the raw material (fruit/vegetable) cost is reduced due to number of factors:

- Buying fruits/vegetables directly from the farms or with lesser involvement of middlemen makes it cheaper for the processor.
- In most of such cases, the fruit is usually brought to the processing facility in loose form, loaded in open trucks, since the travelling distances and times are small. This enables the processor to procure fruit at a lower price compared to that by a facility which is located at a longer distance from the fruit orchards; since in the latter case, the fruit has to be transported in proper packaging by incurring extra cost. In a processing plant operating at 10 tons per hour for two shifts (16 hours), total mango processed per day is 160 tons. At 10 kg mangoes packed per wooden crate, packing this quantity of mangoes requires 16000 crates. At a cost of Rs 40 per crate, this amounts to Rs 640,000 per day. Savings of this tune are achieved by the facilities operating from within the mango production clusters.
- The second important cost saving is achieved in the form of lesser transportation cost from orchard to the nearby processing facility in the production cluster of respective fruit and vegetables.
- Another form of cost saving is achieved as the reduced fruit losses during transportation; which are high when the fruit is transported to facilities located at large distances from the production clusters.

A successful example of a facility situated within production cluster is the recently established Agro Fruit Processing Facility (SMEDA-PSIC) which is located in Multan, the home district of mango.

#### 3.3.2 Diminishing Competitive Advantage

Local production of fruits and vegetables is one of the major factors due to which the sector has attracted investment during the past two decades when numerous new players entered into this sector. However, with the passage of time, with the opening up of world trade, the competitive advantage of the local industry has started to erode. Some important factors responsible for this trend are discussed below:

- Prices of basic raw material of fruits and vegetables have risen due to increased cost of agriculture inputs. The prices of inputs like fertilizer and pesticides have increased significantly during the past years.
- Rising rates of electricity have led to increase in the cost of irrigation. Fuel costs have increased manifold which has increased the cost of transporting the fruit to the processing facilities.
- The increasing cost of utilities has a direct effect on the production cost of the final product. Increasing costs of fuel and electricity are ultimately reflected in the price of the final product; thereby reducing the competitiveness of the locally processed product.
- The situation due to rising cost of the local product is further exacerbated by the presence of tough competitors like China and India. Backed by huge economies of scale and focused marketing efforts, the processed horticulture products from these

two countries are expected to flood the local markets in the coming years, if production cost keep on rising in Pakistan.

### 3.3.3 Capital Intensive Business

Fruit processing sector is a subsector of Food sector and thus is directly related to people's health. It therefore becomes critical that the processing plant, building, processing machinery & equipment and the procedures and processes used for preparing value added products conform to the required health and safety standards. This makes the fruits processing a capital intensive business.

Along with the initial capital investment, working capital needs are also high for a fruits/vegetables processing unit. A plant of even an average (5 tons/hour) processing capacity has to procure fruits and vegetables by spending large sums of money. For example, a plant processing mango at a capacity of 5 tons per hour for two shifts (16 hours) needs 80 tons of mango per day. At an average price of Rs 20 per kg, this amounts to Rs 1.6 million per day; and Rs 48 million per month. Since the availability of the fruit is only in specific months during a year, the processing is usually carried out even without having an order. Products are made and stored in the cold stores; which means that capital is tied up for long periods.

### 3.3.4 Lack of Product Diversification

Mango and citrus are the two most commonly processed fruits in Pakistan. Pakistan produces large variety of other fruits; however the processing sector has never seriously targeted those fruits. The result of such an approach is most of the processing units are operational only for few months in a year. Such a situation reduces the project viability and acts as a disincentive for the new investors to venture into this sector. The local market of fruit juices/drinks has seen some diversification in product line since many new flavors have been launched into the market during the past decade. However, lot of potential of the products made from these fruits lies in the export markets. This potential has never been recognized by the local entrepreneurs. International markets have become very competitive due to presence of players like China which is a cheaper source of products like tomato paste and apple juice concentrate. Recently, one Karachi based processing plant has started producing apple juice concentrate catering to local and export market. The processing facility is in the process of product standardization according to the international standards and buyers demand.

Processing sector of Pakistan has also not focused on multiple types of other value added products apart from pulps/concentrates. The local concept of value addition is centered on crushing the fruits to prepare industrial products like pulps, purees and concentrates. There is lack of recognition about the fact that there is a whole world of other value added products which can be easily made by the industry. Some examples in this regard include:

- Dried mango which is a popular product in export markets and is made by all the important mango producing countries of the world. But in Pakistan, it is rare to see dried mango being prepared. Along with mango, other fruits can also be dried.
- Vegetable drying is also an attractive opportunity which is not considered by the local processing sector.
- Canning of fresh fruits is another possible area where new investment can generate good results.
- Another different type of industrial product can be made by supplying the pulps/purees and juice concentrates in smaller packing; instead of traditionally used

packing of 200 kg drums. This will be useful for producers of consumer products which require these products for smaller batches.

The sector can significantly improve its return on investment by focusing on these diversification opportunities.

### **3.3.5 Local Market for Pulping Units**

Major share of the local demand for pulps/purees/concentrates for manufacturing consumer products is met by the local pulping sector. Part of the demand is also met through imports; mostly for the products for which either there is no local production of those fruits/vegetables, or there is insufficient capacity to meet the local demand. Pineapple is not grown in Pakistan while grape is produced in small quantity. Concentrates of these fruits are imported by the consumer product manufacturers to meet the demand for pineapple and red grapes based consumer products. Although sufficient quantities of tomatoes are produced in Pakistan, tomato paste is imported due to processing capacity constraints.

#### *3.3.5.1 Demand for Low Quality Pulp in Local Market*

Many of the fruits/vegetables processing facilities established in Pakistan do not meet the required standards. This applies to the buildings, machinery and equipment and the operating procedures. Processing machinery is partially assembled by picking components from imported scrap. Such fruit processors run their plants with unqualified staff, and in some cases illiterate managerial and supervisory staff. As a result, the pulps/concentrates manufactured by such units do not meet the minimum health and safety standards.

The most important reason for such a situation is the existing demand from poor end market for cheaper product which encourages the production of low quality industrial product. The large consumer products (ready-to-drink) drinks and juices industry is able to sell their substandard products in the local market due to weak implementation of food laws. This lax behavior of the government allows the juice/drink manufacturers sell their low quality products to the local population. Such a situation discourages the fruits/vegetables processors to produce better quality pulp/ concentrate. In the absence of any pull from their customers, they keep producing low grade products.

While these low grade products have acceptability in the local market, they do not have any acceptability in the international markets. Therefore, this approach limits the potential of the low grade processors to enter into the export markets.

### **3.3.6 Export Market for Pulping Units**

Along with the local market, there is a large export market for the products manufactured by the pulping units. Out of twenty three processing units across Pakistan surveyed during this capacity need assessment and profiling of pulping units, only six are equipped with aseptic processing technology. Individual efforts by some large processors do get some export orders, but there is no consistency and trend in these exports. The market has not been properly explored and tapped by the local processors of fruits/vegetables.

#### *3.3.6.1 Technological Limitation for Exporting Pulps/Concentrates*

The process for manufacturing pulps/concentrates of fruits/vegetables can be seen as comprising of two main sections: the first converting the fruit/vegetables into the form of pulp and the other preserving that product to be used as and when needed. Process flow diagram for fruits/vegetables pulp manufacturing is shown in Appendix III.

With small differences, the machinery and equipment in the first section in most of the processing facilities in Pakistan is similar and there are no major technological differences. However, there is a large difference in the second section where most the processors do not have the required technology.

The pulps/concentrates of fruits/vegetables can be preserved using three technologies:

1. **Chemical preservation;** which uses addition of chemicals in pulp/concentrate to inhibit the microbial activity and preserves the product.
2. **Freezing;** which involves storing the product in subzero temperatures (up to -18C) to stop the microbial activity and keep the product preserved
3. **Aseptic packing;** which means processing the product at high temperature and packing it in pre sterilized aseptic bag using hi-tech equipment.

Of the above three, chemical preservation is the cheapest method and is thus widely practiced in the local fruits/vegetables processing sector. Because of human health concerns, it is discouraged and is not acceptable in the world market. However, Local Food Laws allow use of chemical preservative within prescribed limits. The chemically preserved pulp is sold to local low end consumer product manufacturer. With an uninformed local consumer and weak implementation of food laws, the juice/drink manufacturers manage to keep selling their products with extra high dose of chemical preservatives.

Freezing is the third most commonly used method. It entails high capital expenditure for establishing cold storage facility and incurring an ongoing storage cost till the product is sold. Thus, the frozen products are sold at a higher price in local and international markets. It is a cheaper option compared to Aseptic packaging and the product quality of the frozen product is better than that of aseptically processed. One main reason for better quality of frozen product is its processing at lower temperature compared to that of aseptically packed product. One important issue with frozen product is the difficulty in its handling and usage. The product is received in solid frozen form and has to be thawed before it may be used. This is a cumbersome and time consuming process and is one of the reasons that aseptically packed products are preferred over frozen products. Another important issue in today's industrial environment of Pakistan is the unavailability of consistent supply of electricity which discourages using the option of preparing frozen product and storing it in freezing store.

Aseptic packaging is the most modern technology for storing fruits/vegetables pulps/concentrates. It is a capital intensive technology compared to the two other options. There is demand for aseptically packed pulps/concentrates in the local market by large companies producing quality consumer products. In the international market, aseptic packing is demanded by a wide majority of the customers and is considered as one of the most important requirements for exporting fruits/vegetables pulps/concentrates. One major benefit of aseptically packed products is the ease in use of handling; since it is not frozen.

The local processing sector can be ranked average in terms of its capacity for producing aseptically packed products. Out of twenty three processing facilities, six are equipped with this technology.

### *3.3.6.2 Strong Competition from India in International Pulp Markets*

Pakistan and India, being located in the same region, share a similar horticulture profile. Most of the fruits and vegetables produced in the two neighboring countries are common. Mango is

the most important fruit in this regard which is produced in both the countries. However, India's mango production is about five to six times higher than that of Pakistan. Compared to Pakistan, India is a much larger exporter of fresh mangoes as well as mango pulp; exporting almost 25 times more mango pulp than Pakistan. During the year 2011, India exported 172,000 tons of mango pulp to the world worth Rs 8.14 billion. Major export destinations were Saudi Arabia, Netherland, United Arab Emirates, Yemen Republic, United Kingdom, Sudan, Kuwait and Japan.<sup>3</sup> Details of Indian exports of mango pulp are shown in Appendix IV. Average price of Indian mango pulp in international markets during the year 2011 was USD 895 per ton. Average cost of producing mango pulp in Pakistan was calculated as USD 784 per ton. Detailed cost breakup is provided in Appendix V.

An important reason for this is that India is an early mover in these markets. Fruit processing industry of India is more mature as it started off about thirty years ago. By virtue of this, Indian pulp sector was successful in getting a large share in the international markets; mainly Middle East. Pakistan's processing sector is relatively new in export market and local exporters find it difficult to break into already existing strong marketing networks which have been created by the Indians during the past three decades. Most of the decision makers in these marketing channels prefer Indian suppliers as their first choice.

Along with the marketing reasons, mango pulp product itself is also one reason for strong position of India. Most of the mango pulp exported from India is made from two varieties; Alphonso and Totapuri. The taste profile of these two types of mango pulps have been accepted and established during the past years. In Pakistan, Chaunsa and Sindhri are the two important mango varieties used for making pulp. These have a different taste and it is difficult to shift the customers from Indian taste to Pakistani taste. This is the situation in spite of the fact that the Pakistani products are technically superior; since they have a higher Brix (sugar percent). Chaunsa mango pulp has a Brix of about 22-24; compared to 14-16 for Alphonso mango pulp. The taste and aroma of Pakistani mango is much better and in fresh fruit market, Pakistani mango is considered to be a superior product. This acceptability creates the opportunity where mango pulp made from the same superior mango can also capture its due share in the international markets.

Along with India, Thailand and Philippines are also important suppliers of mango pulp in the international markets.

### 3.3.6.3 *Export Marketing Costs*

Most of the processing companies of Pakistan have not been able to successfully break into the world markets of fruits/vegetables pulps and concentrates markets. Along with issues in product quality, lack of adequate marketing knowledge, skills and efforts is the other important limiting factor. Export marketing entails high costs in activities like international travelling, participation in international trade fairs, etc. Majority of the companies are not willing to spend this initial investment cost which is inevitable to get the local industry recognized as a reliable source of processed horticulture products in export markets.

### 3.3.7 **Pulp Imports**

Pakistan also imports fruits/vegetables pulps and concentrates. There are three main reasons for preferring foreign supplier than the local fruit processors:

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<sup>3</sup> *Agriculture & Processed Foods Products Export Development Authority (APEDA), Ministry of Commerce & Industry, Government of India*

1. Exotic fruits: Juice concentrate of exotic fruit like pineapple is imported because such fruits cannot be commercially grown in Pakistan due to unsuitability of environment. Consumer product manufacturers import the concentrate to meet the demand for pineapple based juice/nectars. Similarly, concentrate of fruit like red grape having limited production in the country is also imported.
2. Lack of processing facility: Despite having sufficient production of fruit/vegetable, lack of required processing capacity leads to import of their processed product. Apple juice concentrate is imported mainly due to this reason. The product is made by the local processors but the capacity is not enough to meet the growing local demand. Another example in this regard is tomato paste which is consumed by the local consumer products manufacturers and is imported because of insufficient processing capacity. Availability of tomatoes at any locality is for 4-6 weeks only. A tomato dedicated plant working for 30-40 days in the year is not viable. Capital investment for a bigger processing capacity plant is too high.
3. Bumper crop of a season: A bumper crop of any fruit /vegetable grown in the other producing countries, or poor crop in Pakistan leads to a situation when imported processed product of that fruit/ vegetable is cheaper than that produced in the country.

## 4.0 PULPING UNITS COMPARATIVE PROFILING

Fruits/vegetables pulping units have been established all over Pakistan except in Baluchistan province. For the purpose of this study, and as per the requirements of the Scope of work (SOW), all the known processing units manufacturing pulps, purees and juice concentrates were included in the survey.

### 4.1 Units Included in the Survey

Twenty three units were identified by the Firms project VCD team and the Consultant for survey. Four of the identified units were found not to be willing to meet with the team and share information. Consequently, detailed information was collected from the remaining nineteen units. For the four units not willing to meet, information based on Consultant's experience was compiled and included in the report. Province wise distribution of the surveyed units and the ones which could not be surveyed is shown in the following tables:

#### 4.1.1 Processing Units Surveyed

Sr. No.	Name	Location
<b>Punjab</b>		
1.	Agro Food Processing	Multan
2.	Al-Habib Foods	Multan
3.	Al-Hilal Industries	Multan
4.	Best Industries	Lahore
5.	Indus Fruit Products	District Kasur
6.	Standard Foods	District Kasur
7.	Citro Pak	Sargodha
8.	Chenab Foods	Shorkot, District Jhang
9.	Haq Farms	Jauharabad, District Khushab
10.	SFA Industries	Kabirwala, District Khanewal
11.	Zaheer Cold Store and Pulping Unit	Khanewal
12.	Mitchell's Fruit Farms	Renala Khurd, District Okara
13.	Noor Foods	Faisalabad
<b>Sindh</b>		
14.	Al-Raheem Agro Processing Company	Karachi
15.	Iftikhar And Company	Karachi
16.	Pakola Products Limited	Karachi
17.	Popular Food Industry	Hyderabad
18.	Maaza Pakistan Ltd.	Thatta
<b>Khyber Pakhtunkhwa</b>		
19.	Qarshi Industries Private Limited	Hattar, District Haripur

#### 4.1.2 Processing Units Not Surveyed

Sr. No.	Name	Location
<b>Punjab</b>		
1.	Shezan International	Lahore
2.	Shakarganj Food Products	Ahmad Nagar, District Chiniot
<b>Sindh</b>		
3.	Shezan International	Karachi
4.	Tops Food & Beverages, Muree Brewery Co.	Rawalpindi

### 4.1.3 Geographical Profiling of Pulping Units

Majority of the identified fruit processing units are in Punjab, followed by Sindh and Khyber Pakhtunkhwa. Sixteen of these units were in Punjab, six were in Sindh and one in Khyber Pakhtunkhwa. District-wise geographical location of these twenty units is shown in the following table:

#### 4.1.4 District-wise Location of Pulping Units

District	No. of Units
<b>Punjab</b>	
Multan	3
Lahore	2
Kasur	2
Rawalpindi	1
Sargodha	1
Jhang	1
Khushab	1
Khanewal	2
Okara	1
Chiniot	1
Faisalabad	1
<b>Total Pulping Units</b>	<b>16</b>
<b>Sindh</b>	
Karachi	4
Hyderabad	1
Thatta	1
<b>Total Pulping Units</b>	<b>6</b>
<b>Khyber Pakhtunkhwa</b>	
Haripur	1
<b>Total Pulping Units</b>	<b>1</b>
<b>Total Pulping Units in Pakistan</b>	<b>23</b>

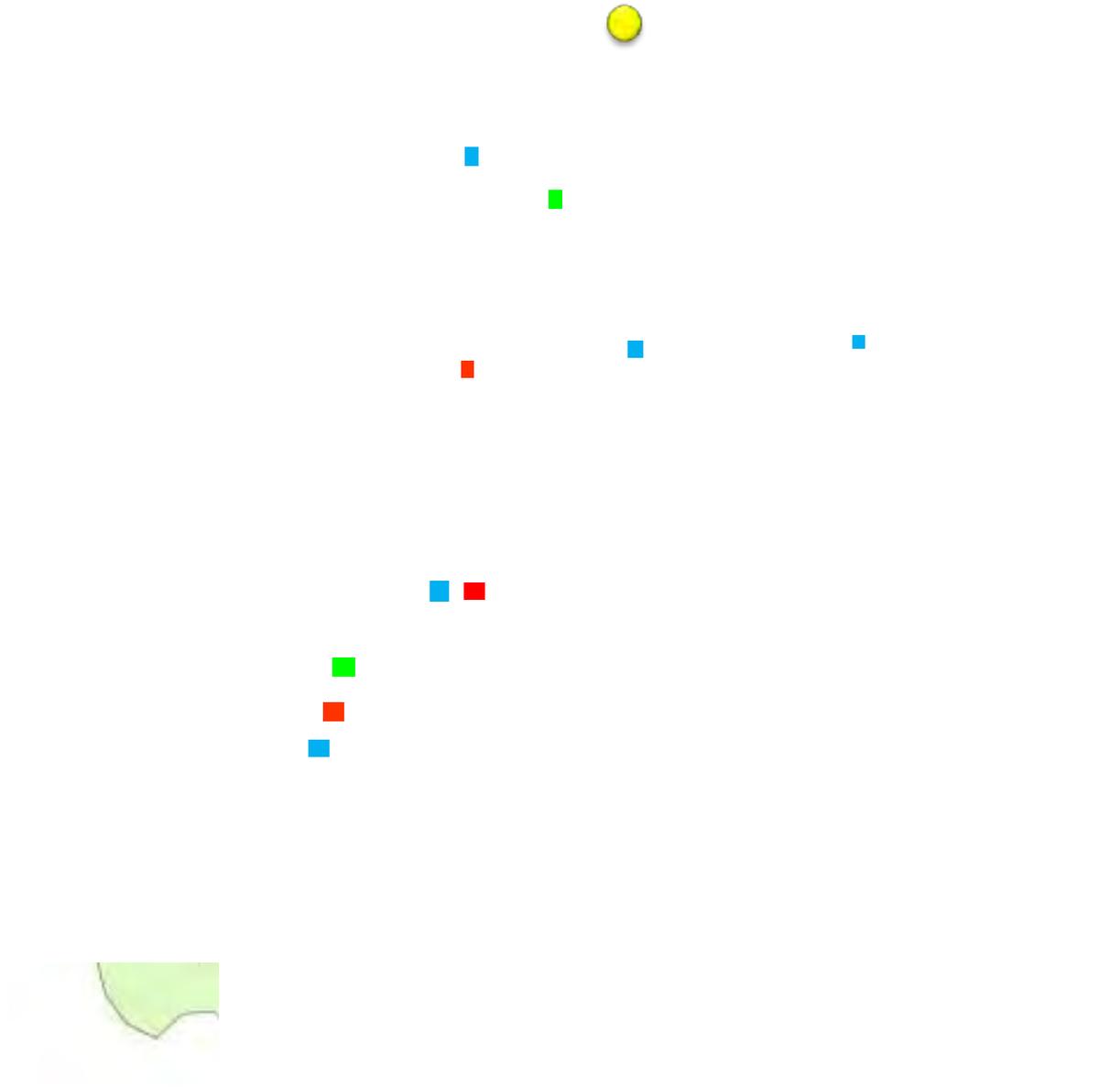
#### 4.1.4.1 District-wise Mapping of Pulping Units

District-wise mapping and Consultant's rating of the pulping units located in Punjab, Sindh and Khyber Pakhtunkhwa are shown in the following pages. Evaluation and rating criteria has been explained in Section 4.5.1 of the report.

4.1.4.1.1 Pulping Units in Punjab

PULPING UNITS

IN PUNJAB



4.1.4.1.2 Pulping Units in Sindh

PULPING UNITS

IN SINDH



#### 4.1.4.1.3 Pulping Units in Khyber Pakhtunkhwa

##### PULPING UNITS IN

##### KHYBER

##### PAKHTUNKHWA



## **4.2 Industry Growth in Chronological Order**

The history of fruit and vegetable processing sector of Pakistan is old and dates back to pre-partition days. At the time of partition, there was only one fruits/vegetables processing unit in Pakistan with the name of Mitchell's Fruit Farms at Renala Khurd of District Okara. The unit was established in 1933, and ever since it has been operating successfully in the local and export market. Mitchell's is a known brand of processed fruits/vegetables products in Pakistan. During the past six decades, the local pulping industry has grown and numerous new players have entered the market. Abundant local production of fruits and vegetables and

the local demand for processed products by a large and growing local population have been the two major triggers for growth of this industry.

The first pulping unit of Pakistan was established after fifteen years of its birth; when Shezan International was set up in Lahore in 1964. The business model and the product profile of Shezan was quite similar to that of Mitchell's which was the only success story in this industry at that time. Both of these companies processed fruits and vegetables to be used for their in-house consumption for manufacturing wide variety of consumer food products. Shezan also introduced for the first time in Pakistan ready-to-drink fruit juice drinks, which was not being done by Mitchell's. Another investment was made in 1969 when Murree Brewery Company, an alcoholic drink producing company operating since pre-partition days, decided to diversify into fruits/vegetables processing. Tops Food & Beverages was established as a division of Muree Brewery Company.

During the four decades after independence, all fruits/vegetables processing units were established in Punjab. The first unit in Sindh was established in 1981 when Shezan installed its unit in Karachi. In 1986 Popular Foods started fruit processing in Hyderabad. During the same year, a unit was also established in Lahore. Till 1990, four more pulp processing units were established in different districts of Punjab. An important addition in this regard was Citro Pak which was established in 1990 in the citrus growing area of Sargodha. This was the first unit which started producing frozen concentrate of kinnow juice; most of which was exported. Up till now, there has been only one unit for fruits/vegetables multi product processing unit established in Khyber Pakhtunkhwa; in Hattar Industrial Estate in Haripur. Table: 9 shows the establishment of fruits/vegetables processing units of Pakistan in chronological order:

**Table 9 - Pulping Industry Growth in Chronological Order**

<b>Sr. No.</b>	<b>Name of Processing Unit</b>	<b>Location</b>	<b>Year of Establishment</b>
1.	Mitchell's Fruit Farms	Punjab	1933
2.	Shezan International	Punjab	1964
3.	Murree Brewery Company (Tops)	Punjab	1969
4.	Shezan International, Karachi	Sindh	1981
5.	Popular Foods	Sindh	1986
6.	Best Industries	Punjab	1986
7.	Standard Foods	Punjab	1987
8.	Haq Farms	Punjab	1988
9.	Indus Fruit Products	Punjab	1989
10.	Citro Pak	Punjab	1990
11.	Qarshi Industries Private Limited	Khyber Pakhtunkhwa	1992
12.	Al-Habib Foods	Punjab	1995
13.	Shakarganj Food Products	Punjab	1997
14.	Noor Foods	Punjab	2001
15.	Maaza Pakistan Ltd.	Sindh	2002
16.	Iftikhar & Company	Sindh	2004
17.	Chenab Foods	Punjab	2004
18.	Al-Raheem Agro Processing Company	Sindh	2007
19.	SFA Industries	Punjab	2008

20.	Pakola Products Limited	Sindh	2009
21.	Agro Food Processing	Punjab	2009
22.	Zaheer Cold Store and Pulping Unit	Punjab	2010
23.	Al-Hilal Industries	Punjab	2011

During the last two decades from 1992 to 2012, the fruits/vegetables processing sector has attracted the interest of investors to establish new facilities in Sindh. So four new units were established during this period; three of which were in Karachi and one in Thatta. Iftikhar & Company was an important addition to the industry since the plant was established with the objective of meeting the requirements of international markets of pulps/purees and juice concentrates. Two most recent processing units have been established in Punjab in district Multan in 2009 and 2011. One of these, Agro Food Processing, was established in public sector by SMEDA and PSIC. The plant is equipped with modern machinery and is being successfully run as a common facility center to produce pulps/purees of mango and other fruits. The second unit is Al-Hilal Industries which processes fruits to manufacture pulps to be used for its own consumption for making consumer products.

### 4.3 Capacity Profile of Fruits/Vegetables Pulping Units

Pulping units process a wide variety of fruits and vegetables grown in the country. Mango, apple and citrus are the three most widely processed fruits; while tomato and carrot are the two most commonly processed vegetables. Since the industry operates in batches, it is not possible to quote a capacity on yearly basis; since it depends on the number of days in a year and the number of hours in a day any particular plant process certain fruit/vegetable. Capacity profile of the pulping sector, therefore, has been developed in terms of tons of fruits/vegetables processed per hour.

#### 4.3.1 Province-wise Capacities

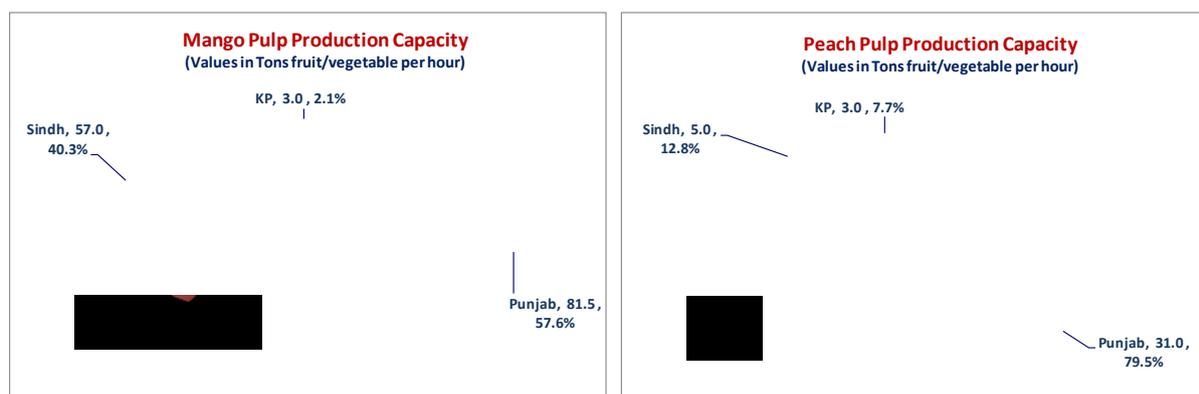
Maximum number of pulping units are located in Punjab; consequently, maximum pulping capacity also exists in Punjab. Following table show a split of pulping capacities between Punjab, Sindh and KP:

##### 4.3.1.1 Capacities for Manufacturing Pulps/Purees (Tons/hour)

Fruit/Vegetable	Punjab	Sindh	KP	Total
Mango	81.5	57.0	3.0	141.5
Apple	25.0	6.0	-	31.0
Guava	45.5	26.0	3.0	74.5
Peach	31.0	5.0	3.0	39.0
Strawberry	34.0			34
Banana	8.0	5.0	-	13.0
Citrus	22.5	-	0.5	23.0
Apricot	6.0	-	3.0	9.0
Falsa	26.5	4.0	-	30.5
Cherry	7.0	4.0	-	11.0
Tomato	17.5	13.0	3.0	33.5
Carrot	29.0	5.0		34.0
<b>Total</b>	<b>333.5</b>	<b>125.0</b>	<b>15.5</b>	<b>474.0</b>

On an overall basis, there is a capacity of processing 474 tons per hour of fruits and vegetables to manufacture pulp. Punjab has the highest share of 70.4% of this capacity; followed by Sindh with a share of 26.4%. The balance is contributed by KP.

Mango is the most important fruit for pulping. Punjab is the largest contributor, accounting for 58% of the total mango pulping capacity. Sindh has the second largest share of 40%, the balance 2% being contributed by Khyber Pakhtunkhwa. Following figure shows the relative shares:



In case of peach, Punjab is once again the largest contributor with a share of 80%; followed by Sindh with a share of 13%. Although KP is much larger in peach production compared to Punjab and Sindh, but it has very little capacity to convert that fruit production into pulp. The peach has to be transported over long distances for its processing which increases the cost of production.

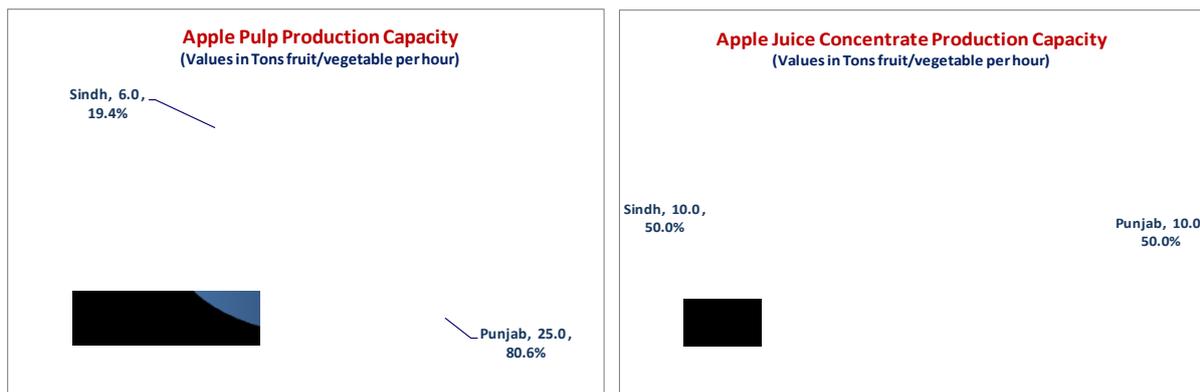
Juice concentrate is the other important product which is manufactured by the local processing sector; mostly for Kinnow, apple and tomato. Following table shows the capacities in three provinces:

#### 4.3.1.2 Capacities for Manufacturing Juice Concentrates (Tons fruit/vegetable per hour)

	Punjab	Sindh	KP	Total
Apple	10.0	10.0	-	20.0
Tomato	38.0	7.5	-	45.5
Kinnow	85.0	-	-	85.0
<b>Total</b>	<b>133.0</b>	<b>17.5</b>	<b>-</b>	<b>150.5</b>

Punjab is the largest contributor in juice concentrate production capacities; accounting for 88% of the national capacity. The balance 12% is contributed by Sindh. Khyber Pakhtunkhwa does not have any unit where juice concentrate can be manufactured.

Apple is one of the fruits for which both pulp and concentrate can be made. Province-wise comparison of production capacities of the two types of products is shown in the following figures:



For apple pulp production, Punjab claims a high share of 80.6%; while in case of apple juice concentrate, Punjab and Sindh have equal capacities.

### 4.3.2 Processing Unit-Wise Capacities

The capacities of all the twenty three units for ten most commonly processed fruits and two most commonly processed vegetables are shown in Tables 10 and 11. The first table shows the capacities for manufacturing pulps and juices of single strength. The second table provides capacities for manufacturing juice concentrates.

### 4.3.3 Capacities of Selected Pulping Units for Manufacturing Pulp/Purees/Juice (single strength)

**Table 10 - Capacities of the Selected Pulping Units for Manufacturing Pulp/Juice (single strength)**

Sr. No.	Name of the company	Mango	Apple	Guava	Peach	Straw berry	Banana	Citrus	Apricot	Falsa	Cherry	Tomato	Carrot
1.	Mitchell's Fruit Farms	-	3.0	2.0	-	2.0	-	3.0	-	2.0	-	-	3.0
2.	Shezan International (Lahore)	10.0	3.0	2.0	2.0	5.0	-	3.0	3.0	3.0	3.0	-	3.0
3.	Murree Brewery Company (Tops)	2.0	1.0	1.0	-	-	-	1.0	-	-	-	-	1.0
4.	Best Industries	2.5	1.0	2.5	-	-	-	2.5	-	2.5	1.0	2.5	2.0
5.	Standard Foods	5.0	2.0	3.0	-	3.0	-	5.0	-	2.0	-	3.0	3.0
6.	Haq Farms	3.0	-	-	2.0	-	-	3.0	3.0	-	-	2.0	-
7.	Indus Fruit Products	5.0	2.0	3.0	3.0	3.0	3.0	5.0	-	3.0	3.0	-	2.0
8.	Citro Pak	15.0	5.0	10.0	10.0	10.0	5.0	-	-	10.0	-	-	10.0
9.	Al-Habib Foods	2.0	-	1.0	2.0	1.0	-	-	-	-	-	-	-
10.	Shakarganj Food Products	3.0	2.0	3.0	2.0	3.0	-	-	-	-	-	3.0	-
11.	Chenab Foods	7.0	1.0	2.0	-	-	-	-	-	-	-	-	-
12.	SFA Industries	3.0	-	4.0	2.0	2.0	-	-	-	-	-	2.0	-
13.	Agro Food Processing	10.0	3.0	5.0	-	-	-	-	-	-	-	5.0	5.0
14.	Al-Hilal Industries	3.0	-	2.0	3.0	2	-	-	-	2.0	-	-	-
15.	Noor Food Industries	8.0	2.0	5.0	5.0	3.0	-	-	-	2.0	-	-	-
16.	Zaheer Cold store and Pulping unit	3.0	-	-	-	-	-	-	-	-	-	-	-
17.	Popular Foods	15.0	-	10.0	-	-	-	-	-	-	-	-	-
18.	Maaza Pakistan Ltd.	10.0	-	5.0	5.0	-	-	-	-	-	-	-	-
19.	Iftikhar & Company	10.0	-	5.0	-	-	5.0	-	-	4.0	4.0	-	5.0
20.	Al-Raheem Agro Processing Company	2.0	1.0	1.0	-	-	-	-	-	-	-	-	-
21.	Pakola Products Limited	15.0	5.0	5.0	-	-	-	-	-	-	-	8.0	-
22.	Shezan International Karachi	5.0	-	-	-	-	-	-	-	-	-	5.0	-
23.	Qarshi Industries Private Limited	3.0	-	3.0	3.0	-	-	0.5	3.0	-	-	3.0	-
	<b>Total Capacity</b>	<b>141.5</b>	<b>31.0</b>	<b>74.5</b>	<b>39.0</b>	<b>34.0</b>	<b>13.0</b>	<b>23.0</b>	<b>9.0</b>	<b>30.5</b>	<b>11.0</b>	<b>33.5</b>	<b>34.0</b>

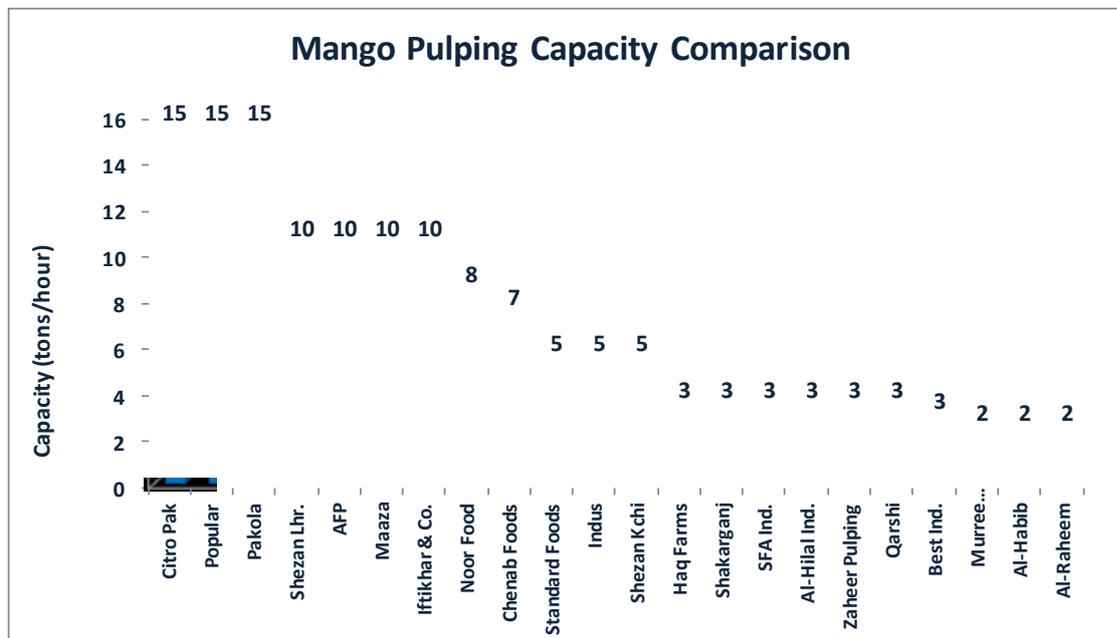
#### 4.3.4 Capacities of Selected Pulping Units for Manufacturing Juice Concentrates

Table 11 - Capacities of Selected Pulping Units for Manufacturing Juice Concentrates

Sr. No.	Name of the company	Location	Apple Tons fruit//hr	Tomato Tons fruit /hr	Kinnow Tons Fruit/hr
1.	Mitchell's Fruit Farms	Punjab	-	8.0	-
2.	Shezan International	Punjab	-	10.0	-
3.	Murree Brewery Company (Tops)	Punjab	-	2.0	-
4.	Best Industries	Punjab	-	-	-
5.	Standard Foods	Punjab	-	-	-
6.	Haq Farms	Punjab	-	-	-
7.	Indus Fruit Products	Punjab	-	5.0	5.0
8.	Citro Pak	Punjab	10.0	8.0	70.0
9.	Al-Habib Foods	Punjab	-	-	-
10.	Shakarganj Food Products	Punjab	-	-	10.0
11.	Chenab Foods	Punjab	-	-	-
12.	SFA Industries	Punjab	-	-	-
13.	Agro Food Processing	Punjab	-	-	-
14.	Al-Hilal Industries	Punjab	-	-	-
15.	Noor Food Industries	Punjab	-	5	-
16.	Zaheer Cold Store & Pulping Unit	Punjab	-	-	-
17.	Popular Foods	Sindh	-	-	-
18.	Maaza Pakistan Ltd.	Sindh	-	-	-
19.	Iftikhar & Company	Sindh	10.0	5.0	-
20.	Al-Raheem Agro Processing Company	Sindh	-	1.5	-
21.	Pakola Products Limited	Sindh	-	1.0	-
22.	Shezan International Karachi	Sindh	-	-	-
23.	Qarshi Industries Private Limited	KP	-	-	-
	<b>Total capacity</b>		<b>20.0</b>	<b>45.5</b>	<b>85.0</b>

4.3.4.1 Mango Pulping Capacities

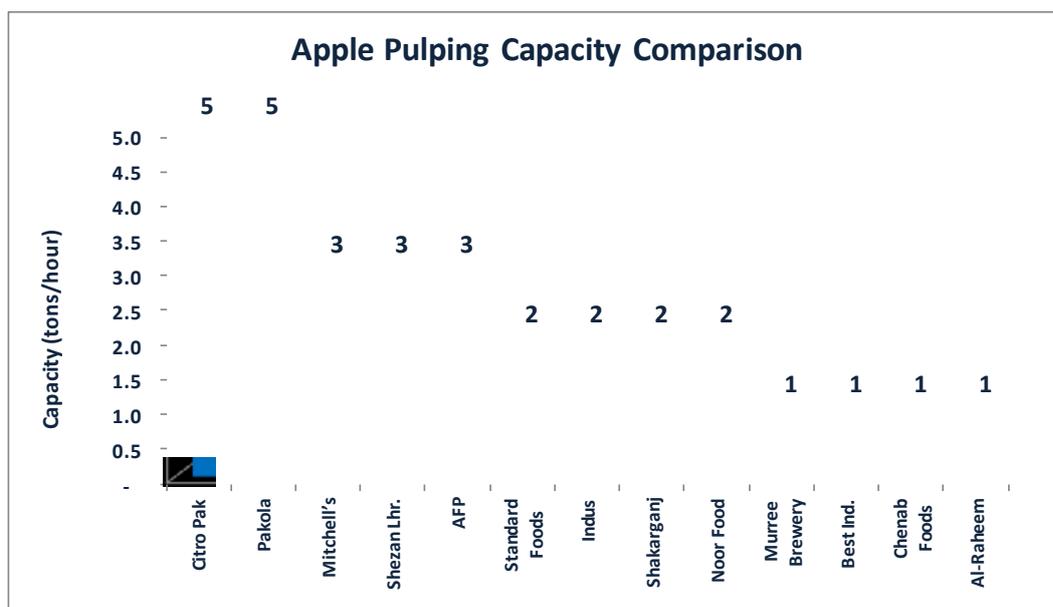
Mango is the most commonly processed fruit and twenty two units out of the selected twenty three units carry out mango pulping (along with other fruits and vegetables). Following figure shows the capacities of these units:



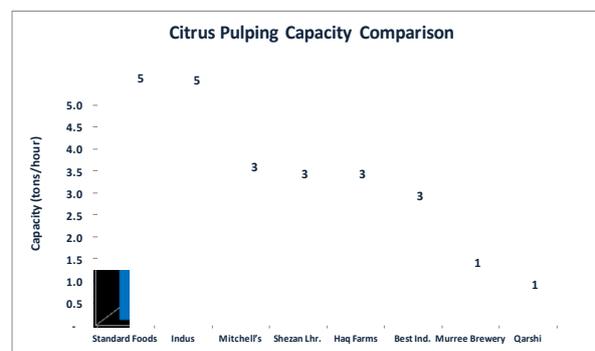
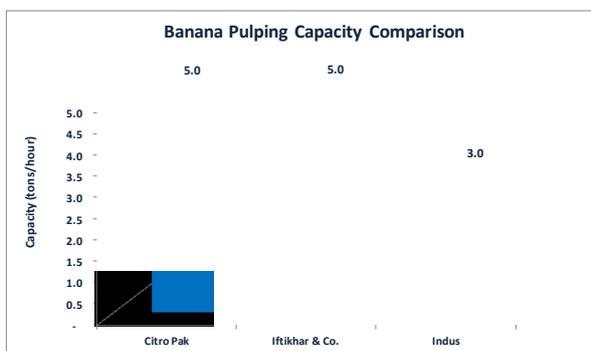
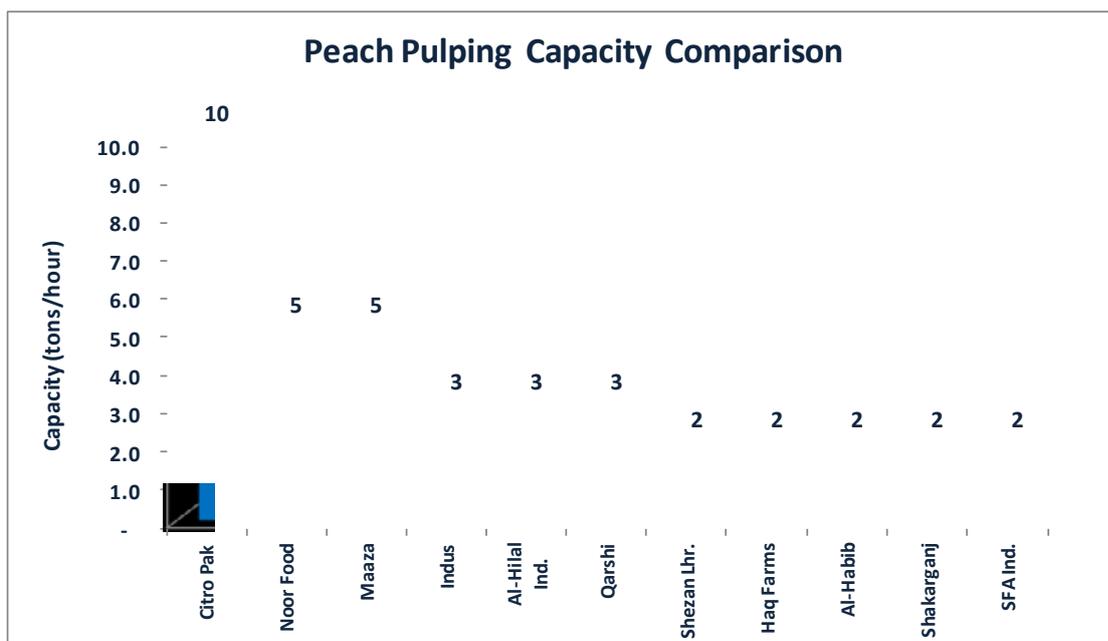
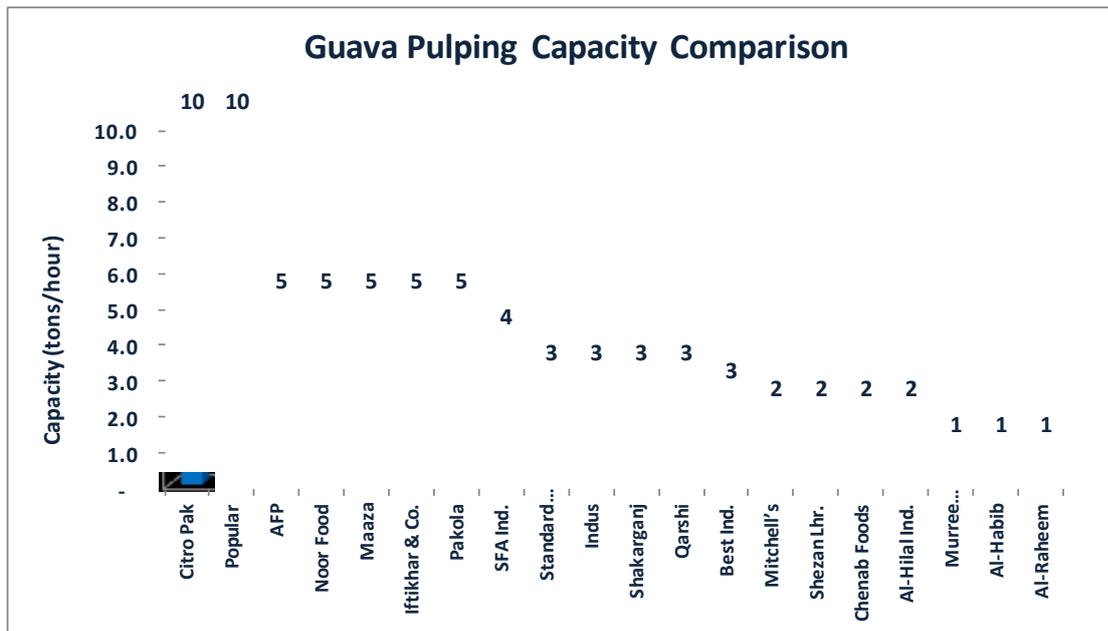
There are three units which have a capacity of processing 15 tons of mango per hour. Four units have capacity of 10 tons per hour while the remaining are smaller units with smaller capacities.

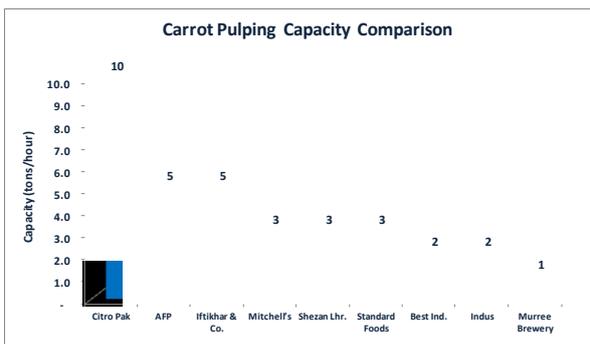
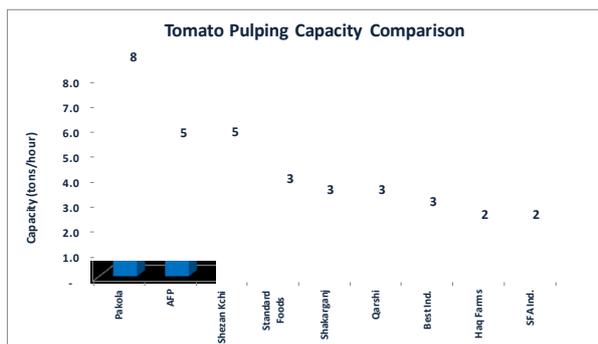
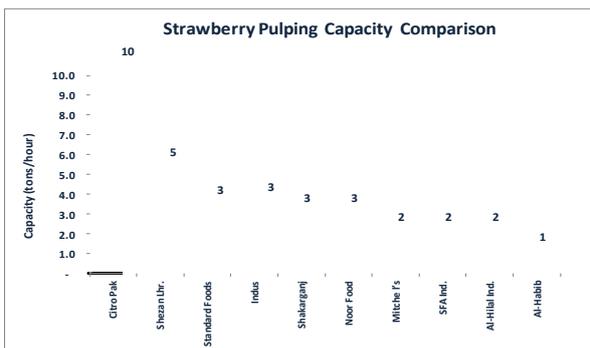
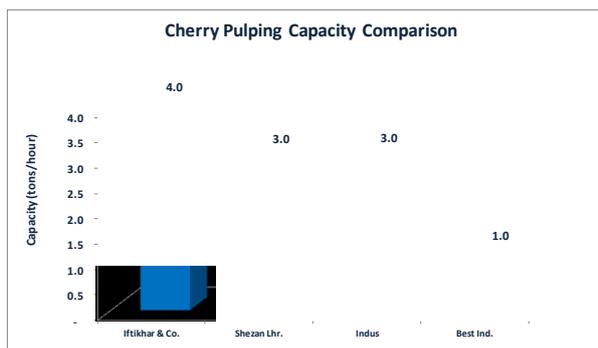
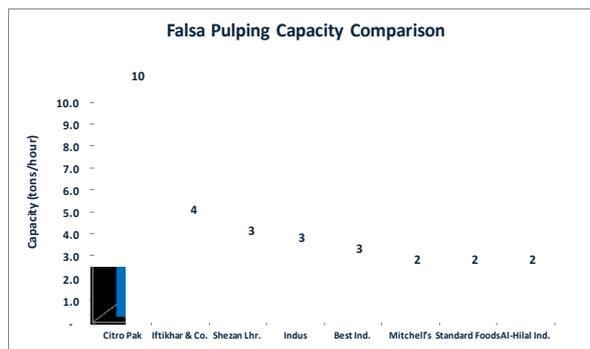
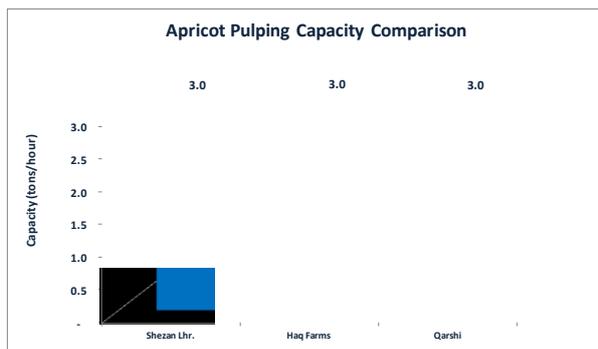
4.3.4.2 Apple Pulping Capacities

In case of apple, there are thirteen units manufacturing pulp. Citro Pak and Pakola are the two largest units in this regard. Following figure shows the comparison between processing units:



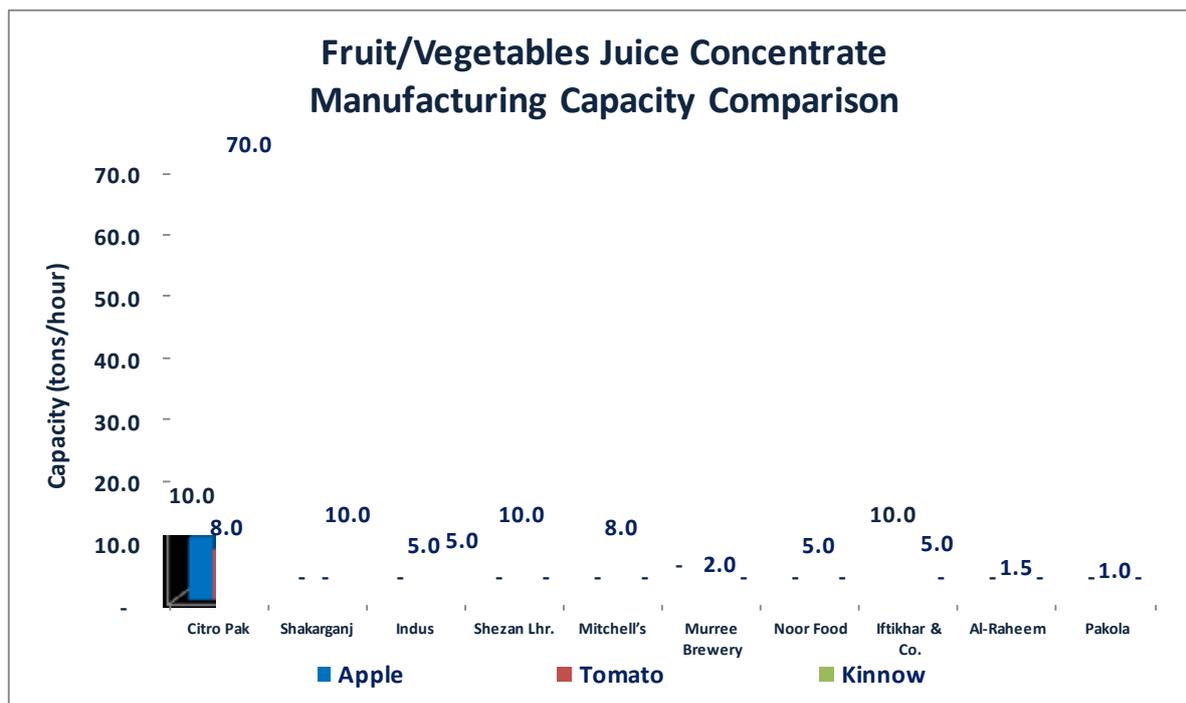
4.3.4.3 Pulping Capacities of Other Fruits/Vegetables





#### 4.3.4.4 Juice Concentrate Manufacturing Capacities

There are ten units which have the capacity to produce juice concentrates. Frozen Concentrated Kinnow Juice (FCKJ) is the most commonly produced product in this regard. Citro Pak is the only company having the facility for processing kinnow, apple and tomato. Following figure shows the comparison between processing units:



## 4.4 Pulping Sector Overview

### 4.4.1 Technological Overview

In Pakistan, initially, all the products were manufactured with chemically preserved pulps and this practice still continues. However, with the advent of awareness and enhancement of technology, the industry realized that the chemical preservation process was hazardous for human health. They started switching to other modern preservation methods like freezing and aseptic processing of pulps. Unfortunately, the local food laws were not changed to do away with chemicals use. So, the pace of using modern technologies remained slow.

During the last fifteen years, the major manufacturers of consumer products like Nestle, Haleeb Foods and Engro Foods started purchasing aseptic and frozen pulps from other factories which had facility to produce the product of the required quality. That led to installation of aseptic processing and freezing facilities in at least six of the 23 processing plants. As most of these fruit processing facilities are capable to produce stuff conforming to the global standards, some of these have started exporting the product. The Government of Pakistan and provincial government of Punjab jointly set up a modern pulping unit in the main mango producing area in Multan to exclusively cater to the needs of superior quality pulp so as to meet the demands from high-end consumer product manufacturers. The pulping unit functions as a Common Facility Center facilitating fruit growers and pulp traders to get their fruit processed for pulp production.

While the demand for hi-end products increased significantly, the low-end consumer market also kept on growing with a steady pace. The demand for low quality cheaper pulps helped grow the low end pulping facilities. These pulping units have been developed from locally fabricated machines along with some components from imported scrap materials. The buildings under use do not fulfill the requirements of a standard food processing facility. The unqualified staff employed, on basis of their inadequate knowledge, produces low quality pulps which are sold to the low end market.

#### 4.4.2 Marketing Overview

Pakistan produces about 37,000 tons of fruit and vegetable pulps and around 14,000 tons of juice concentrates. Pulp, being the intermediate processed product of fruit and vegetable, is mainly consumed within the country for the production of consumer products. The poor quality pulps produced by the low end pulping industry are absorbed by the low end consumer product manufacturing industry. The high quality product produced by high end component of the pulping industry is utilized by good quality consumer product manufacturers like Nestle, Haleeb Foods, Engro Foods, etc.

The real potential of pulping industry lies in export business especially, in the Middle East markets. A nominal portion of fruit and vegetable pulps/concentrates is exported while most of it is domestically consumed. The following factors preclude the local produce from entering the global markets:

- High prices of fruits and vegetables and other imported raw materials.
- Rising production costs comprising fuel and electricity.
- Poor international marketing skills and efforts.
- High costs of sales in the international markets.
- Competition from strong players in the region like China and India.
- Lack exposure and awareness in/about global markets.
- Product quality issues.

In nutshell, rising production & marketing costs, absence of concerted & collective efforts with the government agencies and lack of awareness of international quality standards & food regulations have been the major bottlenecks in the exports of pulps and concentrates.

Fruits grown in Pakistan have far better aroma and taste profiles as compared with Indian produce but India remains very well placed in the world markets. It is because India came in the industrial production and consumer market businesses 25 to 30 years ahead of Pakistan and remains well established now.

Recently, some new companies like Iftikhar & company and Citro-Pak have progressed in exporting mango pulp to the Middle East and Libya and apple juice concentrate to Turkey. That shows a promising scope for the local processors.

#### 4.4.3 Human Resource (HR) Overview

There is no dearth of professionals like food technologists, chemists and marketing specialists besides semiskilled and unskilled labor force. But, somehow, most of the factory owners refrain from hiring competent staff, imparting technical training and providing them with a defined career path so that they grow with the growth of the organization. Unattractive wage and salary structure offering emoluments far below the normal corporate sector of Pakistan has restrained the talent to attract towards fruit and vegetable processing sector. In general, the sector enjoys the status of being a medium scale industry despite having a very high growth rate of industrial and consumer products. That situation hinders production of high quality products suitable for the global markets.

HR Development situation in the very few market leaders is satisfactory, because they are in fact, part of the organized corporate sector. However, the state of affairs in the majority of units is entirely different. Majority of the factory owners pay little heed to Labor Laws pertaining to wages, medical coverage, security, safety, retirement, bonuses, etc. The medium

to small scale factories hire work force on daily wages or through contractors to stay free of any legal obligations. Supervisory staff, foremen and skilled workers are taken from other competitors for a meager increase in take home pays. Staff at none of the organizational levels is trained and the concept of skill development or institutional strengthening does not exist in these organizations. Lack of any incentives adversely affects overall productivity of a unit. Nothing changes much at managerial staff levels too.

Most of the staff needs to develop and improve their skills by hands-on and on-the job training. The processors do not earmark budgets for skills development despite making good profits in a growing market. USAID support in this area seems very pertinent.

#### **4.5 Rating of the Surveyed Units**

One key objectives of the study was to evaluate the capability of the pulping units. The Consultant carried out assessment of the selected units on the basis of his experience and information provided by managers of those units. The spirit of this exercise was only to identify the weak areas of each unit where support can lead to improvements.

Four categories were defined for assessment; Good, Average, Below Average and Poor. Following factors were used for these definitions:

- State of plant and building and conformance to required standards
- Condition of machinery and equipment
- Use of preservation technology (aseptic, frozen or chemical)
- Qualification of HR
- Possession of quality certifications
- Implementation of hygiene and food safety practices

Defined criteria for the four assessment categories and the classifications of the selected twenty three units in those categories are presented in the Table-12 on next page:

## 4.5.1 Pulping Units Rating Assessment-Table - 12

	<b>Good</b>	<b>Average</b>	<b>Below Average</b>	<b>Poor</b>
<b>Criteria for Assessment of Pulping Units</b>	<ul style="list-style-type: none"> <li>Plant and building up to the required standards</li> <li>Equipped with aseptic or both aseptic and frozen technology</li> <li>Has qualified HR</li> <li>Possesses quality certifications or is in progress</li> <li>Hygiene and food safety practices observed</li> </ul>	<ul style="list-style-type: none"> <li>Plant and building slightly below the required standards</li> <li>Uses aseptic, frozen or chemically preserved technologies</li> <li>Has partially qualified HR</li> <li>Rarely possesses quality certifications</li> <li>Hygiene and food safety practices partially observed</li> </ul>	<ul style="list-style-type: none"> <li>Improper building with congested space</li> <li>Old machinery and equipment</li> <li>Uses only chemical preservation</li> <li>Rarely uses qualified HR</li> <li>Possesses no quality certifications</li> <li>Hygiene and food safety practices rarely observed</li> </ul>	<ul style="list-style-type: none"> <li>Building condition very poor and hazardous</li> <li>Old machinery usually made from scrap, sometimes with no steam boiler</li> <li>Used only chemical preservation</li> <li>Only nominally educated HR</li> <li>No quality certifications</li> <li>Hygiene and food safety practices ignored</li> </ul>
	<b>Good</b>	<b>Average</b>	<b>Below Average</b>	<b>Poor</b>
<b>Consultant's Assessment</b>	<ol style="list-style-type: none"> <li>Citro Pak</li> <li>Iftikhar &amp; Company</li> <li>Pakola Products</li> <li>Agro Food Processing</li> </ol>	<ol style="list-style-type: none"> <li>Indus Fruits</li> <li>Mitchell's Fruit farm</li> <li>Shezan international</li> <li>Tops Murree Brewery</li> <li>Popular Foods</li> <li>Standard Fruits</li> <li>Qarshi industries</li> <li>Shakarganj Foods</li> <li>Maaza Pakistan</li> <li>Shezan International Karachi</li> </ol>	<ol style="list-style-type: none"> <li>Best Industries</li> <li>Haq Farms</li> <li>SFA industries</li> <li>Al Hilal</li> <li>Al-Raheem</li> <li>Noor Food Industries</li> </ol>	<ol style="list-style-type: none"> <li>Al Habib</li> <li>Chenab Foods</li> <li>Zaheer Cold Store &amp; Pulping unit</li> </ol>

## 5.0 INDIVIDUAL PROFILES OF SURVEYED PULPING UNITS

### 5.1 Profiles of Pulping Units Surveyed in Punjab

#### 5.1.1 Agro Food Processing (AFP)

##### 5.1.1.1 Plant Location

This fruit processing facility located in Multan was established in 2009. Agro Food Processing facility is joint project of Government of Pakistan and Gov0ernment of Punjab. It functions as a common facility center and provides fruit/vegetable processing services to mango growers of the area and trades of fruit pulps. Multan being the main mango producing area of Punjab is one of the most suitable locations for mango processing.

##### 5.1.1.2 Production Capabilities

For pulp production, the processing unit can process mangoes @10-ton per hour and guava, apple, carrot and tomato at 5 tons per hour. It is equipped to process and pack the fruit pulps with aseptic processing technology.

##### 5.1.1.3 Plant and Machinery Status

Being a newly established unit, both, building and machinery are in good condition. The aseptic facility possesses 5 tons/hour pulp processing capacity. Freezing store operates at -10 C while the Chilling store maintains 2-5 C temperature to retain 800 tons of end products.

##### 5.1.1.4 Quality Assurance

Adequate laboratory facilities also include microbiological testing of products. The Project Director is an experienced and qualified Food Technologist. Plant Manager and Quality Assurance Managers are qualified Food Technologists. Work force is fairly skilled or semi skilled. Quality certification process is in progress.

##### 5.1.1.5 Marketing and Export Status

AFP is basically service provider to the all interested in producing pulp from mango and other fruits. AFP is not directly involved in pulp business but provides processing services on charge. In 2011, it charged Rs. 10 /kg pulp produced. Different mango pulp traders get their mango fruit processed for pulp production and sell the pulp in open market. In 2011 mango pulp processed at AFP was supplied to Nestle, Engro Food, Mitchells, Pepsi International and many others.

##### 5.1.1.6 Growth and Support Interests

2011 was the first commercial production year for AFP. Adequate services provided to customers resulted in acceptance of the produced pulps by the high end local market like Nestle, Engro Foods, Mitchells, etc. Diversifying from the original function, AFP has now equipped itself with fresh fruit (kinnow) processing facility and started processing fresh kinnow fruit. Kinnow in Multan area is being produced in fairly high volumes.

AFP is equipped with a batch type evaporator of very small capacity (400 kg/ hr evaporation) which is suitable for a tomato processing line of 600 kg fruit/vegetable per hr. To utilize the existing 5 tons tomatoes / hr processing capacity of the plant, a continuous evaporator of higher evaporation capacity (3500 kg evaporation) is desired by the AFP management.

Support for export market linkage for the traders involved in pulping business is also sought by the Project Director AFP

*5.1.1.7 Possible Interventions by USAID:*

- Support for matching grant for a continuous evaporator is difficult, as the government procedures are too lengthy and complicated
- Support for linkage with export market can help initiate pulp export

## **5.1.2 Al Habib Foods**

### *5.1.2.1 Plant location*

Al Habib Foods was established in 1995 as a consumer product manufacturing small scale unit. The unit is located in residential area of Multan city.

### *5.1.2.2 Production Capabilities*

The unit produces poor and cheaper consumer pack drinks for the low end market. This juice drinks manufacturing facility also produces pulps for its own consumption. Mango, guava, peaches, and straw berry fruits are processed @ 1-2 tons fruit/ hr

### *5.1.2.3 Plant and Machinery Status*

Locally fabricated machines partially made up of non –Food grade material have been fixed partially in open area to extract pulps from fruits. The facility is lacking steam boiler; the extracted unpasteurized pulp is preserved with heavy dose of chemical preservatives. The unit is also lacking cold storage facility.

### *5.1.2.4 Quality Assurance*

Quality Assurance lab does not exist. Only brix level of the pulps produced is tested. An unqualified production supervisor is responsible for quality of the product. Quality Certification is not their cup of tea.

### *5.1.2.5 Marketing and Export Status*

The pulp produced meets only the in house requirements of making juice drinks for low end market

### *5.1.2.6 Growth and Support Interests*

Despite the poor and unacceptable conditions of plant machinery, building and staff, it is growing. The poor end local market has a potential to absorb product produced at such facilities. The proprietor desired to have an aseptic processing system but was not willing invest more than one million Pak Rupees. Moreover, building to place aseptic processing equipment is not available.

### *5.1.2.7 Possible USAID Interventions*

Most probably, USAID cannot go for any intervention except training of the manager and production staff to bring some improvement in what they are doing.

### 5.1.3 Al-Hilal Industries

#### 4.5.3.1 Plant location

The fruit processing facility, located in Multan, was established in 2008. Multan is the major mango fruit production area. Guava and straw berries are also produced in good quantities.

##### 5.1.3.1 Production Capabilities

The facility has the capacity of processing 2-3 tons (per hour) mango, guava, falsa, peach, and strawberry fruits to produce pulp. The pulp is pasteurized and then preserved by chemicals. The pulping unit was set up to cater for in-house demand of pulps for the production of juice drinks packed in PET bottles. The facility lacks capability of producing for high end local or export market.

##### 5.1.3.2 Plant and Machinery Status

The building is in a below average condition. It lacks proper fly proofing. Untilled floors and low roofs are creating unsuitable working conditions. The material used for locally fabricated fruit processing plant is partially of none food grade. Pasteurizing equipment of a scraped dairy plant of Swedish origin is being used for mango pulp pasteurization. Improper pasteurizer causes break downs when thick mango pulp chocks it. The facility is not equipped with aseptic processing but pulp can be frozen. The freezing room at -18 C can store 400 tons pulp.

##### 5.1.3.3 Quality Assurance

The laboratory is equipped to carry out the basic quality tests. It lacks facility for microbiological testing. Unqualified staff lacking the basic food science knowledge is running the show. The company has not qualified for any Quality Certification.

##### 5.1.3.4 Marketing and Export Status

AL-Hilal Industries does not market fruit pulp but uses it for the production of consumer pack juice drinks. The consumer product produced is sold in the local market.

##### 5.1.3.5 Growth and Support Interests

Besides the main business of consumer pack juice drinks, Al-Hilal wants to produce fruit pulps for local and export market. The General Manager desired to have support for conducting a technical audit of the existing pulping unit. On-the-job training of production and QA staff for better processing was also desired. The company management expressed its willingness to invest for adding aseptic processing equipment.

##### 5.1.3.6 USAID Intervention Possibilities

1. Technical audit of the fruit processing plant and rectification of the faults.
2. Training of managers and supervisor in production and QA to ensure Food safety and better processing, if suitable staff is recruited.
3. Support in adding aseptic processing equipment could have been possible if the unit appropriate fruit processing line have.

## 5.1.4 Best Industries

### 5.1.4.1 Plant Location

The unit is located in industrial area of Lahore. Being away from the fruit growing area, it is less competitive in procuring fruits, however, this consumer product manufacturing unit has got competitive advantage of product selling in a big market like Lahore with low distribution cost.

### 5.1.4.2 Processing Capabilities

The facility can process mango, orange, apple, guava, strawberry, carrot and tomato at around 2 ton per hr processing capacity. Successful trials have been conducted to produce pulps from peaches, jaman and cherries after making modifications in some of the equipment. The company produces juice drinks (packed in Tetra-Pak) and is also equipped with machinery to produce tomato ketchup, jams, marmalade etc.

### 5.1.4.3 Plant and Machinery Status

Building is in average condition; floors need to be improved. Insufficient space for fruit/vegetable unloading and handling is a bottleneck in fruit processing. European machinery installed 25 years ago, now needs minor repair and maintenance. Conversion of single stage refiner into 2-stage refiner is required. The processing facility can produce frozen products for high end local market as well as for export. However, overhauling of product cooling and freezing system is needed. Freezing rooms have capacity to store 2,400 tons product at -15 to -18 C.

### 5.1.4.4 Quality Assurance

The laboratory with insufficient building is equipped to perform the routine product testing. It needs to be up graded by establishing microbiological lab in a new room. No staff for quality assurance has been hired. The unqualified machine operator supervises production and quality assurance activities. The unit has not yet obtained any Quality Certification.

### 5.1.4.5 Marketing and Export Status

The company produces pulps for its own use but is also interested in supplying these in the high end local market as well as in export market. The present staff hired for selling and distribution of consumer product is not capable enough for the marketing of industrial product; pulps

### 5.1.4.6 Growth and Support Interests

Financial health of the company looks sound as it is selling good volumes of its consumer products. However, its approach to run the business without hiring experienced and qualified staff has resulted in its weak capabilities in the areas of fruit pulp production, quality assurance and marketing. The company is at the final stage of starting milk processing; and appears to be more inclined towards milk instead of fruit processing. Being located away from the fruit production area, it is not enjoying any competitive edge over the other fruit processors located in fruit production areas.

The CEO of the company expressed his desire to strengthen its pulping section along with the present consumer product business and upcoming project of milk processing. He showed willingness to invest for the enhancement of the plant capacities. According to him, he has

been having many queries for pulp from abroad. He desired to acquire aseptic processing equipment to enhance the capacity for the production of internationally acceptable fruit pulps.

*5.1.4.7 USAID intervention Possibilities*

1. Modernization of fruit processing plant including setting up 2-stage refining equipment
2. Overhauling of product chilling and freezing store machinery
3. On-job-training for fruit pulping
4. HACCP Certification

## 5.1.5 Chenab Foods

### 5.1.5.1 Plant Location

The fruit processing unit located in Shorkot, District Jhang of Punjab was established in 2004. In the vicinity of mango producing area it purchases mango at economic rates.

### 5.1.5.2 Production Capabilities

This unit can process mangoes @7-8 tons per hour. Guava and apple pulps are also processed in small quantities at 1-2 ton per hour fruit processing capacities.

Guava and apples are cut manually, cooked in pans placed in open area and refined. Pulps are preserved chemically and sold in the local market .

### 5.1.5.3 Plant and Machinery Status

Both, building and plant are in poor shape. The fruit processing plant is local made and pumps, plate heat exchanger and cooking pans are taken from the scrap market. The flow line is imbalanced and improperly placed. Unmatched capacities of pump and plate heat exchanger result in blockages during pulp pasteurization and refiner sieve structure remains unhygienic.

### 5.1.5.4 Quality Assurance

All production and quality assurance staff is unqualified and untrained. No product testing except brix evaluation is carried out. No quality certifications have been obtained.

### 5.1.5.5 Marketing and Export Status

The company sells pulps in the local low end market. There is no question of export possibilities or even local sales to high end market.

### 5.1.5.6 Growth and Support Interests

The company intends to improve the condition of pulping plant.. They need to redesign mango pulping unit, install proper pulp pasteurizers, recruit & train qualified technical staff and establish a proper laboratory for chemical and microbiological testing.

### 5.1.5.7 USAID Intervention Possibilities

- Technical training for processing staff
- Assistance in redesigning the plant
- Procurement of lab equipment
- Development of infrastructure as well the CIP protocols

## 5.1.6 Citro Pak (Pvt.) Limited

### 5.1.6.1 Plant Location

Cargill Pakistan Citrus Limited established citrus processing unit in 1990. Another citrus processing plant namely Sunflo Cit-Russ was also established in Sargodha in 1992. Both the units were equipped to produce Frozen Concentrated Kinnow Juice (FCKJ). Cargill Pakistan Citrus Limited sold its citrus processing unit in 1997 to “Citro Pak Limited”. In 2004, Citro Pak also took over Sunflo Cit-Russ as well. Presently these two units constitute Citro Pak (pvt) Ltd.

Sargodha is hub of Citrus Fruits in Pakistan and biggest Kinnow producing area of the world supplying fresh Kinnow fruit and FKJ to many countries.

### 5.1.6.2 Production Capabilities

Both the processing units, initially, were dedicated for kinnow processing only. However, later on unit # 1 located at Sargodha Lahore Road was equipped to produce pulps from mango, apple, guava, peach, banana, falsa, strawberries, carrot and tomato in addition to kinnow. Kinnow at 35 tons per hour, mango at 15 tons per hour and other fruits can be processed at 10 tons per hour pulping capacity. The processing unit # 2 located at Chak-54 facilitates to process kinnow at 35 tons per hour. Citro Pak also provides cold storage and freezing storage services. It can store 20,000 tons frozen product at -18 C.

Fruit/vegetables are available at cheaper price if procured at peak production times. Citro Pak’s high processing capacities help achieve production targets during the glut period, generally. However, it is facing fruit availability issues in case of kinnow. The small size kinnow which was available for processing some years ago at economical rates, now fetches much higher value as fresh fruit and is not commercially viable for FCKJ production. Due to availability issues and short span of fruit production time, Citro Pak is neither able to utilize the capacity nor it can meet the market demand for FCKJ.

### 5.1.6.3 Plant and Machinery Status

Buildings of both the units fulfill the requirements of modern food processing facilities. Plant and equipment have been sourced from leading food machinery manufactures of USA and Europe. Very well maintained plant and equipment conform to the technical requirements of producing a globally acceptable product.

### 5.1.6.4 Quality Assurance

To ensure highest quality standards, the company is having a strong professional team of technologists and experienced supervisory staff in all technical sections. A proper Quality Assurance department headed by a qualified Food technologist and highly equipped lab ensures production of products of international standards. Citro Pak holds HACCP and ISO-22000 certifications.

### 5.1.6.5 Marketing and Export Status

The company caters to the needs of local high end market and also exports its products. Citro Pak is the main supplier of kinnow juice concentrate and fruit pulps to Nestle Pakistan. It also supplies its products to the top fruit/vegetable product manufacturers of Pakistan like Engro Foods, Mitchells, and Shezan international. It also exports to Europe, the Middle East and Iran. It was inferred from the discussion with Director Operations that Citro-Pak processed about 70,000 tons of B and C grade kinnow to produce around 7,000 tons of Kinnow juice

concentrate in 2010-2011 season. However, the Citro Pak resource person was reluctant to share the detailed information about production and sale volumes.

#### *5.1.6.6 Growth and Support Interests*

The management is well aware of the domestic market needs and export market demands. They stay informed on the trends and techniques. Presently, they are addressing the issues pertaining to growing prices of fresh fruit to be procured for processing and ever increasing freight charge.

The company is watchful of the competitions, quality standards and supply-demand gaps. It keeps on injecting funds in maintaining the plant condition and capacity building of its HR. It desires to grow by growing more kinnow and other varieties with well extended harvesting periods.

#### *5.1.6.7 Possible Interventions by USAID*

Citro Pak confident of its technical capabilities and resources has not expressed its desire for any support.

## 5.1.7 Haq Farms

### 5.1.7.1 Plant Location

The fruit processing plant is located in Joharabad, District Jhang of Punjab. The fruit processing and consumer product manufacturing unit originally named as “Shaheen Foods” was established in 1989 in the kinnow production area of Punjab. The unit remained operational for the first 3-4 years then closed. The unit was taken over by a new management in 2002 and was named as Haq Farms. It was again shut down in 2006.

### 5.1.7.2 Processing Capabilities

The unit can process mango, kinnow, apricot and tomatoes. Original capacity of the processing line was 3 tons fruit input per hour but it has declined now due to removal of one of the two mango de-stoners and one of the two refiners.

The new management made the plant functional in the beginning for 3-4 years but closed again. Some fruits and tomatoes, during this time were processed to produce pulps to manufacture consumer products like juice drinks, squashes, jams and tomato ketchup using its own pulp.

### 5.1.7.3 Plant and Machinery Status

The building is well maintained. Fruit processing line is in fair condition. However, one mango de-stoning machine and one refiner is missing in the original line. Citrus processing is too small to produce kinnow juice concentrate. Adding one mango de stoner and one refiner will complete the line for 3- ton fruit processing capacity.

### 5.1.7.4 Quality Assurance

The plant is nonfunctional for the last 5 years. Staff has not been hired. Quality certification of any kind was not obtained. As the ground water is unsuitable, canal is the only source of water. This water is just sand filtered and used without any proper treatment or purification. Thus, the processing facility is lacking supply of suitable quality water from day one.

### 5.1.7.5 Marketing and Export Status

As the processing facility is no more operative, marketing activity stands suspended.

### 5.1.7.6 Growth and Support Interests

The management is interested in reviving the project. A qualified engineer has been appointed as General Manager who has shown interest in support from Firms Project as under:

- Addition of one mango De-stoning machine and a Refiner
- Technical support for commissioning of plant and training of staff for fruit processing
- Lab equipment for product testing
- Aseptic processing equipment

5.1.7.7 *USAID Intervention Possibilities:* Availability of portable water is the pre requisite for any food processing activity. The following intervention possibilities could be explored if the unit management is serious to resolve the water quality issue

- Addition of locally made mango De-stoner and a Refiner
- Support in plant re-commissioning and training of technical staff for fruit processing
- Lab equipment for product testing

### 5.1.8 Indus Fruit Products

#### 5.1.8.1 Plant Location

Indus Fruit products Limited located in District Kasur of Punjab province was established in 1989. This area produces good quantities of tomatoes and carrots.

#### 5.1.8.2 Production Capabilities

The facility can produce pulps from mangoes, citrus fruits, guavas, bananas, apples, falsa, peaches, cherries, straw berries and carrots. It is also equipped to process tomatoes to produce tomato paste. The fruit/vegetable pulps can be preserved and packed by universally accepted aseptic processing technology. Besides fruit processing for industrial products, the company is also manufacturing consumer products like nectars and juice drinks packed in PET bottles. The company produces consumer product for its own marketing and also provides production services to other companies to produce consumer pack drinks under their brand names.

#### 5.1.8.3 Plant and Machinery Status

Building of average condition needs minor improvements to fulfill the requirements of a good food processing facility. The processing plant imported 20 years ago from Italy needs small repairs. The present worn out mango de-stoner needs to be replaced and single stage refining needs to be improved by putting a 2-stage refiner. However, it is capable of processing the aforesaid fruits and vegetables.

#### 5.1.8.4 Quality Assurance

The laboratory is moderately equipped for routine product testing. Microbiological testing is lacking. Qualified staff for Quality Assurance has not been appointed. An experienced technologist works on part time basis as and when required. The facility has not been able to accomplish any Quality Certification.

#### 5.1.8.5 Marketing and Export Status

The company produces pulps for local market as well as for its in house use of producing consumer pack juice drinks. Being located in the production area of carrot and tomato, it is competitive in selling pulp and paste of these. However, the processing facility being away from the mango production area is less competitive in selling mango pulp. Indus has been supplying *aseptic* fruit pulps to Nestle Pakistan some years ago. As Nestle has partially shifted from aseptically processed pulps to *frozen* pulps, Indus has lost the capability of catering to Nestle as it is not having frozen pulps facility.

Due to shortage of funds, unlike other strong players, it does not invest to stock pulps for anticipated sales but goes only for order based manufacturing.

#### 5.1.8.6 Growth and Support Interests

It appears that the company does not believe in hiring expensive qualified and experienced HR. This sort of cost cutting approach has led to the absence of a strong professional team in the areas of production, quality assurance (QA) and marketing. The only Food Technologist is considered good enough to handle both, production and QA. They have not obtained any Quality Certification as yet. CEO himself looks after the marketing.

The company does not have any plans to explore export possibilities. As a policy matter they just want very quick returns against their sales proceeds.

The company has a desire to improve the condition of its 22-year old processing facility. To cater for the high end local market, it likes to enhance its capacity for frozen products by adding chilling equipment and a 1000-tons freezing store operating at -18 C. They also plan to have ISO-22000 Quality Certification,

*5.1.8.7 USAID Intervention Possibilities*

- Modernization of plant by replacing existing *mango de-stoners* by new ones and single stage *Refiner* by 2-stage *Refiner*.
- Construction of freezing room
- ISO-2200 Quality certification

### **5.1.9 Mitchell's Fruit Farms, Renala Khurd**

#### *5.1.9.1 Plant Location*

The fruit/ vegetable processing facility located in Renala Khurd District Okarah was established in 1933. All type of vegetables and fruits like citrus, guava, falsa, strawberries are grown in abundance, the area is in the vicinity of mango production area. Mitchells has its own 500 acre fruit and vegetable farms.

#### *5.1.9.2 Production Capability*

Being the oldest and well managed, the unit manufactures a wide range of Industrial Products (fruit & vegetable pulps & concentrates), Consumer Products (juices, ketchup, jams, marmalade & pickles) and other products (confectionary, canned fruit & vegetables, ready to take meals, sweet corn etc.

The unit processes different fruits and vegetables for the production of pulps and concentrates. Major Pulps and purees comprises citrus, guava, peach, strawberry, carrot and tomato. However, the facility lacks pulping of mango fruit which is vital capacity gap and Mitchells has to get its mango processed at other facilities or purchases mango pulp. The pulp produced or purchase is used to manufacture consumer products like juices, squashes, tomato ketchup etc for the domestic and export market. Due to smaller capacity for tomato paste processing, the company has to import tomato paste.

#### *5.1.9.3 Plant and Machinery Status*

The building is fairly maintained but the fruit/vegetable processing plant, being very old, is in a poor shape. The Italian machinery comprises sorting, washing & conveying line, chopper, thermo break, 2- stage refiner and pasteurizer. There is a stark need of overhauling and modernizing of the fruit processing line and addition of mango pulping equipment and evaporator for tomato paste production

#### *5.1.9.4 Quality Assurance*

A team of senior Food and Chemical Technologists and skilled supervisors manages the process line and maintains plant and machinery. Likewise, qualified chemists handle laboratory testing and process controls. Microbiological and chemical tests like brix, viscosity, acidity (pH) are carried out.

The company has obtained "Halal" and "ISO-9000" certifications.

#### *5.1.9.5 Marketing and Export Status*

Mitchells produces pulp/concentrates to manufacture consumer products for local and export markets. Their brands are well established and enjoy sustained market acceptability in both, local and foreign markets.

#### *5.1.9.6 Growth and Support Interests*

The company is running the fruit/vegetable based consumer products plant at full capacity. It is planning to enhance the capacities of fruit/vegetable processing unit including addition of mango pulping equipment in the process line. They desired to have on the job training in mango pulping and support in redesigning the processing lines to accommodate mango processing equipment.

*5.1.9.7 USAID Intervention Possibilities*

- Technical training for processing staff
- Fruit processing capacity enhancement by addition of mango pulping equipment and assistance in redesigning the fruit processing plant
- Addition of evaporator for tomato paste production

### **5.1.10 SFA Industries**

#### *5.1.10.1 Plant Location*

SFA industries located in Kabirwala, District Khanewal of Punjab was established in 2008. This District is among the major mango producing areas of Punjab.

#### *5.1.10.2 Processing Capabilities*

The processing facility is equipped with machines to extract pulp from mango, peach, guava, strawberry and tomatoes at the rate of 2-4 tons per hour. The pulp produced can be processed aseptically. However, because of the present technical gaps in the existing fruit processing line, it needs: overhauling, addition of new equipment and realignment of the entire line. The plant was set up as fruit pulp production facility to cater to the local and export markets. The company initially produced mango pulp for local market but after facing quality issues diverted to consumer product business and fresh fruit processing for export. Limited quantities of pulp are produced mainly to meet its in house use for consumer product production.

#### *5.1.10.3 Plant and Machinery Status*

Building is of average condition needs minor improvements. The fruit processing plant with many technical gaps need:

- Repair/overhauling of fruit/vegetables washing and conveying system
- Replacing the existing refining equipment by 2-stage refining system
- Realignment of the fruit processing line.

#### *5.1.10.4 Quality Assurance*

The lab is equipped for routine product testing. A semiskilled chemistry graduate performs the job of quality assurance in charge beside his original function of production supervision of pulp production and consumer products manufacturing. Besides improvement in fruit processing plant, strong support is required for product standardization and capacity building of all the personal involved in pulp production.

#### *5.1.10.5 Marketing and Export Status*

Product quality issues discouraged the management from marketing efforts. The company may need support for export market linkage once it over comes the product quality issues.

#### *5.1.10.6 Growth and Support Interests*

The fruit processing plant lay out and pulping process adopted indicates that facility has been established on the basis of half knowledge. The top management equipped with some knowledge of mechanical engineering has tried to set up the unit as per their own ideas without considering the basics of food processing.

Managing Director and Director planning expressed their interest in having technical support for:

- Rectification of the technical gaps of plant
- Process and product standardization
- On the job training for quality assurance
- Quality certification

*5.1.10.7 USAID Intervention Possibilities*

- Technical audit of the processing plant
- Realignment of the equipment
- Process and product standardization
- On the job training

### **5.1.11 Standard Fruits**

#### *5.1.11.1 Plant Location*

The unit, located in the Chunia Industrial Area, District Kasur, on Lahore - Multan Road was established in 1987. The area is famous for carrot and tomato production.

#### *5.1.11.2 Production Capabilities*

Standard Fruits was started as a consumer product manufacturing unit to produce juice drinks packed in glass bottle and tetra pak and tomato ketchup, and jam marmalades. The unit is also equipped with fruit processing equipment to produce pulps from mango, citrus fruits, guava, apples, falsa, carrot and tomatoes at a rate of 2-5 tons fruit /vegetables per hour. The fruit processing unit has been producing pulps to meet the in house requirements for the production of consumer products. Only small quantities were sold in the local market.

#### *5.1.11.3 Plant and Machinery Status*

Processing hall of the main building is in bad shape. The Italian plant of average condition can process the mentioned fruits and vegetables after moderate repair maintenance. The unit is not equipped with aseptic or freezing facility. When it was operational, the pulps produced were chemically preserved.

#### *5.1.11.4 Quality Assurance*

The Lab is equipped for testing pulps and consumer products. All necessary tests like brix, ph, viscosity and micro biological can be carried out.

#### *5.1.11.5 Growth and Support Interests*

Due to financial crises the company has stopped its business of pulping and consumer products manufacturing. The consumer product manufacturing unit has been leased out. Fruit/ vegetable processing has been closed and put to outright sale. Paucity of funds (working capital) is the major constraint in the growth.

## **5.1.12 Noor Food Industries**

### *5.1.12.1 Plant Location*

Noor Food Industries located in Faisalabad was established in 2001.

### *5.1.12.2 Processing Capabilities*

The processing facility is equipped to process mango, apple, peach, guava, strawberries and tomatoes. Mangoes can be processed at rate of 8-10 tons per hour, while capacity for the other fruits vary from 2 to 5 tons per hour. Tomato processing capacity of the plant is 5 tons per hour but due to lesser concentration capacity of the evaporator, the entire plant is run @ 2 tons tomatoes /hr to produce tomato paste. The plant is lacking aseptic processing facility. The product is chemically preserved and sold in the local market.

### *5.1.12.3 Plant and Machinery Status*

The processing plant is composed of used machine of different origins. Some of the plant components have been developed from scrap material. Similarly, the building is also in poor condition.

### *5.1.12.4 Quality Assurance*

Along with poor plant and building, the laboratory is equipped only for brix and acidity determination. Production and QA is supervised by non qualified staff. Separate staff for QA has not been recruited. Pulp produced were found of poor quality

### *5.1.12.5 Marketing and Export Status*

Despite the poor condition of building and plant, almost nonexistent Q.A and absence of qualified H R, pulps are produced in good volumes and are consumed by the low end consumer product manufacturers. The processing facility is not capable of producing exportable product.

### *5.1.12.6 Growth and Support Interests*

The company is known for its low price product. Presently it produces chemically preserved product only and desires to enhance its capacity by adding aseptic processing equipment and evaporator with bigger capacity to produce tomato paste. The company is not willing to invest

### *5.1.12.7 USAID Intervention Possibilities*

None

### **5.1.13 Zaheer Cold Store and Mango Pulping Unit**

#### *5.1.13.1 Plant Location*

Zaheer Cold Store and mango Pulping unit located in Khanewal district headquarter of Punjab was established in 2010.

#### *5.1.13.2 Processing Capabilities*

This ill designed mango pulping unit has been developed by assembling some locally fabricated machines. Some of the plant components are fabricated from non food grade material. A condemn heat exchanger has been adopted as pasteurizer. The incoherent flow of process, yields mango pulp of unusable quality. Capacity of plant is 3-4 ton per hour

#### *5.1.13.3 Plant and Machinery Status*

Building and plant are in poor condition.

#### *5.1.13.4 Quality Assurance*

Concept of Quality Assurance does not exist; establishing a laboratory or hiring a technical person has been considered useless and extravagance. The entire 40 tons mango pulp produced last year was fond spoiled. The mold growth developed on the surface of product was indicative of spoiled fruit used and poorest hygiene conditions of plant at the time of processing.

#### *5.1.13.5 Marketing and Export Status*

Product cannot be sold even in the low end local market.

#### *5.1.13.6 Growth and Support Interests*

Proprietor, whose core business is storage and trading of fresh fruit and vegetables, is not willing to invest for improvement of the plant and recruit some suitable person to look after the processing activity.

#### *5.1.13.7 USAID Intervention Possibilities:*

None

## 5.2 Profiles of Surveyed Pulping Units in Sindh

### 5.2.1 Al-Raheem Agro Processing Company, Karachi

#### 5.2.1.1 Plant Location

Al-Raheem, a small scale pulping unit located in the cosmopolitan in Sindh, was set up in 2007.

#### 5.2.1.2 Production Capabilities

The plant can process 1 to 2 tons of fruit per hour. Mango, peach, apple, guava, tomato and carrot are the major fruits to make pulp. Processing facility comprises locally fabricated washing and extraction machines for mango and peaches. The other fruits undergo cooking in kettles before pulping. The unit is having a cold storage facility to store the chemically preserved products.

#### 5.2.1.3 Plant and Machinery Status

The processing hall is below average in looks. Machinery is in depleted condition and working environment is pretty unhygienic.

Processing line is based on locally fabricated machines to wash mango & peaches and extract pulp from them. Apple, guava, tomatoes and carrots are subjected to cooking in kettles to make pulps. Chemical preservatives are mixed in unpasteurized mango & peach pulps. Other cooked pulps are cooled and preserved chemically.

#### 5.2.1.4 Quality Assurance

The unit has employed one qualified Food Technologist and one Chemist. Laboratory is equipped for routine product testing. The facility has not been able to obtain any Quality Certification.

#### 5.2.1.5 Marketing and Export Status

The company produces low quality cheaper industrial products (pulp) for low end market. These pulps are purchased by local cottage level consumer product manufacturers who make tomato ketchup, fruit drinks, squashes, jams, marmalade etc.

#### 5.2.1.6 Growth and Support Interests

Business wise, it is a growing unit despite being in poor shape. The management desires to improve the condition of its plant. Presence of qualified staff is a positive indicator. Overhauling of the present processing equipment and training of the staff can improve the situation. Director of the company desired for support in installing an aseptic processing unit but they neither have enough space in the building nor have necessary funds to accomplish that. However, the management is willing to invest in having a pasteurizer and overhauling of the present processing equipment.

#### 5.2.1.7 USAID Intervention Possibilities

- On the job training for the production and Quality assurance staff
- Technical support in overhauling of machinery
- Addition of pasteurizer in present fruit processing line

## 5.2.2 Iftikhar and Company

### 5.2.2.1 Plant location

Iftikhar And Company ( IAC) located in Karachi was established in 2004.

### 5.2.2.2 Production capabilities

The processing facility can process mango, guava and apple fruits @ 10 ton/hour and other fruits/vegetables like guava, carrot and tomato at 5 ton per hour capacities. The processing facility can also process apples for clear apple juice concentrate production.

### 5.2.2.3 Plant and machinery Status

Building fulfills the requirements of a modern food processing factory. Plant and equipment of good condition have been sourced from leading food machinery manufactures of Europe.

### 5.2.2.4 Quality Assurance

The unit is equipped with laboratory to carry out all the required quality test. Besides qualified food technologists employed permanently, a part time consultant also support in technical affairs. The company has accomplished HALAL and HACCP certifications.

### 5.2.2.5 Marketing and Export Status

The company produces fruit pulps and concentrates for hi end local and export markets. IAC regularly supplies its Mango pulp to Libya and Middle East countries. It has recently supplied Apple Juice Concentrates to Turkey.

### 5.2.2.6 Growth and Support Interests

The company is planning to set up its Kinnow juice concentrate production plant in Sargodha.

### 5.2.2.7 USAID Intervention Possibilities

- Export market linkage

### 5.2.3 Pakola Products Limited

#### 5.2.3.1 Plant Location

Pakola located in Karachi (Sindh) was established in 1950 as carbonated drinks bottling company and added pulping facility to its production line in 2009. The processing facility is located near the mango and tomato production areas. Presence of port in Karachi gives competitive advantage over the fruit processors of other places involved in export.

#### 5.2.3.2 Production Capabilities

The processing facility is equipped to process mango at 15 ton, tomato and strawberries 8 tons, guava 5 tons and apple 3 tons per hour. Fruit pulps are processed/ packed aseptically. Major part is retained for in-house production of value added consumer products, only small quantities are sometimes sold in the local market. About 13,000 tons of produce can be stored in chilling store.

#### 5.2.3.3 Plant and machinery Status

The factory building is in good shape and is very well maintained. Plant and machinery is mostly of Italian origin with some local components like batch type evaporator for tomato pulp concentration which needs to be replaced by a continuous evaporator. Likewise, apple juice concentration equipment is also required. They do need to connect the available thermo break to the processing line to utilize its capacity for guava, apple, carrot and tomato pulping.

#### 5.2.3.4 Quality Assurance

Qualified Food technologists and chemists are handling laboratories and production lines (milk processing & consumer packs preparation) but the staff engaged in fruit processing needs to be better skilled and trained. The lab is well equipped to conduct all the necessary tests including microbiological testing for fruit and vegetable pulps. The unit has obtained ISO-22000 certification.

#### 5.2.3.5 Marketing and Export Status

The company is highly placed in sales and distribution of its initial product mix of aerated water drinks and flavored milk. However, the management has shown deep concern in establishing strong links in the domestic and export markets especially, for the sales of mango pulp. The entire mango pulp produced is consumed to meet the domestic needs of producing consumer product.

#### 5.2.3.6 Growth and Support Interests

Quality certified modern processing facility and qualified staff indicates the business potential and professional approach of the company. A strong team of professionals is well informed about the market trends, distribution networking and international market requirements. The company recognizes the need for skill development of the technical staff engaged in fruit & vegetable processing. They intend to invest on apple juice concentrate production machinery and a proper evaporator for tomato paste production. They are conscious about exploring export market potential for a possible breakthrough.

#### 5.2.3.7 USAID Intervention Possibilities

- On- the-job training for better processing of fruits /vegetable.
- Support for adding evaporator for tomato paste processing.
- Establishing export market linkages.

## 5.2.4 Maaza Pakistan Limited

### 5.2.4.1 Plant location

The fruit processing facility is located in Thatta, Sindh, in the vicinity of main mango production area of Sindh.

*Maaza Pakistan Ltd* was established in 2002 with 100% foreign investment by Mazza International Company LLC, (MIC), UAE- an affiliate of Al-Omran group.

### 5.2.4.2 Production Capabilities

Engaged in fruit pulping and production of fruit juice drinks in consumer packs, *Maaza* can process mangoes, guava and peach. The company produces pulp for the production of its famous *Maaza* brand mango nectar packed in PET bottles. The pulp is processed and preserved by Canning technology. Mango pulping capacity of the plant is 10 ton fruit/ h but due to the lower canning capacity, the fruit processing plant is utilized @ 2 tons fruit /hr only (20% of the total capacity). However, domestic pulp requirement of 1000 ton/year is achieved.

### 5.2.4.3 Plant and Machinery Status

Both, building and plant stand in a fair condition. Primarily, the plant is of Italian origin with some Swedish and local components. The unit can enhance its capacity by five times if an Aseptic processing unit is installed. Mango de-stoner is modified for peach processing, as and when required. Canning is done in 3.5-kg tin cans.

### 5.2.4.4 Quality Assurance

The lab is equipped for product and container testing. Qualified and experienced Food technologist supervises the pulping and canning operation. Due to poor quality tin plate of the available cans, product starts deteriorating after 10-12 months. The product shelf life problem can be controlled by using better quality tin cans and adopting proper processing techniques.

To utilize the full capacity of the plant and overcoming the quality issues, the unit needs to be equipped with aseptic processing facility for bulk packing.

The company has not yet obtained any quality certification.

### 5.2.4.5 Marketing and Export Status

*Maaza* is a multinational company having a variety of popular brands marketed in an organized manner. The industrial produce (pulp) is used in-house for the manufacture of value added consumer products, mainly bottled juice drinks. *Maaza International* also operates in UAE and consumes sizeable volumes of mango pulp to produce mango nectar. *Maaza Pakistan* is planning to install aseptic processing equipment with an aim to produce mango pulp for its mother company producing mango based consumer product in UAE.

### 5.2.4.6 Growth and Support Interests

The processing unit is managed by qualified technical staff. However, some production areas need technical assistance for gap identification and training of staff along with process standardization.

- The company plans to enter into exports of mango pulp for which they are interested in having Aseptic processing facility of 5-ton pulp per hour capacity. The company also desires quality certification (ISO-22000).

*5.2.4.7 USAID Intervention Possibilities*

- On the job technical training for production and quality assurance staff
- Technical audit of the processing facility and process standardization.
- Support in adding aseptic processing equipment, if USAID laws allow support for the pulping units established by foreign investors.

## **5.2.5 Popular Foods**

### *5.2.5.1 Plant Location*

The fruit processing plant located in Hyderabad, Sindh was established in 1986. Hyderabad is considered as one of the major mango producing areas of Sindh

### *5.2.5.2 Production Capabilities*

The unit is equipped to process mango at 15 tons and guava at 10 tons per hr. The pulp produced is chemically preserved.

The company is the biggest producer of consumer pack juice drinks in Pakistan having four production units in different cities of Pakistan.

### *5.2.5.3 Plant and Machinery Status*

Both, building and plant are in average condition. Some parts of the plant are locally made while others were imported from Sweden and Italy.

### *5.2.5.4 Quality Assurance*

The laboratory is well equipped for product testing. Qualified Food Technologists and Chemists have been employed to ensure quality of the product. The company has accomplished HACCP and HALAL Quality Certificates.

### *5.2.5.5 Marketing and Export Status*

The company has huge in house demand for pulps to produce the consumer pack juice drinks. Mango is the main fruit processed for pulp production. Besides consumption of juice drinks in the local market, juice drinks are also exported.

### *5.2.5.6 Growth and Support Interests*

The company has enjoyed tremendous growth in fruit based value added consumer products business and is the largest producer of juice drinks in the country. Popular Foods has planned to install another pulping unit in Sindh.

### *5.2.5.7 USAID Intervention Possibilities*

The company is interested in support for setting up an aseptic processing plant.

## **5.3 Profiles of Surveyed Pulping Units in Khyber Pakhtunkhwa**

### **5.3.1 Qarshi Industries Private Limited**

#### *5.3.1.1 Plant Location*

This fruit and vegetable processing unit located in Haripur District of Khyber Pakhtunkhwa was established in 1992 under the name “Sinsas enterprises (pvt.) limited”. In 2001, the unit was acquired by Qarshi industries (Pvt.) limited, a known herbal products manufacturing company of Pakistan.

#### *5.3.1.2 Production Capability*

The unit has the capacity of processing mango, peach, apricot, guava and tomatoes @ 3 tons per hour. In addition, oranges can be squeezed @ 0.5 ton per hour. The facility is equipped to produce chemically preserved and frozen pulps. It can store 1,200 tons of products at -18 C.

#### *5.3.1.3 Plant and Machinery Status*

Building and machinery has been well maintained to give it the look of a modern food factory. A complete unit comprising fruit pre-processing & conveying system, mango de-stoner, peach, apricot de-stoner, citrus extractor and single stage refiner is installed. Two complete bottling lines for filling juices in glass and PET bottles are also available.

#### *5.3.1.4 Growth and Support Interests*

Since its acquisition, the management has not made the unit operative as a fruit and vegetable processing factory. Freezing store, warehouse, and juice blending tanks of the unit are used for other purposes. Qarshi has not yet planned to revive it as a pulp producing unit. Qarshi had taken over from its financiers (Banks) in an open auction at throw away price. Truly speaking, it was just an opportunity availed without any deep desire to run it. The unit is far away from all fruit producing areas of the country and it was difficult meet the ever increasing costs of transportation of fruit from the farms. The profit margins are much higher in herbal product business as compared to that of pulping or juice business. It seems that fruit pulping business is not much attractive to Qarshi. The unit is closed, presently.

## 6.0 RECOMMENDATIONS

The ultimate objective of Profiling and Capacity Need Assessment of Pulping Units was to strengthen the fruit and vegetable processing sector for realizing the dormant potential of the sector. All the pulping units in Pakistan were individually evaluated for their present status in terms of production capabilities, quality assurance, certification levels, technical skills, training needs and marketing strengths.

Identification of gaps in plant and machinery, assessment of technical and managerial skills, evaluation of quality assurance system & gaps in laboratory and difficulties in marketing remained as the focus of attention during this study. Accordingly, benchmarks were fixed for filling the gaps and recommendations are being made in view of capacity building of the units under study.

Following are some pertinent explanatory notes to highlight the areas of intervention as suggested in the table using our above defined criteria:

1. **General:** Pakistan's fruit/vegetable pulp processing sector produces for both low-end and high-end markets. While the demand for hi-end industrial products has increased significantly, the low-end consumer market also kept on growing with a steady pace. Though the low end pulping facilities cannot be upgraded up to the mark, yet some improvements can be made to strength these sustainable business units.
2. **Production:** Performance of an existing processing line can be improved by replacing torn off machines or components by new ones or re-designing the process flow lines. Two stage refining equipment improves the yield and quality of pulp produced. It resolves major quality problems of formation of black or brown specs in the pulp. A single line processing for one or a few fruits or vegetables can be extended or improved to enable it to process many more products just by adding one more machine or equipment in an existing line.

Aseptic processing is the world wide acceptable way of preserving/ packaging fruit/vegetable pulps. Only one fourth of the Pakistani pulping industry is equipped with this facility and the remaining are still using the undesirable chemicals to preserve the product. As desired by some companies, a support in this regards will help modernize the pulping sector.

Under the present demand supply situation, the pulping sector is lacking enough processing capacities for apple juice concentrate, tomato paste and peach pulp production. A support in enhancing/developing processing capacities for the mentioned products is highly recommended. An increase in the local production of these products will lead to reduction in import of the same.

A processing line can be made more productive if guidance and technical support is provided for overhauling after conducting a technical audit of the plant. The desire for support can only be considered if the existing unit possesses the necessary building space to install the desired equipment complementing the machinery where the equipment has to be installed.

3. **Training:** Training and technical support for process and product standardization and strengthening of skills for capacity building of supervisory staff and operators is desired by most of the pulp producers; especially, the new players in both, low and high end pulp products. Every plant has its own specific technical issues, on job training or technical support desired by most of the processors can enhance their technical capabilities.
4. **Export Opportunities:** Export marketing activities involve considerably high costs and international trade skills. Many companies are interested in having the valuable support for export market linkage. However, capability to produce export grade product, the quality assurance system they have and their accomplishments of quality certifications are important consideration in providing such support.
5. **Other:** While assessing the support desired by medium enterprises involving relatively high investments, other considerations are competitiveness of the unit in procuring raw materials, HR and Quality assurance capabilities and market demand for the end products. Support is generally desired for installation of aseptic processing equipments, evaporators for tomato paste, freezing equipments and freezing stores etc.

Table 12 on the next page shows the types of support desired by the surveyed units along with the consultant's comments on the expected benefits which can be derived from USAID intervention.

### 6.1 Possible Areas of Support for Individual Units

Table 12 - Possible Areas of Support for Individual Units

	Processing unit	Products	Support desired	Consultant’s comments on Expected Benefits of Intervention
1	<b>Indus fruit products District Kasur, Punjab</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> <li>• Pulp production for commercial sale</li> </ul>	<ul style="list-style-type: none"> <li>• Nnew mango de stoner and 2-stage Refiner to be added in the existing line</li> </ul>	<ul style="list-style-type: none"> <li>• Better yield and production of high quality pulp without black/brown particle</li> </ul>
			<ul style="list-style-type: none"> <li>• To Set up a new Freezing Room for 1000 ton product storage</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity enhancement to produce frozen pulp for hi end market like Nestle</li> </ul>
			<ul style="list-style-type: none"> <li>• ISO-22000 Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Customer trust and marketing tool</li> </ul>
2	<b>Mitchells Fruit Farms, District Okara, Punjab</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> <li>• Consumer product manufacturer</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of Mango pulping equipment in the existing line of tomato processing</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity enhancement to produce mango pulp</li> </ul>
			<ul style="list-style-type: none"> <li>• Support for re-designing the fruit/ Vegetable processing line</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support would help implement the desired change</li> </ul>
			<ul style="list-style-type: none"> <li>• To acquire an Evaporator for tomato paste/ puree production</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity enhancement of existing line for tomato paste/puree production. More production of tomato paste would help decrease the import of tomato paste</li> </ul>
			<ul style="list-style-type: none"> <li>• Training on mango pulping</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building of staff would enable them for successful operation and improved productivity</li> </ul>
			<ul style="list-style-type: none"> <li>• ISO-22000 Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Certification would build Customer trust and act as marketing tool</li> </ul>
3	<b>Best Industries, Lahore, Punjab Consumer product manufacturer</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house consumption</li> </ul>	<ul style="list-style-type: none"> <li>• A new 2-stageRefiner to be added in the existing line</li> </ul>	<ul style="list-style-type: none"> <li>• Better yield and production of high quality pulp without black/brown particle</li> </ul>

			<ul style="list-style-type: none"> <li>Overhauling of freezing equipment to improve its efficiency. Presently it does not attain the desired degree of cooling</li> </ul>	<ul style="list-style-type: none"> <li>Capacity enhancement to produce frozen pulp for hi end local market</li> </ul>
			<ul style="list-style-type: none"> <li>Training on fruit processing</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building of staff would increase productivity</li> </ul>
			<ul style="list-style-type: none"> <li>HACCP Certification</li> </ul>	<ul style="list-style-type: none"> <li>Certification would build customer trust and act as marketing tool</li> </ul>
4	<b>Al Hilal Industries, Multan Consumer product manufacturer</b>	<ul style="list-style-type: none"> <li>Pulp production for in house use</li> <li>Consumer product production</li> </ul>	<ul style="list-style-type: none"> <li>Technical audit of the plant</li> </ul>	<ul style="list-style-type: none"> <li>Identification of gaps and their rectification</li> </ul>
			<ul style="list-style-type: none"> <li>Training on fruit processing</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building of the staff would improve productivity</li> </ul>
			<ul style="list-style-type: none"> <li>Addition of new 2-stage refining equipment in the existing fruit processing line</li> </ul>	<ul style="list-style-type: none"> <li>Better yield and production high quality pulp without black/brown particles</li> </ul>
			<ul style="list-style-type: none"> <li>Addition of Aseptic processing equipment</li> </ul>	<ul style="list-style-type: none"> <li>Support in adding aseptic processing equipment could have been possible if the unit have appropriate fruit processing line.</li> </ul>
			<ul style="list-style-type: none"> <li>HACCP certification</li> </ul>	<ul style="list-style-type: none"> <li>Could be considered for support if the company recruit suitable HR, The present staff is not qualified</li> </ul>
			<ul style="list-style-type: none"> <li>Support for export market linkage</li> </ul>	<ul style="list-style-type: none"> <li>The company is not capable of producing exportable product</li> </ul>
5	<b>SFA Industries, Kabirwala, District Khanewal, Punjab</b>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Realignment/ redesigning and maintenance of existing pulping unit</li> <li>Addition of new 2-stage refiner in the existing line</li> </ul>	<ul style="list-style-type: none"> <li>Redesigning is required for plant optimization. Better yield and production of high quality pulp without black/brown particles</li> </ul>

			<ul style="list-style-type: none"> <li>• Technical assistance to overcome quality issues</li> </ul>	<ul style="list-style-type: none"> <li>• The company has stopped commercial production and sale of aseptic pulp due to quality issues like discoloration. It needs technical support to overcome the quality issues and standardize its product</li> </ul>
			<ul style="list-style-type: none"> <li>• ISO-22000 Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Certification would build Customer trust and act as a marketing tool</li> </ul>
6	<p><b>Chenab Foods, Shorkot, District Jhang, Punjab</b></p> <p><b>Industrial product producer</b></p>	<ul style="list-style-type: none"> <li>• Pulp production for commercial sale</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of new 2-stage Refiner in the existing line</li> </ul>	<ul style="list-style-type: none"> <li>• Better yield with production of high quality pulp without black/brown particle and</li> </ul>
			<ul style="list-style-type: none"> <li>• To acquire a Proper new Pulp pasteurizer to replace the existing defective one</li> </ul>	<ul style="list-style-type: none"> <li>• The present pasteurizer being used is originally for milk. Frequent choking decrease the productivity of the processing line. A new wide gap pasteurizer would improve the productivity</li> </ul>
			<ul style="list-style-type: none"> <li>• Training for better processing and hygiene improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building of staff would help improve the hygiene conditions and produce safe product</li> </ul>
7	<p><b>Haq Farms, Jauharabad, District Khushab, Punjab</b></p> <p><b>Closed. In the process of revival now</b></p>		<ul style="list-style-type: none"> <li>• Addition of one mango de-stoner and one refiner is required to fill the gap of the 2 missing machines</li> </ul>	<ul style="list-style-type: none"> <li>• One new mango de-stoner and a refiner can fill the plant capacity gap</li> </ul>
			<ul style="list-style-type: none"> <li>• Addition of aseptic processing equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Non availability of suitable water at plant is the major constraint. Canal water without proper treatment must not be used.</li> </ul>
8	<p><b>Al Habib Foods, Multan, Punjab</b></p> <p><b>Consumer product manufacturer</b></p>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> <li>• Production of consumer product</li> </ul>	<ul style="list-style-type: none"> <li>• The entire fruit pulping equipment and building needs to be developed. Processing is being carried out partially in open area because of improper and insufficient building. In the absence of steam boiler unpasteurized pulp is preserved with very high dose chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Beyond the scope of USAID intervention</li> </ul>

9	<b>Noor Food Industries</b>	Pulp /concentrate production for local sale	Management of the unit desires to have Evaporator for tomato paste production wit out sharing the cost. Training of the technical staff was also desired	USAID Firms project can consider the case only on the cost sharing basis
10	<b>Pakola Products, Karachi, Sindh</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house consumption</li> <li>• Pulp production for commercial sale</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of new continuous Evaporator for tomato paste. The present batch type evaporator is insufficient and improper</li> </ul>	<ul style="list-style-type: none"> <li>• The proper evaporator would produce better quality product with enhanced capacity. plant is located in tomato production area, tomato paste production would help reduce its import</li> </ul>
			<ul style="list-style-type: none"> <li>• Complete plant for apple juice concentrate production</li> </ul>	<ul style="list-style-type: none"> <li>• Complete apple processing plant would cost around 150 million Pak Rupees, which is beyond the scope of intervention.</li> </ul>
			<ul style="list-style-type: none"> <li>• Market linkage support for export of mango pulp</li> </ul>	<ul style="list-style-type: none"> <li>• The processing facility is capable of producing exportable product. Support in market linkage would help promote the export.</li> </ul>
			<ul style="list-style-type: none"> <li>• Training on better fruit processing</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building of staff would increase productivity</li> </ul>
11	<b>Maaza Pakistan limited, Thatta, Sindh Consumer product manufacturer</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of Aseptic processing equipment for pulp</li> </ul>	<ul style="list-style-type: none"> <li>• Aseptic equipment would enable to utilize the fruit processing plant and build capacity to produce hi quality product</li> </ul>
			<ul style="list-style-type: none"> <li>• Technical audit of the fruit processing plant and rectification of the gaps</li> </ul>	<ul style="list-style-type: none"> <li>• Rectification of gaps would improve product quality and productivity</li> </ul>
			<ul style="list-style-type: none"> <li>• ISO-22000 Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Certification would build customer trust and act as a marketing tool</li> <li>• Would USAID support a processing facility owned by a foreigner (Non Pakistani)?</li> </ul>

12	<b>Al Raheem Agro Processing, Karachi, Sindh</b> <b>Industrial product manufacturer</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> </ul>	<ul style="list-style-type: none"> <li>• On the Job training for supervisory staff engaged in fruit processing</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building of supervisory staff</li> </ul>
			<ul style="list-style-type: none"> <li>• Aseptic processing equipment was desired by the management</li> </ul>	<ul style="list-style-type: none"> <li>• Building space for aseptic equipment is not available Instead of aseptic processing system, the available building can accommodate a plate type pasteurizer. This addition will upgrade the processing facility.</li> </ul>
13	<b>Agro Food Processing, Multan, Punjab</b> <b>Industrial product manufacturer</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house use</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of evaporator of 3500 kg per hr capacity to enhance capacity for tomato paste production</li> </ul>	<ul style="list-style-type: none"> <li>• The existing processing plant can process 5 tons tomatoes per hr to produce pulp. Capacity of evaporator converting pulp into paste is too small.</li> <li>• An evaporator of matching capacity would enable to utilize the full capacity of tomato processing line. Tomato paste production would help reduce its import into Pakistan.</li> </ul>
			<ul style="list-style-type: none"> <li>• Market linkage for export of mango pulp</li> </ul>	<ul style="list-style-type: none"> <li>• The processing facility is capable of producing exportable product. Support in export market linkage would help promote export of mango and other pulps.</li> </ul>
14	<b>Popular Foods, Hyderabad, Sindh. The biggest consumer product producer of Pakistan with 4 manufacturing units in different cities.</b> <b>Presently producing chemically preserved pulp</b>	<ul style="list-style-type: none"> <li>• Pulp production for in house consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of Aseptic processing equipment and technical support to set up the aseptic plant</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of aseptic processing equipment would result in capacity enhancement for the production of high quality pulp for export and hi end local market.</li> </ul>

## 7.0 APPENDICES

### 7.1 Appendix I – Definitions of Different Types of Industrial Products

#### **Fruit Juices**

Fruit and vegetable juices are defined as the “*fermentable but unfermented liquid obtained from mature fresh fruit or vegetable*”. The liquid has nothing added or subtracted. Squeezed or extracted fresh juices can be consumed as such but for long term storage they are preserved by pasteurization or commercial sterilization and sealing hermetically in some sort of packaging.

#### **Pulp or Puree**

Some fruits/vegetable when extracted/squeezed, yield thin juice such as orange juice. Other fruit/vegetable due to their specific composition; high pectin, starch fiber and sugar contents like mango or banana, on processing, yield viscous material termed as pulp or puree. “*Pulp or puree is fermentable but not fermented viscous refined fleshy portion of the fresh and mature fruit/vegetable having nothing added or subtracted*”.

#### **Brix**

Percentage of soluble solids, mainly sugars of fruit/vegetable pulps or juice is termed as *Brix*. 1 degree brix is equivalent to 1 % sugar, w/w.

#### **Concentrate**

Juices concentrates are produced by evaporating water from juices or pulps. The process is called *Concentration, Evaporation* or *Folding*. It is done to reduce the bulks facilitating packaging, transportation and storage.

The extent of concentration or folding depends upon the initial soluble solids and viscosity of the juice/pulp to be concentrated. Higher the initial viscosity or soluble solids lesser it will be subjected to concentration or folding. Thin juice of oranges is concentrated 5 to 7 times to produce orange juice concentrate but pulp from grafted mango varieties having high sugar content and viscosity cannot be concentrated. Pulp from low sugar mango varieties is concentrated only 2 times.

#### **Clear Juice**

This transparent juice is obtained by removing all turbidity or haze causing insoluble and soluble contents of the natural fruit juice. After filtration juice is treated with pectin-decomposing enzymes. By concentration, these juices are converted into juice concentrates and sold as industrial product. The most common concentrated clear juice is Concentrated Clear Apple juice.

#### **Tomato Puree**

Tomato concentrate containing more than 8% but less than 24% natural soluble solids ( brix degree) is termed as Tomato puree. Tomato puree is always is expressed in terms of its percent soluble solids (brix degree) i.e. tomato puree 15 brix , tomato puree 21 brix etc.

**Tomato Paste**

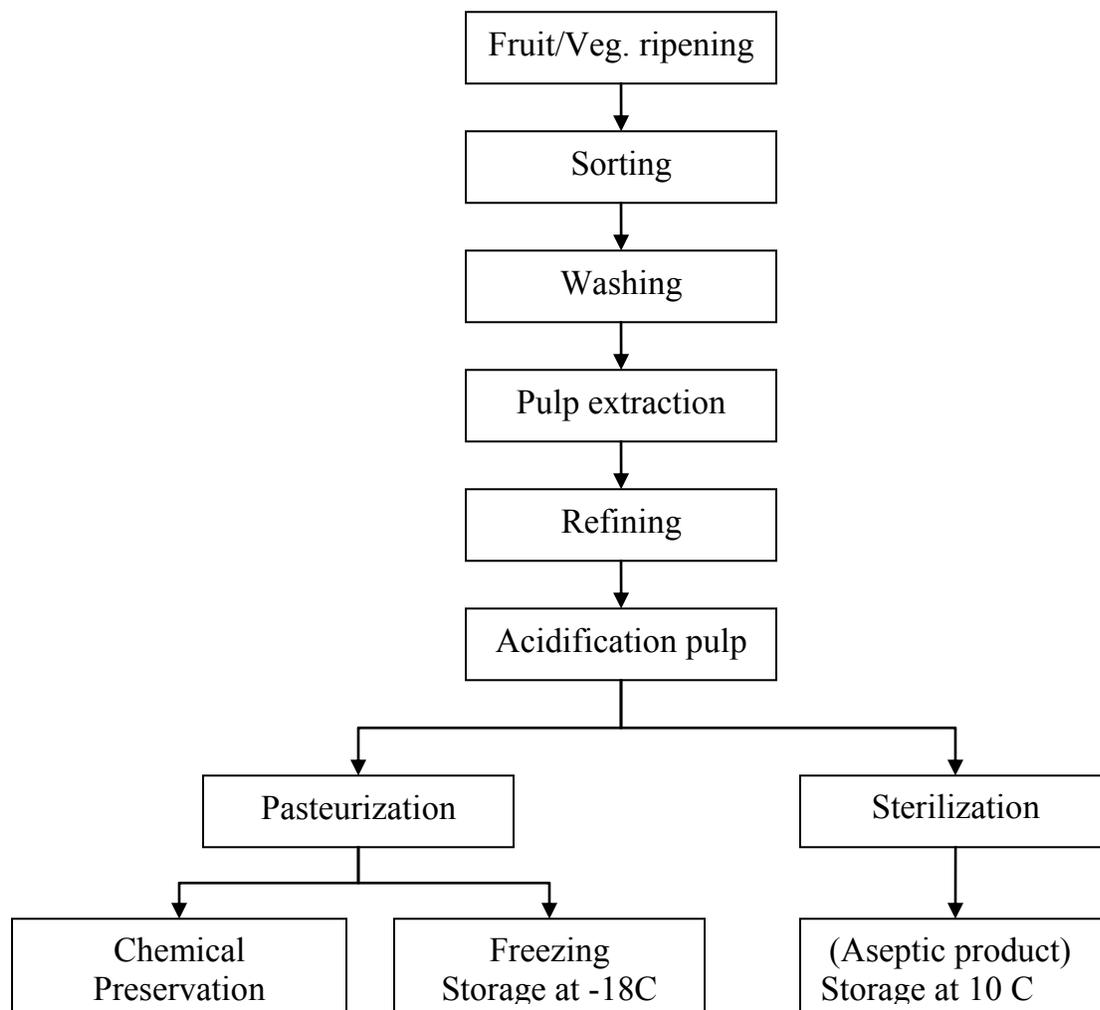
Tomato concentrate containing 24% or more than 24% natural soluble solids is called *Tomato Paste*. It is always expressed in terms of its soluble solids (brix degree) i.e. tomato paste 28 brix, tomato paste 37 brix etc.

## 7.2 Appendix II – Value Added Product Recovery from Fruits/Vegetables

Table II-A

<b>Fruit/vegetable</b>	<b>Value added Product</b>	<b>Yield %age</b>
Apple	Apple Juice Concentrate 70 brix	18
	Apple pulp	95
Apricot	Pulp	80
Banana	Pulp	50
Carrot	Pulp	90
Guava	Pulp	85
Kinnow	Juice Concentrate 65 brix	9-10
Mango	Pulp	55-60
Peach	Pulp	85
Falsa	Juice	80
Strawberry	Pulp	80
Tomato	Pulp	95
	Tomato puree 15 Brix	24-26
	Tomato Paste 28 Brix	14

### 7.3 Appendix III – Process Flow Diagram for Manufacturing Fruits/Vegetables Pulp



#### 7.4 Appendix IV – Indian Exports of Mango Pulp (Source APEDA)

Country	2008-2009		2009-2010		2010-2011		%age growth over	%age share
	Qty (kg)	Value (INR lacs)	Qty (kg)	Value (INR lacs)	Qty (kg)	Value (INR lacs)	previous year	in 2010-2011
<u>Saudi Arabia</u>	5,35,63,566.00	20,116.66	6,34,79,945.00	22,156.43	4,86,94,671.00	21,061.79	-4.94	25.87
<u>Netherland</u>	1,93,11,306.00	10,662.69	1,60,73,352.00	9,013.29	1,76,87,107.00	10,730.40	19.05	13.18
<u>United Arab Emirates</u>	2,18,95,700.00	8,497.82	1,70,53,897.00	6,135.87	1,43,97,749.00	6,187.34	0.84	7.6
<u>Yemen Republic</u>	1,55,62,605.00	5,339.15	2,17,52,565.00	6,849.66	1,52,20,374.00	6,068.83	-11.4	7.46
<u>United Kingdom</u>	82,04,036.00	3,751.56	1,06,26,153.00	4,750.26	1,19,59,631.00	5,648.99	18.92	6.94
<u>Sudan</u>	48,67,868.00	2,393.91	57,58,366.00	2,240.52	77,23,100.00	4,056.18	81.04	4.98
<u>Kuwait</u>	75,68,588.00	2,963.68	1,10,13,777.00	3,969.42	79,92,870.00	3,493.59	-11.99	4.29
<u>Japan</u>	49,71,261.00	3,730.99	24,71,529.00	1,938.34	37,50,615.00	2,930.48	51.19	3.6
<u>United States</u>	43,42,876.00	2,290.55	44,67,048.00	2,842.30	52,63,896.00	2,816.86	-0.9	3.46
<u>Egypt Arab Republic</u>	1,09,069.00	48.4	9,72,506.00	293.8	50,52,518.00	2,643.58	799.79	3.25
<u>Lebanon</u>	35,35,886.00	1,257.19	40,85,838.00	1,511.88	42,51,502.00	1,917.71	26.84	2.36
<u>Germany</u>	24,60,769.00	1,130.60	20,47,988.00	1,157.13	27,44,255.00	1,601.07	38.37	1.97
<u>Canada</u>	24,06,812.00	1,258.05	20,79,067.00	1,171.27	28,07,631.00	1,350.60	15.31	1.66
<u>Nepal</u>	18,18,939.00	703.26	16,14,651.00	497.3	31,48,298.00	1,309.08	163.24	1.61
<u>France</u>	30,12,642.00	1,786.60	12,79,440.00	868.25	11,48,791.00	733.97	-15.47	0.9
<u>Malaysia</u>	16,80,572.00	582.33	22,48,671.00	649.18	17,22,309.00	661.96	1.97	0.81
<u>Iran</u>	4,54,296.00	277.6	6,93,626.00	412.5	12,67,448.00	660.07	60.02	0.81
<u>Belgium</u>	1,79,843.00	98.1	3,35,300.00	212.07	10,08,756.00	651.79	207.35	0.8
<u>China P Rp</u>	2,66,104.00	142.47	12,54,827.00	486.27	10,33,296.00	591.27	21.59	0.73
<u>Bangladesh</u>	28,69,212.00	1,650.20	18,13,171.00	768.78	14,15,936.00	538.86	-29.91	0.66
<u>Russia</u>	14,24,240.00	742.37	4,46,056.00	169.97	12,73,940.00	525.25	209.03	0.65
<u>Oman</u>	20,31,630.00	730.19	13,68,774.00	483.66	13,12,690.00	478.34	-1.1	0.59
<u>Bahrain</u>	5,89,581.00	260.16	8,02,342.00	253.81	7,55,057.00	372.19	46.64	0.46
<u>Singapore</u>	9,52,825.00	334.76	10,09,009.00	324.29	8,93,887.00	348.28	7.4	0.43
<u>Algeria</u>	7,32,778.00	460.64	4,37,712.00	246.43	5,71,132.00	317.26	28.74	0.39

<u>Denmark</u>	1,04,173.00	66.47	2,27,198.00	72.98	6,17,685.00	299.45	310.32	0.37
<u>Kenya</u>	4,17,021.00	138.04	6,96,842.00	310.8	7,81,769.00	278.94	-10.25	0.34
<u>Taiwan</u>	5,80,454.00	297.07	4,48,480.00	286.74	5,09,899.00	269.35	-6.06	0.33
<u>Spain</u>	3,60,291.00	219.25	6,66,485.00	336.37	6,69,860.00	251.84	-25.13	0.31
<u>Libya</u>	6,87,981.00	422.37	4,69,828.00	250.62	4,46,714.00	237.87	-5.09	0.29
<u>Qatar</u>	3,44,373.00	131.36	4,80,568.00	215.25	5,07,670.00	231.41	7.51	0.28
<u>Jordan</u>	4,42,628.00	212.42	11,47,516.00	383.13	4,75,286.00	211.2	-44.88	0.26
<u>Finland</u>	2,68,851.00	153.6	2,82,807.00	169.7	3,18,275.00	187.35	10.4	0.23
<u>Australia</u>	4,28,045.00	154.72	5,06,450.00	226.31	4,69,036.00	174.79	-22.77	0.21
<u>Syria</u>	2,94,888.00	120.07	12,86,699.00	422.33	11,70,579.00	174.32	-58.72	0.21
<u>Tanzania Republic</u>	4,09,980.00	243.33	1,03,120.00	30.23	3,36,478.00	161.52	434.3	0.2
<u>Indonesia</u>	68,383.00	27.89	7,99,972.00	266.37	2,89,426.00	125.68	-52.82	0.15
<u>Portugal</u>	2,86,734.00	179.63	2,55,836.00	188.17	1,86,496.00	108.88	-42.14	0.13
<u>Sri Lanka</u>	1,53,322.00	70.44	1,69,173.00	66.6	2,04,640.00	107.71	61.73	0.13
<u>New Zealand</u>	1,49,398.00	51.91	2,01,341.00	76.61	2,50,874.00	102.27	33.49	0.13
<u>Korea Republic</u>	18,620.00	6.26	30,699.00	18.78	1,38,604.00	99.14	427.9	0.12
<u>Georgia</u>	19,600.00	8.72	2,46,960.00	79.96	2,05,800.00	71.66	-10.38	0.09
<u>Tunisia</u>	0	0	0	0	88,400.00	71.44	100	0.09
<u>Hong Kong</u>	45,780.00	14.9	49,325.00	30.16	1,34,179.00	62.48	107.16	0.08
<u>French Polynesia</u>	0	0	0	0	1,09,760.00	52.12	100	0.06
<u>Austria</u>	91,350.00	42.32	49,056.00	28.22	97,477.00	40.91	44.97	0.05
<u>Barbados</u>	0	0	0	0	69,620.00	40.28	100	0.05
<u>Mauritius</u>	47,716.00	15.77	56,200.00	22.63	77,611.00	36.73	62.31	0.05
<u>Switzerland</u>	14,811.00	10.82	90,768.00	33.29	94,731.00	31.35	-5.83	0.04
<u>Turkey</u>	2,16,000.00	179.13	60,624.00	43.29	42,000.00	29.58	-31.67	0.04
<u>Cyprus</u>	1,10,120.00	46.33	34,000.00	10.07	71,848.00	27.47	172.79	0.03
<u>Italy</u>	1,912.00	0.23	55,610.00	30.15	32,525.00	24.6	-18.41	0.03
<u>Ukraine</u>	1,45,620.00	89.3	1,09,200.00	52.06	57,133.00	22.66	-56.47	0.03
<u>Ireland</u>	7,881.00	3.48	18,620.00	4.91	55,860.00	21.47	337.27	0.03
<u>Poland</u>	21,000.00	13.22	10,720.00	1	22,000.00	17.46	1,646.00	0.02
<u>Israel</u>	1,33,160.00	34.6	2,38,000.00	126.65	34,000.00	17.32	-86.32	0.02

<u>Nigeria</u>	91,800.00	74.4	0	0	36,887.00	15.81	100	0.02
<u>Seychelles</u>	21,309.00	10.05	42,299.00	13.98	42,990.00	15.18	8.58	0.02
<u>Vietnam Social Republic</u>	1,03,096.00	33.88	2,000.00	9.81	36,887.00	12.61	28.54	0.02
<u>Unspecified</u>	1,08,110.00	111.75	1,58,300.00	145.98	18,848.00	11.15	-92.36	0.01
<u>Korea D P Republic</u>	0	0	0	0	18,002.00	11.01	100	0.01
<u>Martinique</u>	0	0	0	0	18,000.00	10.91	100	0.01
<u>Thailand</u>	0	0	9,213.00	3.35	23,015.00	10.71	219.7	0.01
<u>South Africa</u>	20,463.00	5.57	9,60,461.00	505.93	17,796.00	9.16	-98.19	0.01
<u>Norway</u>	18	0.03	22,151.00	6.76	20,692.00	6.86	1.48	0.01
<u>Bhutan</u>	15,096.00	5.31	36,981.00	16.77	7,670.00	4.28	-74.48	0.01
<u>Djibouti</u>	0	0	17,000.00	10.83	14,982.00	3.49	-67.77	0
<u>Fiji Islands</u>	4,117.00	1.87	100	0.04	4,220.00	2.6	6,400.00	0
<u>Maldives</u>	1,896.00	0.76	3,100.00	1.15	2,300.00	0.57	-50.43	0
<u>Reunion</u>	0	0	1,500.00	0.49	1,400.00	0.52	6.12	0
<u>Netherlands</u>	0	0	0	0	700	0.37	100	0
<u>Botswana</u>	7,967.00	0.92	0	0	600	0.29	100	0
<u>Madagascar</u>	0	0	0	0	701	0.09	100	0
<u>Senegal</u>	0	0	0	0	48	0.02	100	0
<u>Zambia</u>	0	0	883	0.61	0	0	-100	0
<u>Mexico</u>	0	0	20	0.01	0	0	-100	0
<u>Malawi</u>	0	0	7	0	0	0	0	0
<u>Philippines</u>	7,000.00	0.59	0	0	0	0	0	0
<u>Morocco</u>	18,000.00	13.7	54,000.00	20.82	0	0	-100	0
<u>Ghana</u>	40	0.02	0	0	0	0	0	0
<u>Armenia</u>	3,09,120.00	116	4,000.00	30.93	0	0	-100	0
<u>Sweden</u>	805	0.33	18,620.00	7.3	0	0	-100	0
<u>Trinidad</u>	0	0	22,000.00	8.84	0	0	-100	0
<u>Swaziland</u>	0	0	96	0.07	0	0	-100	0
<u>Uganda</u>	16,21,664.00	760.14	8,67,410.00	491.01	0	0	-100	0
<b>Total</b>	<b>17,30,13,597</b>	<b>75,299</b>	<b>18,61,97,848</b>	<b>74,461</b>	<b>17,19,29,432</b>	<b>81,400</b>	<b>9.32</b>	<b>100</b>

### 7.5 Appendix V – Average Cost of Mango Pulp Produced in Pakistan

Material Required	Quantity	Per unit cost (PKR)	Total cost per ton of mango pulp (PKR)
Mango fruit	1,670 kg	20 per kg	41,750
Citric acid	8 kg	150 per kg	1,200
Ascorbic acid	0.3 kg	800 per kg	240
Aseptic bag	4.6 bags	800 per bag	3,680
Steel drum	4.6 drums	2500 per drum	11,500
Poly bag	4.6 bag	50 per bag	230
Processing Charges	1000 kg pulp	12 per kg	12,000
<b>Total production cost per ton of mango pulp in Pakistan</b>			<b>Rs 70,600.00</b>
			<b>USD 784.30</b>

## 7.6 Appendix VI - Quality Assurance Laboratory for Pulping Units

Test to be performed	Equipment required	Other items required for Lab
Brix	Refractometer	<ul style="list-style-type: none"> <li>• Electronic weighing Scale</li> <li>• Small scale Distillation equipment</li> <li>• Thermometers</li> <li>• Glass ware</li> </ul>
Acidity	Titration equipment	
pH value	pH meter	
Viscosity	Viscosity meter	
Vitamin C	Titration equipment	
Preservative level	Titration equipment	
Microbiology	<ul style="list-style-type: none"> <li>• Microscope</li> <li>• Auto calve</li> <li>• Incubator</li> <li>• Pt dishes</li> <li>• Culture bottles</li> <li>• Inoculating loops</li> </ul>	

## 7.7 Appendix VII - Filled Questionnaires

### 7.7.1 Pulping Units in Punjab

#### 7.7.1.1 Agro Food Processing Facility (AFP)

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>					
<b>Date of Study:</b>	Feb 9, 2012		<b>Form Code:</b>	Punjab-2	
<b>Company Information</b>					
<b>1. Unit Name:</b>	Agro Food Processing Facility (AFP)		<b>2. Year of Establishment:</b>	2009	
<b>3. Address:</b>	Plot # 32-33, Industrial Area, Phase-2, Multan				
<b>4. Tel:</b>	061-923 9450-1	<b>5. Fax:</b>	061- 923 9453	<b>6. E-mail:</b>	--
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>		<b>Phone/Cell No</b>	
	Mr. Zahid Munir	Project Director (PD)		O332-611 2300	
<b>Product(s) Information:</b>					
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit/vegetable pulp			
	<b>Consumer Product</b>	--			
	<b>Others</b>	Fresh Fruit (Kinnow) processing			
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>					

Sr.#	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	10	10	10	10	10		Pulp
2	Citrus	--						--
3	Guava	5	5	5	5	5		Pulp
4	Peach	--						--
5	Apple	3	3	3	3	3-		Pulp
6	Strawberry	--						--
7	Falsa	--						--
8	Jaman	--						--
9	Cherry	--						--
10	Carrot	5	5	5	5	5		Pulp
11	Tomato	5	5	5	5	5		Pulp
12		--						--

Notes:

<b>10. Market/Use of Pulp produced :</b>	<b>In-house use for the production of value added consumer products</b>	--
	<b>Local Market</b>	✓
	<b>Export Market</b>	--
<b>Unit's Information:</b>		
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
	Sorting, Brushing washing and conveying line	Italy
	Mango De-stoner, chopper, Thermo break (continuous cooker), Two stage refiner	Italy
	Vacuum kettle for tomato puree production	Italy
	Aseptic processing & packaging equipment with two fillers	Italy
<b>12. Capacity gaps in processing equipment:</b>	none	
<b>13. Modifications made in the original plant:</b>	none	

<b>14. Technical gaps in processing equipment:</b>		none					
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/equipment:</b>	Good	✓	<b>17. condition of building/processing hall:</b>	Good	✓
			Fair			Fair	
			Poor			Poor	
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>		Aseptic	Two head fillers for 5 tons of pulp /hr				
		Freezing	--				
		Chemical Preservation	5-6 ton pulp/hr				
		Canning	--				
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>				
	Temperature	-10 C	5 C				
	Condition	--	fair				
	Capacity	--	800 tons of end product				
<b>20. Pulp/Concentrate produced (one years):</b>	<b>Product</b>	<b>tons</b>	<b>21. Losses/wastages (3 years):</b>				
	Pulp	2000 tons	none				
	Concentrate	--					
<b>22. Repair/Maintenance Procedures:</b>		<b>Company engineering staff</b>				✓	
		<b>Service providers</b>				--	
		<b>Other</b>				--	
<b>Quality Control</b>							
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>			<b>Equipment/instruments gaps</b>			
	Brix, Acidity, pH, Viscosity meter			none			
	Microbiological Lab			none			
				none			
<b>24. Specific quality issues:</b>	none		<b>25. Quality Certifications obtained:</b>		none		

<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>	Solid waste (stone and peel) is sold to brick kilns as fuel and also to nurseries for plant growth. Effluent treatment is not carried out.
<b>Human Resource Information:</b>	

27. Staffing Details:	Permanent	28	28. Qualifications / Experience of Managerial and Supervisory Staff:	PD: Food Technologist with 15 years experience	
	Seasonal	100		Plant Manager: Food Technologist with 2 years experience	
	Contractual	--		Food Technologist with 1 year experience	
29. Skill gaps and need for training or technical assistance:		none			
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	Issue				
	Financial	--			
	Raw Material	--			
	Marketing	✓			
	Packaging	--			
31. Procurement of fruit / vegetables:	Direct from farms	x	32. Imported raw materials:	Types	Aseptic bags
	Through contractor	--		issues	Increasing costs
	From whole sale market	--			
	Other	--			
33. Reasons if fruit processing business has been closed:		operative	34. Role played by the fruit processors association if it exists :		insignificant
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:		Completely Government owned/ funded project			
36. Company's future Business plan:		-			
37. Company's need for support:	Area	Support desired			
	Processing Capacity enhancement	Tomato paste production by adding an evaporator			
	Training	--			
	Lab up-gradation	--			
	Technical assistance	--			
	Local market linkage	--			
	Export market linkage	Export of mango pulp			
Quality Certifications	-				

<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>	Reportedly, AFP is having necessary funds for sharing the cost of a canning plant.	
<b>Participants Information</b>		
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>	<b>FIRM Team</b>
	Chairman (Board of Directors)	
	Project Director	
		Tanveer-ul-Islam, Consultant

## 7.7.1.2 Al Habib Foods

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	Feb 8, 2012	<b>Form Code:</b>	Punjab -6
<b>Company Information</b>			
<b>1. Unit Name:</b>	Al Habib Foods	<b>2. Year of Establishment:</b>	1995
<b>3. Address:</b>	Al Habib Peeran Ghibe, Khanewal Road , Multan		
<b>4. Tel:</b>	0300-6334197	<b>5. Fax:</b>	
		<b>6. E-mail:</b>	
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Sh. Ijaz Ahmed	Proprietor	0300-6334197
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit pulps	
	<b>Consumer Product</b>	Juice drinks packed in PET bottles	
	<b>Others</b>		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

s.no	Fruit /Vegetable	Tonnes of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	2	2	2	2	2		Pulp
2	Citrus	-						
3	Guava	1	-	-	1	1		pulp
4	Peach	2	2	2	2	2		pulp
5	Apple	-						-
6	Strawberry	1	1	1	1	1		Pulp
7	Falsa							
8	Jaman							
9	Cherry							
10	Carrot							
11	Tomato							
12								

Notes: guava and strawberries are boiled in open pans and pulp made by passing through refiner.

10. Market/Use of Pulp produced	In-house use for the production of value added consumer products:		<input checked="" type="checkbox"/>						
	Local Market		<input checked="" type="checkbox"/>						
	Export market		<input checked="" type="checkbox"/>						
<b>Unit's Information:</b>									
11. List of Main Machinery:	<b>Components</b>		<b>Origin</b>						
	Fruit washer, Conveyor, Mango de stoner, refiner		Local						
12. Capacity gaps in processing equipment:	Steam boiler does not exist								
13. Modifications made in the original plant:	-								
14. Technical gaps in processing equipment:	Pulping machines are made up of non-Food grade material. Processing is done in open area. The basic food safety measures are ignored. All working under poor hygiene conditions								
15. Country or origin (main plant):	Local	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td><input type="checkbox"/></td></tr> <tr><td>Fair</td><td><input type="checkbox"/></td></tr> <tr><td>Poor</td><td><input checked="" type="checkbox"/></td></tr> </table>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Poor	<input checked="" type="checkbox"/>
			Good	<input type="checkbox"/>					
Fair	<input type="checkbox"/>								
Poor	<input checked="" type="checkbox"/>								
17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td><input type="checkbox"/></td></tr> <tr><td>Fair</td><td><input type="checkbox"/></td></tr> <tr><td>Poor</td><td><input checked="" type="checkbox"/></td></tr> </table>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Poor	<input checked="" type="checkbox"/>		
Good	<input type="checkbox"/>								
Fair	<input type="checkbox"/>								
Poor	<input checked="" type="checkbox"/>								
18. Processing/Preservation/packaging technologies being used and their capacities:	Aseptic								
	Freezing								
	Chemical Preservation	Chemical preservation of unpasteurized pulp with heavy dose of chemicals							
	Canning								
19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-	-						
	Condition	-	-						
	Capacity	-	-						
20. Pulp/Concentrate produced (1years):	<b>Product</b>	<b>Mt</b>	21. Losses/wastages (1 years):						
	Pulp	100 tons		3-4 tons					
	Concentrate								
22. Repair/maintenance Procedures:	Company's engineering staff		<input checked="" type="checkbox"/>						
	Service providers		<input type="checkbox"/>						
	Other		<input type="checkbox"/>						
<b>Quality Control</b>									

23. Lab Testing and analysis being carried out:	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>		
	Brix measurement		pH meter, titration facility		
24. Any specific quality issue	Color darkening		25. Quality Certifications obtained:	None	
26. Details of solid waste disposal and effluent treatment arrangements:		No effluent treatment			
<b>Human Resource Information:</b>					
27. Staffing Details:	Permanent	12	28. Qualifications / Experience of Managerial and Supervisory Staff:	Primary education , S.S.C	
	Seasonal	100			
	Contractual	-			
29. Skills gaps and need for training or technical assistance:	Lack of know how about food processing				
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	Issue				
	Financial	✓			
	Raw Material				
	Marketing				
	Packaging	✓			
31. Procurement of fruit / vegetables:	Direct from farms		32. Import of raw materials:	Items	-
	Through contractor	✓		issues	-
	From whole sale market	✓			
	Other				
33.Reasons if fruit processing business has been closed:	-		34. Role played by the fruit processors association if it exists :	None	

<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>		None		
<b>36. Company's future Business plan:</b>				
<b>37. Company's need for support:</b>	<b>Company's Desired Areas</b>	<b>Details</b>	<b>Consultants remarks</b>	<b>Priority</b>
	Processing Capacity enhancement	Steam boiler	Cottage level pulping unit in informal sector is lacking building, proper machines and men.	
	Training	Fruit processing		
	Lab up gradation			
	Technical assistance			
	Local market linkage			
	Export market linkage			
	Quality Certifications			
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Poor		
<b>Participants Information</b>				
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRM Team</b>	
	Sh. Ijaz Ahmed (proprietor)		Tanveer-ul-Islam	

## 7.7.1.3 Al-Hilal Industries (Private) Ltd.

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	<b>Feb 8, 2012</b>	<b>Form Code:</b>	<b>Punjab-9</b>
<b>Company Information</b>			
<b>1. Unit Name:</b>	Al-Hilal Industries (Private) Ltd.	<b>2. Year of Establishment:</b>	2011
<b>3. Address:</b>	Factory: Vehari Road , Multan Office: 103 Habitat, Shadman 2, Jail Road, Lahore		
<b>4. Tel:</b>	<b>042-111 737 111</b>	<b>5. Fax:</b>	<b>042-111 737 111</b>
<b>6. E-mail:</b>	<a href="mailto:farrukh@alhilal.com.pk">farrukh@alhilal.com.pk</a>		
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Mohammad Junaid Ali	General Manager	0323- 640 0000
	Mr. Farrukh	CEO	0323-630 0000
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit/vegetable pulps	
	<b>Consumer Product</b>	Drinks/Nectars packed in PET bottles	
	<b>Others</b>		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

sr. no	Fruit /Vegetable	Tones of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	3	3	3	3	3		Pulp
2	Citrus	--						
3	Guava	2	2	2	2	2		Pulp
4	Peach	3	3	3	3	3		Pulp
5	Apple							
6	Strawberry	2	2	2	2	2		Pulp
7	Falsa	2	2	2	2	2		Pulp
8	Jaman	--						--
9	Cherry	--						--
10	Carrot							
11	Tomato							
12								

Notes:

10. Market/Use of Pulp produced	In-house use for the production of value added consumer products		✓						
	Local Market		✓						
	Export market		X						
<b>Unit's Information:</b>									
11. List of Main Machinery:	<b>Components</b>		<b>Origin</b>						
	Sorting, washing and conveying equipment		Local						
	Mango de-stoner, chopper, thermo break, single stage refiner		Local						
	Pasteurizer (developed by joining components of Alfalaval & GEA		Sweden and Germany						
	Open kettle for cooking								
12. Capacity gaps in processing equipment:	Aseptic processing /packaging does not exist.								
13. Modifications made in the original plant:	Pasteurization system has been developed by joining components of Alfa laval (Sweden) and GEA (Germany) Mango de-stoner is modified at the time of peach processing								
14. Technical gaps in processing equipment:	<ul style="list-style-type: none"> <li>• Used/Scrapped Plate Heat Exchanger being used for pulp pasteurization.</li> <li>• Blockage problem during mango pulp pasteurization.</li> <li>• Pulp Refiner is made up of non Food- grade material. Food safety aspect has been criminally ignored.</li> </ul>								
15. Country or origin (main plant):	Local	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td></td></tr> <tr><td>Poor</td><td>✓</td></tr> </table>	Good		Fair		Poor	✓
Good									
Fair									
Poor	✓								
		17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td></td></tr> <tr><td>Poor</td><td>✓</td></tr> </table>	Good		Fair		Poor	✓
Good									
Fair									
Poor	✓								
18. Processing/Preservation/packaging technologies being used and their capacities:	Aseptic	--							
	Freezing	✓							
	Chemical Preservation	✓							
	Canning	--							
19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-18 C	Fair						
	Condition	Fair	Fair						
	Capacity	400 tons product	200 tons product						
20. Pulp/Concentrate produced (1 years):	<b>Product</b>	<b>700 tons</b>	21. Losses/wastages (1 years)						
	Pulp								
	Concentrate								
			--						

<b>22. Repair/maintenance Procedures:</b>		<b>Company engineering staff</b>		✓
		<b>Service providers</b>		--
		<b>Other</b>		--
<b>Quality Control</b>				
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>	
	Brix, acidity and pH		Microbiology Lab	
	Sulfur dioxide and Benzoic acid test			
<b>24. specific quality problem</b>	Black specs in guava pulp		<b>25. Quality Certifications obtained:</b>	None
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Sold to nursery growers No effluent treatment		
<b>Human Resource Information:</b>				
<b>27. Staffing Details:</b>	<b>Permanent</b>	5	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>	1 Diploma Engineer
	<b>Seasonal</b>	75		Supervisory staff with 1- 2 year experience
	<b>Ladies workers</b>	--		
<b>29. Skills gaps and need for training or technical assistance:</b>	<p>Scientific knowledge of food processing is very much lacking due to absence of qualified staff.</p> <p>Training of the staff and detailed technical audit of the processing plant followed by rectification as and if required</p>			
<b>Commercial Information</b>				
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>			
	<b>Financial</b>	--		
	<b>Raw Material</b>	--		
	<b>Marketing</b>	--		
	<b>Packaging</b>	Aseptic Packaging system		

31. Procurement of fruit / vegetables:	Direct from farms		32. Import of raw material	Items	--
	Through contractor	✓		Issues	--
	From whole sale market	✓			
	Other	--			
33.Reasons if fruit processing business has been closed:	Operative		34. Role played by the fruit processors association if it exists :	None	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:	None				
36. Company's future Business plan:	Export of mango pulp				
37. Company's need for support:	Area of support		Company's desire for support		
	Processing Capacity enhancement		Aseptic processing 2 ton pulp /hr		
	Training		Better processing of fruit		
	Lab up gradation		Micro biological lab		
	Technical assistance		<ul style="list-style-type: none"> <li>• Technical audit of plant and rectification</li> <li>• Fixing of pasteurizer problem</li> <li>• Process/ product standardization</li> </ul>		
	Local market linkage		--		
	Export market linkage		✓		
	Quality Certifications		HACCP		
38. Management Capacity and Willingness for capital Investment for BMR:	Willing to invest for aseptic processing equipment				
<b>Participants Information</b>					
39.Participants of the meeting:	<b>Unit Management</b>		<b>FIRM Team</b>		
	Mr. Junaid Ali, General Manager		Tanveer-ul-Islam		
	Mr. Muddasar, Plant Manager				

## 7.7.1.4 Best Industries (private) Ltd.

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>									
<b>Date of Study:</b>		Feb 20, 2012				<b>Form Code:</b>		Punjab-1	
<b>Company Information</b>									
<b>1. Unit Name:</b>		Best Industries (Private) limited			<b>2. Year of Establishment:</b>		1986		
<b>3. Address:</b>		157, Quaid-e-Azam Industrial Estate, Kot Lakhpat, Lahore.							
<b>4. Tel:</b>		042-3515 3 098-9		<b>5. Fax:</b>		042-3515 0 780		<b>6. E-mail:</b> <a href="mailto:Javaid.pk@hotmail.com">Javaid.pk@hotmail.com</a>	
<b>7. Contact Person(s):</b>		<b>Name</b>		<b>Position</b>		<b>Phone/Cell No</b>			
		Mr. Javaid Iqbal		CEO		0300- 844 7 071			
		Mr. Sarfaraz Ahmed		GM		0300-417 0020			
<b>Product(s) Information:</b>									
<b>8. Type of Manufacturing:</b>		Industrial Products		Fruit/ vegetable pulping					
		Consumer products		Fruit juice/drinks in Tetra Pak					
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>									
S.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product	
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining			
1	Mango	2.5	2.5	2.5	2.5	2.5		Pulp	
2	Citrus	2.5	2.5	2.5	2.5	2.5		Juice	
3	Guava	2.5	2.5	2.5	2.5	2.5		Pulp	
4	Peach								
5	Apple	1	1	1	1	1		Pulp	
6	Strawberry							Pulp	
7	Falsa	2.5	2.5	2.5	2.5	2.5		Pulp	
8	Jaman	2	2	2	2	2		Pulp	
9	Cherry	1	1	1	1	1			
10	Carrot	2	2	2	2	2		Pulp	
11	Tomato	2.5	2.5	2.5	2.5	2.5	800 kg /hr	Pulp/ 4- fold puree	
12									
Notes:									

<b>10. Market/Use of Pulp produced</b>	In-house consumption for consumer pack juice drinks				✓												
	Local Market				X												
	Export market				X												
<b>Unit's Information:</b>																	
<b>11. List of Main Machinery:</b>	<b>Components</b>			<b>Origin</b>													
	Fruit sorting, brushing, washing and conveying system, orange peel pricking unit for oil removing			Italy													
	Mango de-stoner, citrus extractor			Italy													
	Chopper for apple/guava/tomato & strawberries			Italy													
	Continuous cooker(Thermo break) and single stage refiner			Italy													
	Evaporator (Lowa)			Italy													
	Aseptic processing packaging system			Italy													
<b>12. Capacity gaps in processing equipment:</b>	Without Aseptic processing/packaging, the existing plant can neither cater for high end local nor for the export market.																
<b>13. Modifications made in the original plant:</b>	None																
<b>14. Technical gaps in processing equipment:</b>	The plant is in poor condition. It needs overhauling/repair. The existing single stage refiner cannot give optimum results. 2-stage refiner is required for better yield and quality of pulp. Freezing facility needs to be overhauled adequately to enable it to store the products at -15 C.																
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/equipment:</b>	<table border="1" style="width: 100%; text-align: center;"> <tr><td style="background-color: #e0e0e0;">Good</td><td style="width: 20px;"></td></tr> <tr><td style="background-color: #e0e0e0;">Fair</td><td></td></tr> <tr><td style="background-color: #e0e0e0;">Poor</td><td style="text-align: center;">✓</td></tr> </table>	Good		Fair		Poor	✓	<b>17. condition of building/processing hall:</b>	<table border="1" style="width: 100%; text-align: center;"> <tr><td style="background-color: #e0e0e0;">Good</td><td style="width: 20px;"></td></tr> <tr><td style="background-color: #e0e0e0;">Fair</td><td style="text-align: center;">✓</td></tr> <tr><td style="background-color: #e0e0e0;">Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor	
Good																	
Fair																	
Poor	✓																
Good																	
Fair	✓																
Poor																	
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic				--												
	Freezing				-												
	Chemical Preservation				✓												
	Canning				--												

19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>
	Temperature	+ 5 C	Freezing room working at 5 C is being used as chilling store for the storage of chemically preserved pulps
	Condition	Needs repair /overhauling	--
	Capacity	5,000 drums store 1,000 tons of product	--
20. Pulp/Concentrate produced (1 years):	<b>Product</b>	<b>Tons</b>	21. Losses/wastages (1 years): None
	Pulp	300	
22. Repair/maintenance Procedures:		Company engineering staff	<input checked="" type="checkbox"/>
		Service providers	<input type="checkbox"/>
		Other	<input type="checkbox"/>
<b>Quality Control</b>			
23. Lab Testing and analysis being carried out:	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>
	Refractor meter for brix degree		Micro biological lab
	pH meter for pH value		
	Acid Titration for acidity value		
24. Specific quality issues:		None	25. Quality Certifications obtained:
			None
26. Details of solid waste disposal and effluent treatment arrangements:		Sold to brick kilns as fuel	
<b>Human Resource Information:</b>			
27. Staffing Details:	<b>Permanent</b>	12	28. Qualifications / Experience of Managerial and Supervisory Staff: One Food Technologist and one supervisor hired for consumer pack juice drink production is also utilized for pulp processing as and when required The company is lacking team of professionals for pulp business. Their core business is consumer pack juice drinks manufacturing and sales
	<b>Seasonal</b>	50	
	<b>Contractual</b>	-	
29. Skills gaps and need for training or technical assistance:		Lack of fruit processing knowledge and skills	
		On job training on fruit processing	
<b>Commercial Information</b>			

30. Factors hampering the fruit /vegetable pulping business:	<b>Issue</b>	<b>Constraints (access and costs etc)</b>		
	Financial	--		
	Raw Material	✓		
	Marketing	✓		
	Packaging	--		
	Other	--		
31. Procurement of fruit / vegetables:	Direct from farms		32. Imported raw materials:	
	Through contractors	✓		
	From whole sale market	✓		
	Other			
		Types	-	
		Issues		
33.Reasons if fruit processing business has been closed:	Operative		34. Role played by the fruit processors association if it exists	Insignificant
35. Any assistance from/collaboration with any donor, government or private agency during the last 3 years:		None		
36. Company's future Business plan:		To start Milk Processing		
37. Company need for support:	<b>Details</b>			
	Processing Capacity enhancement	2-stage refining Repair of freezing room machinery Aseptic processing system with 2-ton/hr capacity		
	Training	Training in better fruit processing and hygiene improvement		
	Lab up gradation	--		
	Technical assistance	-		
	Local market linkage	--		
	Export market linkage	--		
	Quality Certifications	HACCP		
38. Management Capacity and willingness for capital Investment for BMR:		not expressed		
<b>Participants Information</b>				

<b>39. Participants of the meeting:</b>	<b>Unit Management</b>	<b>FIRM Team</b>
	Mr. Javaid Iqbal CEO	Dr. Waqar Ahmed
	Mr. Sarfaraz Ahmed GM Technical	Khalid Saeed Watto
		Tanveer-ul-Islam, Consultant

## 7.7.1.5 Chenab Foods

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>								
<b>Date of Study:</b>		Feb. 29, 2012			<b>Form Code:</b>		Punjab-7	
<b>Company Information</b>								
<b>1. Unit Name:</b>		Chenab Foods			<b>2. Year of Establishment:</b>		2004	
<b>3. Address:</b>		2 km- Jhang Road, Shorkot, District Jhang						
<b>4. Tel:</b>		047-531 0128		<b>5. Fax:</b>		--		<b>6. E-mail:</b> <u>Mousman9674@yahoo.mail</u>
<b>7. Contact Person(s):</b>		<b>Name</b>		<b>Position</b>		<b>Phone/Cell No</b>		
		Muhammad Rafique		Proprietor		0300-650 9674		
		Usman Rafique		Manager		0302-866 9674		
<b>Product(s) Information:</b>								
<b>8. Type of Manufacturing:</b>		<b>Industrial Product</b>		Mango, apple and guava pulps				
		<b>Consumer Product</b>		--				
		<b>Others</b>		--				
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>								
s.no	Fruit /Vegetable	Tons of Fruit Per Hour					Pasteurization Kgs of pulp/hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	7	7	7	7	7	3	Pulp
2	Citrus	--						--
3	Guava*	2					--	Pulp
4	Peach	--						-
5	Apple**	1						Pulp
6	Strawberry	-	-	-	-	-	-	-
7	Falsa	-	-	-	-	-	-	-
8	Jaman	-	-	-	-	-	-	-
9	Cherry	-	-	-	-	-	-	-
10	Carrot	-	-	-	-	-	-	-
11	Tomato	-	-	-	-	--	-	-
12								
Notes: 1. Guava* and Apple** -fruits are manually cut, cooked in open cooking pans and refined. 2. Pulping of these two fruits are done manually (no automation).								

10. Market/Use of Pulp produced	In-house use for the production of value added consumer products		-						
	Local Market (low end)		✓						
	Export market		--						
<b>Unit's Information:</b>									
11. List of Main Machinery:	<b>Components</b>		<b>Origin</b>						
	Sorting , washing, conveying , mango de-stoning machinery and single stage refiner		Local						
	Pumps and Plate Heat Exchanger of un matching capacities		Imported scrap						
	Cooking pans for apple and guava boiling installed in the open area		Imported scrap						
12. Capacity gaps in processing equipment:	--								
13. Modifications made in the original plant:	The PHE is originally for milk Pasteurization								
14. Technical gaps in processing equipment:	Un -matching capacities of pump and Plate Heat Exchanger (PHE) originally designed for milk resulting in blockage during pulp pasteurization. Refiner sieve structure is unhygienic.								
15. Country or origin (main plant):	Some machines locally fabricated. Some are assembled by using imported scrap	16. Condition of plant/ equipment:	<table border="1"> <tr><td>Good</td><td><input type="checkbox"/></td></tr> <tr><td>Fair</td><td><input type="checkbox"/></td></tr> <tr><td>Poor</td><td><input checked="" type="checkbox"/></td></tr> </table>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Poor	<input checked="" type="checkbox"/>
Good	<input type="checkbox"/>								
Fair	<input type="checkbox"/>								
Poor	<input checked="" type="checkbox"/>								
		17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td><input type="checkbox"/></td></tr> <tr><td>Fair</td><td><input type="checkbox"/></td></tr> <tr><td>Poor</td><td><input checked="" type="checkbox"/></td></tr> </table>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Poor	<input checked="" type="checkbox"/>
Good	<input type="checkbox"/>								
Fair	<input type="checkbox"/>								
Poor	<input checked="" type="checkbox"/>								
18. Processing/Preservation/ packaging technologies being used and their capacities:	Aseptic	--							
	Freezing	--							
	Chemical Preservation	✓							
	Canning	--							
19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	--	0---5 C						
	Condition	--	fair						
	Capacity	--	4000 tons product						
		--							

20. Pulp/Concentrate produced (1 years):	<b>Product</b>		<b>21. Losses/wastages (1 years):</b>								
	Pulp	3000 tons In 2011	10 tons pulp spoiled during the very first year of production. Wastages of small quantities in the subsequent years.								
22. Repair/maintenance Procedures:		<table border="1"> <tr> <td>Company engineering staff</td> <td>✓</td> </tr> <tr> <td>Service providers</td> <td>-</td> </tr> <tr> <td>Other</td> <td>-</td> </tr> </table>		Company engineering staff	✓	Service providers	-	Other	-		
Company engineering staff	✓										
Service providers	-										
Other	-										
<b>Quality Control</b>											
23. Lab Testing and analysis being carried out:	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>								
			Acidity and pH testing facility								
	Brix		Micro biological lab								
24. Specific quality issues	Black specs in the end product		25. Quality Certifications obtained:	None							
26. Details of solid waste disposal and effluent treatment arrangements:		Sold to nurseries and brick kilns No effluent treatment									
<b>Human Resource Information:</b>											
27. Staffing Details:	Permanent	3	28. Qualifications / Experience of Managerial and Supervisory Staff:	Unqualified and non professional manager							
	Seasonal	45		Unskilled production and operational staff.							
	Contractual	--									
29. Skills gaps and need for training or technical assistance:	No basic knowledge or awareness fruit processing.										
	On-job- training for GMP. Technical assistance for redesigning the unit needed.										
<b>Commercial Information</b>											
30. Factors hampering the fruit /vegetable pulping business:	<b>Issue</b>										
	Financial	--									
	Raw Material	--									
	Marketing	--									
	Packaging	--									

31. Procurement of fruit / vegetables:	X	Direct from farms	32. Import of raw materials	Items	none
	X	Through contractor		Issues	--
	x	From whole sale market			
	--	Other			
33. Reasons if fruit processing business has been closed:	Operative		34. Role played by the fruit processors association if it exists :	None	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:	None				
36. Company's future Business plan:	None				
37. Company's need for support:	Area of support		Company's desired area		
	Processing Capacity enhancement		Addition of proper Pasteurizer 2-stage refiner		
	Training		Training on fruit processing		
	Lab up gradation		✓		
	Technical assistance				
	Local market linkage				
	Export market linkage				
	Quality Certifications		HACCP		
38. Management Capacity and Willingness for capital Investment for BMR:	None				
<b>Participants Information</b>					
39. Participants of the meeting:	<b>Unit Management</b>		<b>FIRM Team</b>		
	Ch. Muhammad Rafique		Dr. Waqar Ahmed		
	( proprietor)		Tanveer-ul-Islam		

## 7.7.1.6 Citro Pak (Private) Ltd.

**QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units**

Date of Study:	Feb. 27, 2012	Form Code:	Punjab-4
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**Company Information**

1. Unit Name:	Citro Pak (Private) Ltd.	2. Year of Establishment:	1988
3. Address:	16 Km-Sargodha-Lahore Road, Sargodha		
4. Tel:	0483-881 227	5. Fax:	0483-881 201
6. E-mail:	--		
7. Contact Person(s):	Name	Position	Phone/Cell No
	Sardar Zulfiqar Hayat	Director Operations	--

**Product(s) Information:**

8. Type of Manufacturing:	Industrial Product	Fruit pulps, Kinnow and apple juice concentrates
	Consumer Product	-
	Others	Freezing storage services

**9. Present Capacity for Fruits/Vegetables Pulping:**

Sr. no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	15	15	15	15	15		Pulp
2	Citrus*	70	70	70	70	70	30, tons	65 brix Juice concentrate
3	Guava	10	10	10	10	10		Pulp
4	Peach	10	10	10	10	10		Pulp
5	Apple	10	10	10	10	10		Juice concentrate/pulp
6	Strawberry	10	10	10	10	10		Pulp
7	Falsa	10	10	10	10	10		Pulp
8	Jaman	-	-	-	-	-		-
9	Cherry	-	-	-	-	-		-
10	Carrot	10	10	10	10	10		Pulp
11	Tomato	10	10	10	10	10		Pulp
12								

Notes: \*Citrus (Kinnow/mandarin) juice extraction with FMC extraction system

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>		-						
	<b>Local Market</b>		✓						
	<b>Export market</b>		✓						
<b>Unit's Information:</b>									
<b>11. List of Main Machinery:</b>	<b>Components</b>		<b>Origin</b>						
	Tropical fruit processing: sorting, brush-washing and conveying equipment. Mango/peach destining, chopping, thermo break, 2-stage refining machines and pasteurizers.		Italy						
	Two kinnow processing lines with FMC extractors, centrifuges, TASTE evaporators, de-acidifier and de-bittering plant		USA						
<b>12. Capacity gaps in processing equipment:</b>	None								
<b>13. Modifications made in the original plant:</b>	None								
<b>14. Technical gaps in processing equipment:</b>	None								
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table>	Good	✓	Fair		Poor	
Good	✓								
Fair									
Poor									
		<b>17. condition of building/processing hall:</b>	<table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table>	Good	✓	Fair		Poor	
Good	✓								
Fair									
Poor									
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic	Aseptic processing/packaging with 5- ton per capacity							
	Freezing	-18 C with 100,000 drums storage capacity							
	Chemical Preservation	Chemical preservation @ 5 ton product/hr							
	Canning								
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-18 C	As per need, compartments of the freezing storage are adjusted at + 5 C 10 C to use these as cold store						
	Condition	Good							
	Capacity	20,000 tons of end product							
<b>20. Pulp/Concentrate produced (3 years):</b>	<b>Product</b>	<b>tons</b>	<b>21. Losses/wastages (3 years):</b>						
	Pulp	Information not shared by the company		Insignificant					

	Concentrate		
<b>22. Repair/maintenance Procedures:</b>		<b>Company's engineering staff</b>	<b>x</b>
		<b>Service providers</b>	-
		<b>Other</b>	-
<b>Quality Control</b>			
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>
	Facility for chemical and microbiological testing		None
<b>24. specific quality issues</b>	None	<b>25. Quality Certifications obtained:</b>	HCCP ISO-22000
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>	Mango peel/stone and citrus peel sold to brick kilns as fuel Treatment of effluent water is done		
<b>Human Resource Information:</b>			
<b>27. Staffing Details:</b>	<b>Permanent</b>	50	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>
	<b>Seasonal</b>	250	
	<b>Contractual</b>		
<b>29. Skills gaps and need for training or technical assistance:</b>	None		
<b>Commercial Information</b>			
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>		
	<b>Financial</b>	--	
	<b>Raw Material</b>	Fruit availability and its prices are the major issues. Increased consumption of fresh fruit within the country has led to price hike of the fruit. B and C grade fruit which was easily available a few years back for processing is now consumed as fresh fruit. This situation has resulted in fruit availability problems. Increased freight charges are also one of the factors in the fruit price increase.	

	<table border="1"> <tr> <td><b>Marketing</b></td> <td>High product cost has made Pakistani pulp less competitive in the international market.</td> </tr> <tr> <td><b>Packaging</b></td> <td></td> </tr> </table>	<b>Marketing</b>	High product cost has made Pakistani pulp less competitive in the international market.	<b>Packaging</b>	
<b>Marketing</b>	High product cost has made Pakistani pulp less competitive in the international market.				
<b>Packaging</b>					
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>	✓	<b>32. Import of raw materials</b>	Items	Aseptic bags
	<b>Through contractor</b>	✓		Issues	None
	<b>From whole sale market</b>	✓			
	<b>Other</b>				
<b>33. Reasons if fruit processing business has been closed:</b>	Operative		<b>34. Role played by the fruit processors association if it exists :</b>	--	
<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>	None				
<b>36. Company's future Business plan:</b>	Not shared by the company				
<b>37. Company's need for support:</b>	<b>Details</b>				
	Processing Capacity enhancement			--	
	Training			None	
	Lab up gradation			None	
	Technical assistance			None	
	Local market linkage			None	
	Export market linkage			None	
	Quality Certifications			None	
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>			--		
<b>Participants Information</b>					
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRM Team</b>		
	Mr. Zufiqar, Director operations		Dr. Waqar Ahmed		
			Tanveer-ul-Islam		

## 7.7.1.7 Haq Farms

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	February 27 <sup>th</sup> 2012	<b>Form Code:</b>	P-11
<b>Company Information</b>			
<b>1. Unit Name:</b>	Haq Farms	<b>2. Year of Establishment:</b>	1988
<b>3. Address:</b>	MB-63, Jouharabad Industrial Area, District. Khusab		
<b>4. Tel:</b>	0454-723606	<b>5. Fax:</b>	+9251-4434089
		<b>6. E-mail:</b>	<a href="mailto:shakil@haqholdings.com">shakil@haqholdings.com</a>
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Mr. Mehmood-ul-Haq	CEO	0300-8293070
	Shakil Ahmed	General Manager	+92300-5012989
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Chemically preserved pulps	
	<b>Consumer Product</b>	Fruit Juices in PET bottles, Ketchup, Jams, etc	
	<b>Others</b>		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

s.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	3	3	3	1.5	1.5		Pulp
2	Citrus	3	3	3	3	3		Juice
3	Guava							
4	Peach	3	3	3	3	3		Pulp
5	Apricot	3	3	3	3	3		Pulp
6	Strawberry							
7	Falsa							
8	Jaman							
9	Cherry							
10	Carrot							
11	Tomato	2	2	2	2	2	400-500 Kg	Tomato Paste
12								

Notes:

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>		-						
	<b>Local Market</b>		-						
	<b>Export market</b>		-						
<b>Unit's Information:</b>									
<b>11. List of Main Machinery:</b>	<b>Components</b>		<b>Origin</b>						
	sorting, washing & conveying line citrus skin oil remover and orange extractor, mango de-stoner (1.5 ton capacity) pitter expeller for peach apricot (3 ton/hr) Thermobreak 3000 pasteurizer tek 1650 kg / hour. sand filter plant for filtration of canal water, the only source of water supplied to the factory		France						
<b>12. Capacity gaps in processing equipment:</b>	Water source for the processing facility is canal water that is simply filtered through sand filter; filtration and quality of water is just unsatisfactory. One mango de-stoner and one refiner is missing from the line Citrus processing capacity is too small and to produce kinnow juice, the concentrator is also missing.								
<b>13. Modifications made in the original plant:</b>	-								
<b>14. Technical gaps in processing equipment:</b>	-								
<b>15. Country or origin (main plant):</b>	France	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor	
Good									
Fair	✓								
Poor									
		<b>17. condition of building/processing hall:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor	
Good									
Fair	✓								
Poor									
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic	-							
	Freezing	-							
	Chemical Preservation	✓							
	Canning	Canning							
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-10 Deg C	5 Deg C						
	Condition	Non operative, condition unknown	Incomplete						
	Capacity	200 tons product	2 Rooms for 500 tons product						
<b>20. Pulp/Concentrate produced (3 years):</b>	<b>Product</b>	<b>tons</b>	<b>21. Losses/wastages (3 years):</b>						
	-	-	-						
			-						
			-						

		-												
<b>22. Repair/maintenance Procedures:</b>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:80%;">Company's engineering staff</td> <td style="width:20%; text-align:center;">✓</td> </tr> <tr> <td>Service providers</td> <td></td> </tr> <tr> <td>Other</td> <td></td> </tr> <tr> <td> </td> <td></td> </tr> </table>	Company's engineering staff	✓	Service providers		Other							
Company's engineering staff	✓													
Service providers														
Other														
<b>Quality Control</b>														
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>	<b>Equipment/instruments gaps</b>												
	none-	Equipment for sugar, acidity, pH, viscosity, water and microbiological testing												
	-													
	-													
-														
<b>24. Quality issues</b>	Facility non operative	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><b>25. Quality Certifications obtained:</b></td> <td style="width:50%; text-align:center;">None</td> </tr> </table>	<b>25. Quality Certifications obtained:</b>	None										
<b>25. Quality Certifications obtained:</b>	None													
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>	-													
<b>Human Resource Information:</b>														
<b>27. Staffing Details:</b>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%;">Permanent</td> <td style="width:10%; text-align:center;">4</td> </tr> <tr> <td>Seasonal</td> <td style="text-align:center;">-</td> </tr> <tr> <td>Contractual</td> <td style="text-align:center;">-</td> </tr> </table>	Permanent	4	Seasonal	-	Contractual	-	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b></td> <td style="width:50%;">                     - GM Mechanical Engineer                      - One experienced mechanic                      -                      -                 </td> </tr> </table>	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>	- GM Mechanical Engineer - One experienced mechanic - -				
Permanent	4													
Seasonal	-													
Contractual	-													
<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>	- GM Mechanical Engineer - One experienced mechanic - -													
<b>29. Skills gaps and need for training or technical assistance:</b>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Technical Training Required for Quality Control</td> <td style="width:50%;"></td> </tr> <tr> <td>Technical Support Required for process &amp; Product standardization</td> <td></td> </tr> <tr> <td> </td> <td></td> </tr> <tr> <td> </td> <td></td> </tr> </table>		Technical Training Required for Quality Control		Technical Support Required for process & Product standardization									
Technical Training Required for Quality Control														
Technical Support Required for process & Product standardization														
<b>Commercial Information</b>														
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%;"><b>Issue</b></td> <td style="width:80%;"></td> </tr> <tr> <td>Financial</td> <td style="text-align:center;">✓</td> </tr> <tr> <td>Raw Material</td> <td></td> </tr> <tr> <td>Marketing</td> <td></td> </tr> <tr> <td>Packaging</td> <td></td> </tr> <tr> <td> </td> <td></td> </tr> </table>		<b>Issue</b>		Financial	✓	Raw Material		Marketing		Packaging			
<b>Issue</b>														
Financial	✓													
Raw Material														
Marketing														
Packaging														

31. Procurement of fruit / vegetables:	Direct from farms	-	32. Import of raw materials:	Items	-
	Through contractor	-		Issues	-
	From whole sale market	-			
	Other	-			
33. Reasons if fruit processing business has been closed:	-		34. Role played by the fruit processors association if it exists :	None	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:			NO		
36. Company's future Business plan:		Re-start of Pulp production for Export and Local Market			
37. Company's need for support:	Company's Desired Areas		Details		
	Processing Capacity enhancement		Water treatment plant New de stoner and refiner		
	Training		On fruit processing		
	Lab up gradation				
	Technical assistance				
	Local market linkage				
	Export market linkage				
	Quality Certifications				
38. Management Capacity and Willingness for capital Investment for BMR:		Yes			
<b>Participants Information</b>					
39. Participants of the meeting:	<b>Unit Management</b>		<b>FIRM Team</b>		
	Shakil Ahmed General Manager		Dr. Waqar		
			Tanver-ul-Islam		

## 7.7.1.8 Indus Fruit Products Limited

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>									
<b>Date of Study:</b>			Feb 16, 2012			<b>Form Code:</b>		Punjab-3	
<b>Company Information</b>									
<b>1. Unit Name:</b>		Indus Fruit Products Limited				<b>2. Year of Establishment:</b>		1989	
<b>3. Address:</b>		65 km Lahore- Multan Road, District Kasoor							
<b>4. Tel:</b>		Cell: 0333-420 9584		<b>5. Fax:</b>		--		<b>6. E-mail:</b> --	
<b>7. Contact Person(s):</b>		<b>Name</b>		<b>Position</b>		<b>Phone/Cell No</b>			
		Mr. Shabeer Ghani		Chairman		0300-829 3600			
		Mr. Ahmed Masood		CEO		0333-420 9584			
<b>Product(s) Information:</b>									
<b>8. Type of Manufacturing:</b>		Industrial Products		Fruit /vegetable pulp, tomato puree paste And Kinnow Juice concentrate					
		Consumer products		Fruit juice drinks packed in PET bottles					
		Other							
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>									
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>									
S.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product	
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining			
1	Mango	5	5	5	5	5		Pulp	
2	Citrus	5	5	5	5	5		Juice	
3	Guava	3	3	3	3	3		Pulp	
4	Peach	3	3	3	3	3		Pulp	
5	Apple	2	2	2	2	2		Pulp	
6	Strawberry	3	3	3	3	3		Pulp	
7	Falsa	3	3	3	3	3		Pulp	
8	Jaman	-	-	-	-	-	-	-	
9	Cherry	3	3	3	3	3		Pulp	
10	Carrot	2						Pulp	
11	Tomato	5	5	5	5	5	2500 kg/hr	puree	
12									
<b>Notes:</b>									

<b>10. market/ use of the pulp produced</b>	In house consumption for the production of juice drinks					✓	
	Local market					✓	
	Export					--	
<b>Unit's Information:</b>							
<b>11. List of Main Machinery:</b>	<b>Components</b>				<b>Origin</b>		
	Fruit sorting, brushing, washing and conveying system, orange peel pricking unit for oil removing				Italy		
	Mango de-stoner, citrus extractor				Italy		
	Chopper for apple/guava/tomato & strawberries				Italy		
	Continuous cooker (Thermo break) and single stage refiner				Italy		
	Evaporator( Lova)				Italy		
Aseptic processing/packageing system				Italy			
<b>12. Capacity gaps in processing equipment:</b>	Freezing room for frozen products 2- stage refiner						
<b>13. Modifications made in the original plant:</b>	Mango de-stoner is modified only at the time of peach processing						
<b>14. Technical gaps in processing equipment:</b>	Single- stage refiner needs to be replaced by two-stage refiner. It will improve yield and quality of pulps						
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/ equipment:</b>	Good	✓	<b>17. condition of building/processing hall:</b>	Good	
			Fair			Fair	✓
			Poor			Poor	
<b>18. Processing/Preservation/ packaging technologies being used and their capacities:</b>	Aseptic	Aseptic processing & packaging of Pulp @2 tons /hr					
	Freezing	--					
	Chemical Preservation	3 tons/hr product					
	Canning	--					
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>		<b>Chilling Store</b>			
	Temperature	--		10-15 C			
	Condition	--		Fair			
	Capacity	--		Storage of 1000s tons of product			

20. Pulp/Concentrate produced (1 years):	<b>Product</b>		<b>21. Losses/wastages (1 years):</b>		
	Pulp	1500 tons	Negligible		
	Concentrate	500 tons			
22. Repair/maintenance Procedures:			Company engineering staff	✓	
			Service providers	--	
			Other	--	
<b>Quality Control</b>					
23. Lab Testing and analysis being carried out:	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>		
	Brix, acidity, pH value		Microbiological Lab		
24. Specific quality issues:	--		25. Quality Certifications obtained:	none	
26. Details of solid waste disposal and effluent treatment arrangements:		<ul style="list-style-type: none"> <li>Peel /stone and other processing waste sold to brick kilns</li> <li>No effluent treatment</li> </ul>			
<b>Human Resource Information:</b>					
287 Staffing Details:	Permanent	40	28. Qualifications / Experience of Managerial and Supervisory Staff:	one Food Technologist with 5-year experience	
	Seasonal	200		5-10 year experienced supervisory staff	
	Female workers	48			
29. Skills gaps and need for training or technical assistance:	Hygiene conditions need to be improved				
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	<b>Issue</b>				
	Financial	✓			
	Raw Material	--			
	Marketing	--			
	Packaging	--			
31. Procurement of fruit / vegetables:	Direct from farms		32. Imported raw materials:	Types	Aseptic Bags
	Through contractors	✓		Issues	Increasing costs
	From whole sale market	✓			
	Other				

33. Reasons if fruit processing business has been closed:	Operative	34. Role played by the fruit processors association if it exists :	Insignificant																	
35. Any assistance from/collaboration with any donor, government or private agency during the last 3 years:	None																			
36. Company's future Business plan:	Marketing of Frozen pulp																			
37. Company's need for support:		<table border="1"> <thead> <tr> <th>Area of support</th> <th>Company's desired area</th> </tr> </thead> <tbody> <tr> <td>Processing Capacity enhancement</td> <td>Replacing single stage refiner by 2- stage Refiner  Freezing facility to store 1,000 tons of pulp</td> </tr> <tr> <td>Training &amp; Technical assistance</td> <td>Better hygiene at processing facility and Better processing of fruit for pulp production</td> </tr> <tr> <td>Lab up gradation</td> <td>--</td> </tr> <tr> <td>Local market linkage</td> <td>--</td> </tr> <tr> <td>Export market linkage</td> <td>--</td> </tr> <tr> <td>Quality Certifications</td> <td>ISO-22000</td> </tr> <tr> <td>Aseptic Processing Facility</td> <td>--</td> </tr> </tbody> </table>	Area of support	Company's desired area	Processing Capacity enhancement	Replacing single stage refiner by 2- stage Refiner  Freezing facility to store 1,000 tons of pulp	Training & Technical assistance	Better hygiene at processing facility and Better processing of fruit for pulp production	Lab up gradation	--	Local market linkage	--	Export market linkage	--	Quality Certifications	ISO-22000	Aseptic Processing Facility	--		
		Area of support	Company's desired area																	
		Processing Capacity enhancement	Replacing single stage refiner by 2- stage Refiner  Freezing facility to store 1,000 tons of pulp																	
		Training & Technical assistance	Better hygiene at processing facility and Better processing of fruit for pulp production																	
		Lab up gradation	--																	
		Local market linkage	--																	
		Export market linkage	--																	
		Quality Certifications	ISO-22000																	
Aseptic Processing Facility	--																			
38. Management Capacity and willingness for capital Investment for BMR:	Willingness expressed.																			
<b>Participants Information</b>																				
39. Participants of the meeting:	<table border="1"> <thead> <tr> <th>Unit Management</th> <th>FIRM Team</th> </tr> </thead> <tbody> <tr> <td>Ahmed Masood CEO</td> <td>Tanveer-ul-Islam</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>			Unit Management	FIRM Team	Ahmed Masood CEO	Tanveer-ul-Islam													
Unit Management	FIRM Team																			
Ahmed Masood CEO	Tanveer-ul-Islam																			

## 7.7.1.9 Mitchell's Fruit Farms Ltd.

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>					
<b>Date of Study:</b>		16 Feb, 2012		<b>Form Code:</b> Punjab-8	
<b>Company Information</b>					
<b>1. Unit Name:</b>		Mitchell's Fruit Farms limited		<b>2. Year of Establishment:</b> 1933	
<b>3. Address:</b>		Renala Khurd, District Okara			
<b>4. Tel:</b>		044-262 2098 044- 263 5907-8	<b>5. Fax:</b> 044-262 1416	<b>6. E-mail:</b> <a href="mailto:ho@mitchells.com.pk">ho@mitchells.com.pk</a>	
<b>7. Contact Person(s):</b>		<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>	
		Mr. M. Ramzan BhattiS	Factory Manager	0303-4440 308	
<b>Product(s) Information:</b>					
<b>8. Type of Manufacturing:</b>		<b>Industrial Product</b>	Fruit/vegetable pulp/concentrate.		
		<b>Consumer product</b>	Juices, squashes, tomato ketchup, jams, marmalade, pickles etc.		
		<b>Others</b>	Confectionary, canned fruit and vegetables, canned ready to take meals, canned sweet corn.		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>					

s.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	--						
2	Citrus	3	3	3	3	3		
3	Guava	2	2	2	2	2		
4	Peach	--						
5	Apple	3	3	3	3	3		
6	Strawberry	2	2	2	2	2		
7	Falsa	2	2	2	2	2		
8	Jaman	--						
9	Cherry	--	-	-	-	-		
10	Carrot	3	3	3	3	3		
11	Tomato	8	8	8	8	8		
12								

Notes:

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer product</b>	✓
	<b>Local Market</b>	--
	<b>Export market</b>	--

**Unit's Information:**

<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
		Fruit/vegetable sorting, washing, conveying
	Chopper, thermo break and 2-stage Refiner	Local
	Pasteurizer	Imported

<b>12. Capacity gaps in processing equipment:</b>	The fruits/vegetable processing facility lacks mango pulping
---	--

13. Modifications made in the original plant:	--																
14. Technical gaps in processing equipment:	The fruit Processing plant needs to be overhauled and modernized.																
15. Country or origin (main plant):	Local	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor		17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor	
Good																	
Fair	✓																
Poor																	
Good																	
Fair	✓																
Poor																	
18. Processing/Preservation/packaging technologies being used and their capacities:	Aseptic	Aseptic processing/packaging with 2-ton /hr capacity															
	Freezing	--															
	Chemical Preservation	✓															
	Canning	✓															
19. Product Storage Facility:	Parameters	Freezing Store	Chilling Store														
	Temperature	--	--														
	Condition	--	--														
	Capacity	--	--														
20. Pulp/Concentrate produced (1years):	Product	tons	21. Losses/wastages (1years):														
	Tomato puree (15 brix)	750	Insignificant														
	Apple pulp	400															
22. Repair/maintenance Procedures:	Company's engineering staff		✓														
	Other Service providers		-														
<b>Quality Control</b>																	
23. Lab Testing and analysis being carried out:	Testing facility available		Equipment/instruments gaps														
	Brix, Acidity, pH, viscosity Microbiological analysis		--														
24 Specific quality issues:	Pulp separation in squashes	25. Quality Certifications obtained:	Halal ISO-9000														
26. Details of solid waste disposal and effluent treatment arrangements:	All fruit /vegetable waste is converted into manure and used in company owned fruit farms. No effluent treatment																

Human Resource Information:						
27. Staffing Details:	Permanent	275 for entire factory operations	28. Qualifications / Experience of Managerial and Supervisory Staff:	A skilled team of professionals including Food Technologists, Chemists and Chemical Technologists having up to 25 years relevant experience and skilled supervisory staff.		
	Seasonal	500				
	woman workers	75				
29. Skills gaps and need for training or technical assistance:		To redesign the existing fruit/vegetable processing plant for enhancing fruit processing capacity by adding mango pulping equipment.				
		Training for GMP on mango pulping				
Commercial Information						
30. Factors hampering the fruit /vegetable pulping business:	Issue					
	Financial	--				
	Raw Material	--				
	Marketing	--				
	Packaging	--				
31. Procurement of fruit / vegetables:	Direct from farms		✓	32. Import of raw materials:	Items	Tomato paste.
	Through contractor		✓			Lemon juice concentrates.
	Other From whole sale market		✓		issues	--
33. Reasons if fruit processing business has been closed:	Operative			34. Role played by the fruit processors association if it exists :	Insignificant	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:		None				
36. Company's future Business plan:	To modernize existing fruit/vegetable pulping plant including capacity enhancement for mango processing. To enhance capacity of confectionary plant and canning of ready to take meals .					

<b>37. Company's need for support:</b>	<b>Area of support</b>	<b>Company's Desired Area</b>
	Processing Capacity enhancement	Addition of mango pulping equipment  Addition of evaporator for tomato paste
	Training	On-job-training in mango pulping
	Lab up gradation	--
	Technical assistance	Redesigning the present plant to add mango pulping equipment
	Local market linkage	--
	Export market linkage	--
	Quality Certifications	
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Willing to enhance existing fruit/vegetable processing capacity by adding mango pulping equipment. Presently the company out sources about 400 tons mango pulp every year.
<b>Participants Information</b>		
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>	<b>FIRM Team</b>
	Muhaamad Ramzan Bhatti (Factory Manager)	Tanveer-ul-Islam

## 7.7.1.10 SFA Industries (Private) Ltd.

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>									
<b>Date of Study:</b>			Feb 09, 2012			<b>Form Code:</b>		Punjab-6	
<b>Company Information</b>									
<b>1. Unit Name:</b>		SFA Industries (Private) Limited				<b>2. Year of Establishment:</b>		2008	
<b>3. Address:</b>		5-Kassi, Multan Road, Kabirwala, District Khanewal							
<b>4. Tel:</b>		065-2450 267		<b>5. Fax:</b>		065- 245 0467		<b>6. E-mail:</b> <a href="mailto:ashanali@sfa.com">ashanali@sfa.com</a>	
<b>7. Contact Person(s):</b>			<b>Name</b>		<b>Position</b>		<b>Phone/Cell No.</b>		
			Syed Inam Ali		Managing Director		0302-506 6088		
			Syed Ahsan Ali		Director Planning & Development		0312-911 6772		
<b>Product(s) Information:</b>									
<b>8. Type of Manufacturing:</b>		Industrial product		Fruit/ vegetable pulping					
		Consumer product		Production of consumer pack juice drinks					
		Others		Fresh Fruit (Kinnow) processing					
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>									
S.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product	
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining			
1	Mango	3	3	3	3	3		Pulp	
2	Citrus	--							
3	Guava	4	4	4	4	4		Pulp	
4	Peach*	2							
5	Apple	--							
6	Strawberry	2	2	2	2	2		Pulp	
7	Falsa	--							
8	Jaman							Pulp	
9	Cherry	--							
10	Carrot	--							
11	Tomato	2	2	2	2	2		Pulp	
12									
Notes: Peach de stoning is done manually*									

<b>10. Market/use of pulp produced</b>	In-house consumption for the production of value added consumer product		✓						
	Local market		✓						
	Export								
<b>Unit's Information:</b>									
<b>11. List of Main Machinery.</b>	<b>Components</b>		<b>Origin</b>						
	Sorting, washing and conveying line		Local						
	Mango De-stoner, Single stage Refiner		Local						
	Contherm heating equipment ( being used as Pasteurizer)		Sweden						
<b>12. Capacity gaps in processing equipment:</b>	Needs realignment of equipment, improvement of washing system								
<b>13. Modifications made in the original plant:</b>	-								
<b>14. Technical gaps in processing equipment:</b>	Fruit washing line is defective. It is partially made of stainless steel. Fruit processing facility lacks proper pasteurizer. A heating device devoid of proper temperature programming is used. Realignment of the entire processing line is required.								
<b>15. Country or origin (main plant):</b>	Mixed	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr> <td>Good</td> <td></td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td>✓</td> </tr> </table>	Good		Fair		Poor	✓
Good									
Fair									
Poor	✓								
		<b>17. condition of building/processing hall:</b>	<table border="1"> <tr> <td>Good</td> <td></td> </tr> <tr> <td>Fair</td> <td>✓</td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table>	Good		Fair	✓	Poor	
Good									
Fair	✓								
Poor									
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic	Aseptic processing equipment sourced from China with 2 tons pulp processing capacity							
	Freezing	--							
	Preservation	Chemical preservation							
	Canning	--							
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-	5-10 C						
	Condition	-	fair						
	Capacity	-	10,000 drums= 2,000 tons product						
<b>20.Pulp/Concentrate produced (1years):</b>	Pulp	400 tons	<b>21. Losses/wastages (1 years):</b>						
			200 tons in first year of production (2009)						
<b>22. Repair/maintenance Procedures:</b>		Company engineering staff	✓						
		Service providers	-						
		Other	-						

<b>Quality Control</b>						
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>			<b>Equipment/instruments gaps</b>		
	Brix, acidity and pH value			Nil		
				Micro biological lab		
<b>24. Specific quality issues:</b>		Rapid color darkening in mango pulp during storage		<b>25. Quality Certifications obtained:</b>	None	
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Sale for nursery plant raising Sale to brick kilns as fuel No effluent treatment				
<b>Human Resource Information:</b>						
<b>27. Staffing Details:</b>	<b>Permanent</b>	12	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>	One part time Food Technologist and one Chemist		
	<b>Seasonal</b>	70				
	<b>Contractual</b>	--				
<b>29. Skills gaps and need for training or technical assistance:</b>	Process standardization					
	Realignment of the fruit processing line					
<b>Commercial Information</b>						
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>					
	<b>Financial</b>	Pulping business is less profitable as compared to Value added consumer products; juice drinks				
	<b>Raw Material</b>	--				
	<b>Marketing</b>	--				
	<b>Packaging technical</b>	✓				
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>	✓	<b>32. Import of raw materials:</b>	<b>Items</b>	Aseptic bags	
	<b>Through contractor</b>	-		<b>Issues</b>	Quality of bags; 1 week barrier against oxidation	
	<b>From whole sale market</b>	-				
	<b>Other</b>	-				
<b>33. Reasons if fruit processing business has been closed:</b>	Operative		<b>34. Role played by the fruit processors association if it exists :</b>	Insignificant		
<b>35. Any assistance from/collaboration with any donor, government or private agency during the last 3 years:</b>				None		

<b>36. Company's future Business plan:</b>		--
<b>37. Company's need for support:</b>	<b>Area of Support</b>	<b>Company's desired area</b>
	Processing Capacity enhancement	improvement of processing line addition of 2-stage refiner
	Training	Training for GMP
	Lab up gradation	--
	Technical assistance	Realignment of the equipment
	Local market linkage	--
	Export market linkage	--
	Quality Certifications	HACCP
	Aseptic Processing Facility	--
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Willing to invest
<b>Participants Information</b>		
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>	<b>FIRM Team</b>
	CEO	Tanveer-ul-Islam, Consultant
	Director Planning & Development	Muhammad Asif Iqbal, Technical field Officer, FIRMS

## 7.7.1.11 Standard Fruits (Private) Ltd.

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	Feb 19, 2012	<b>Form Code:</b>	Punjab-5
<b>Company Information</b>			
<b>1. Unit Name:</b>	Standard Fruits (Private) Ltd.	<b>2. Year of Establishment:</b>	1987
<b>3. Address:</b>	46-Km Lahore-Multan Road, Deena Nath, Chonia Industrial Area, District Kasur.		
<b>4. Tel:</b>	042-35713690-92	<b>5. Fax:</b>	--
		<b>6. E-mail:</b>	--
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Mr. Zafar Ullah Khan	CEO	0333-4144777
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Products</b>	Fruit/vegetable pulps	
	<b>Consumer Products</b>	Jams, Ketchup and Fruit juices packed in Tetra Pak, glass & PET bottles	
	<b>Others</b>	--	
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

Sr.#	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	5	5	5	5	5		Pulp
2	Citrus	5	5	5	5	5		Juice
3	Guava	3	3	3	3	3		3
4	Peach	--						--
5	Apple	2	2	2	2	2		--
6	Strawberry	3	3	3	3	3		2
7	Falsa	2	2	2	2	2		3
8	Jaman	--						--
9	Cherry	--						--
10	Carrot	3	3	3	3	3		3
11	Tomato	3	3	3	3	3	400 kg/hr	3
12								

Notes:

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>	✓
	<b>Local Market</b>	--
	<b>Export market</b>	--

<b>Unit's Information:</b>			
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>	
	Fruit sorting, washing and conveying system, orange peel pricking unit for oil removing,	Italy	
	Mango de-stoner, citrus extractor	Italy	
	Chopper for apple/guava/tomato &strawberries	Italy	
	Continuous cooker(Thermo break) and single stage refiner	Italy	
	Bottling line for glass and PET bottle juice filling		
Vacuum kettle and filling/packing system for the production of jam, Ketchup etc	Italy		

12. Capacity gaps in processing equipment:	Aseptic system 2-ton pulp processing/packaging capacity, 2- stage Refining																
13. Modifications made in the original plant:	None																
14. Technical gaps in processing equipment:	Major repairs/overhauling required																
15. Country or origin (main plant):	Italy	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor		17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor	
Good																	
Fair	✓																
Poor																	
Good																	
Fair	✓																
Poor																	
18. Processing/Preservation/packaging technologies being used and their capacities:	Aseptic	--															
	Freezing	--															
	Chemical Preservation	Pulp - 3 tons/hr															
	Canning	--															
19. Product Storage Facility:	Parameters		Freezing Store	Chilling Store													
	Temperature		--	+ 5 C													
	Condition		--	Fair													
	Capacity		--	500 tons product													
20. Pulp/Concentrate produced (1 years):	Product		21. Losses/wastages (1years):														
	Pulp																
	Concentrate	--	--														
22. Repair/maintenance Procedures:	Company engineering staff			✓													
	Service providers			--													
	Other			--													
Quality Control																	
23. Lab Testing and analysis being carried out	Testing facility available			Equipment/instruments gaps													
	Brix, Acidity and pH			Microbiology Lab													
24. Specific quality issues:	None		25. Quality Certifications obtained:	None													

<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Disposed to brick kilns as fuel No water effluent system	
<b>Human Resource Information:</b>			
<b>27. Staffing Details:</b>	<b>Permanent</b>	8	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>
	<b>Seasonal</b>	--	
	<b>Contractual</b>	--	
No managerial or supervisory staff for pulping unit			
<b>29. Skills gaps and need for training or technical assistance:</b>		Need to hire technical/skilled staff	
<b>Commercial Information</b>			
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>		
	<b>Financial</b>	X	
	<b>Raw Material</b>	--	
	<b>Marketing</b>	--	
	<b>Packaging</b>	--	
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>	-	<b>32. Import of raw materials:</b>
	<b>Through contractors</b>	-	
	<b>From whole sale market</b>	-	
	<b>Other</b>	-	
		<b>Types</b>	--
		<b>Issues</b>	--
<b>33. Reasons if fruit processing business has been closed</b>	Pulping business closed due to Financial Constraints		<b>34. Role played by the fruit processors association if it exists :</b>
		Insignificant	
<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>		None	
<b>36. Company's future Business plan:</b>		None	
<b>37. Company's need for support:</b>	<b>Area of support</b>	<b>Company's desired area</b>	
	Processing Capacity enhancement	-	
	Training	-	
	Lab up gradation	-	
	Technical assistance	-	
	Local market linkage	-	
	Export market linkage	-	
	Quality Certifications	-	

	-		-	
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Have closed fruit processing business		
<b>Participants Information</b>				
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRM Team</b>	
	Zafar Ullah Khan (CEO)		Tanveer –ul-Islam, Consultant	

## 7.7.1.12 Noor Food Industries

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>									
<b>Date of Study:</b>			Feb 28, 2012			<b>Form Code:</b>			Punjab-12
<b>Company Information</b>									
<b>1. Unit Name:</b>		Noor Food Industry			<b>2. Year of Establishment:</b>		2001		
<b>3. Address:</b>		Noor Food Industries, Rehmania Road, Near Ayoub Research Institute, Faisalabad							
<b>4. Tel:</b>		0300-9652027		<b>5. Fax:</b>		-		<b>6. E-mail:</b>	<a href="mailto:fsd_noorfood1@hotmail.com">fsd_noorfood1@hotmail.com</a>
<b>7. Contact Person(s):</b>		<b>Name</b>		<b>Position</b>		<b>Phone/Cell No</b>			
		Mr. Anwar Ahmed		Proprietor		0300-9652027			
<b>Product(s) Information:</b>									
<b>8. Type of Manufacturing:</b>		<b>Industrial Product</b>		Fruit/vegetable pulp and Tomato paste					
		<b>Consumer Product</b>		--					
		<b>Others</b>							
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>									
Sr.#	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product	
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining			
1	Mango	8	8	8	8	8		Pulp	
2	Citrus	--						--	
3	Guava	5	5	5	5	5		Pulp	
4	Peach*	5	5	5	5	5		--	
5	Apple	2	2	2	2	2		Pulp	
6	Strawberry	-3	3	3	3	3		--	
7	Falsa	--2	2	2	2	2		--	
8	Jaman	--						--	
9	Cherry	--						--	
10	Carrot								
11	Tomato*	5	5	5	5	5	1500 Kg	Paste (24 brix)	
Notes: Peach:* De-stoning of peach is done manually. Tomato*: Tomato processing capacity of the plant is 5 ton /hr, however, due to lower evaporator capacity , the plant is utilized around 2 ton									

10. Market/Use of Pulp produced :	<b>In-house use for the production of value added consumer products</b>		-						
	<b>Local Market</b>		✓						
	<b>Export Market</b>		-						
<b>Unit's Information:</b>									
11. List of Main Machinery:	<b>Components</b>		<b>Origin</b>						
	Sorting, washing and conveying line		Italy						
	Mango De-stoner, chopper, Thermo break (continuous cooker), Refiner		Italy and Pakistan						
	Continuous evaporator		USA						
12. Capacity gaps in processing equipment:	Capacity of tomato pulping equipment is 5 tons/, due to lower evaporation capacity tomato line is utilized @ 2 ton/hr. An evaporator of 4000 kg /hr capacity can fill the gap. Pulp is preserved by chemical preservatives. Addition of aseptic processing equipment will enable to produce aseptic product.								
13. Modifications made in the original plant:	Plant has been assembled from scrap material and old machinery.								
14. Technical gaps in processing equipment:	None								
15. Country or origin (main plant):	Italy	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>-✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good	-	Fair	-✓	Poor	
			Good	-					
			Fair	-✓					
Poor									
17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>-</td></tr> <tr><td>Poor</td><td>✓</td></tr> </table>	Good	-	Fair	-	Poor	✓		
	Good	-							
	Fair	-							
Poor	✓								
18. Processing/Preservation/ packaging technologies being used and their capacities:	Aseptic								
	Freezing	-							
	Chemical Preservation	✓							
	Canning	-							
19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>						
	Temperature	-	-						
	Condition	-	-						
	Capacity	-	-						
20. Pulp/Concentrate produced (1 years):	<b>Product</b>	<b>tons</b>	21. Losses/wastages (1 years):						
	Pulp	4400							
	Concentrate	--							

22. Repair/Maintenance Procedures:	Company engineering staff		✓
	Service providers		--
	Other		--
<b>Quality Control</b>			
23. Lab Testing and analysis being carried out:	Testing facility available		Equipment/instruments gaps
	Brix, Acidity measuring		pH meter
			Microbiological Lab
24. Specific quality issues:	None	25. Quality Certifications obtained:	None

26. Details of solid waste disposal and effluent treatment arrangements:	Solid waste (stone and peel) is sold to brick kilns as fuel and also to nurseries for plant growth. Effluent treatment is not carried out.
--	--

<b>Human Resource Information:</b>			
27. Staffing Details:	Permanent	22	28. Qualifications / Experience of Managerial and Supervisory Staff:
	Seasonal	100	
	Contractual	--	
		Non qualified	
		Supervisory staff with poor skills	

29. Skill gaps and need for training or technical assistance:	Despite skill gaps and poor performance, the management is not desirous of any training; satisfied with whatever they are doing.
---	--

<b>Commercial Information</b>			
30. Factors hampering the fruit /vegetable pulping business:	Issue		
	Financial	--	
	Raw Material	-	
	Marketing	-	
	Packaging	-	

31. Procurement of fruit / vegetables:	Direct from farms	✓	32. Imported raw materials:	Types	-
	Through contractor	✓		issues	-
	From whole sale market	✓			
	Other	--			

33.Reasons if fruit processing business has been closed:	operative	34. Role played by the fruit processors association if it exists :	None
--	-----------	--	------

<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>		None	
<b>36. Company's future Business plan:</b>		Aseptic processing and tomato paste production	
<b>37. Company's need for support:</b>	<b>Area of support</b>		<b>Desired support</b>
	Processing Capacity enhancement		Evaporator for tomato paste production Aseptic processing equipment for pulps
	Training		--
	Lab up-gradation		--
	Technical assistance		--
	Local market linkage		--
	Export market linkage		
	Quality Certifications		
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Not willing to invest	
<b>Participants Information</b>			
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRM Team</b>
	Mr. Anwar Ahmed		Dr, Waqar ahmed
			Tanveer-ul-Islam, Consultant

## 7.7.1.13 Zaheer Cold Store &amp; Pulping Unit

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	Feb 9, 2012	<b>Form Code:</b>	Punjab-13
<b>Company Information</b>			
<b>1. Unit Name:</b>	Zaheer Cold Store and pulping Unit	<b>2. Year of Establishment:</b>	2010
<b>3. Address:</b>	Zaheer Cold Store, Lahore Khenawal Road, Khanewal		
<b>4. Tel:</b>	0300-8731950	<b>5. Fax:</b>	-
		<b>6. E-mail:</b>	-
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Sh Muhammad Akmal	Proprietor	0300-8731950
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Mango pulp-	
	<b>Consumer Product</b>	-	
	<b>Others</b>		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

s.no	Fruit /Vegetable	Tonnes of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	3	3	3	3	3		Pulp
2	Citrus							
3	Guava							
4	Peach							
5	Apple							
6	Strawberry							
7	Falsa							
8	Jaman							
9	Cherry							
10	Carrot							
11	Tomato							
12								

Notes:

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>	
	<b>Local Market</b>	✓
	<b>Export market</b>	
<b>Unit's Information:</b>		
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
	Conveyor, washer, de-stoner and refiner	Local
	Heat exchanger	scrap material
<b>12. Capacity gaps in processing equipment:</b>	Mango pulping unit is composed of some condemn local machines, and some are assembled by using scrap materials. It has nothing to do with food processing.	
<b>13. Modifications made in the original plant:</b>	-	

<b>14. Technical gaps in processing equipment:</b>	<ul style="list-style-type: none"> <li>Used/Scrapped Plate Heat Exchanger being used for pulp pasteurization.</li> <li>Pulp Refiner is made up of non Food- grade material. Food safety aspect has been criminally ignored.</li> </ul>																
<b>15. Country or origin (main plant):</b>	<b>Local</b>	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>-</td></tr> <tr><td>Poor</td><td>✓</td></tr> </table>	Good	-	Fair	-	Poor	✓	<b>17. condition of building/processing hall:</b>	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>-</td></tr> <tr><td>Poor</td><td>✓</td></tr> </table>	Good	-	Fair	-	Poor	✓
Good	-																
Fair	-																
Poor	✓																
Good	-																
Fair	-																
Poor	✓																
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic	-															
	Freezing	-															
	Chemical Preservation	✓															
	Canning																
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>														
	Temperature	-	Mango pulp was stored at ambient temperature. Huge cold storage facility is for fresh fruits.														
	Condition	-															
	Capacity	-															
	-																
<b>20. Pulp/Concentrate produced (1 years):</b>	<b>Product</b>		<b>21. Losses/wastages (1years)</b>														
	Pulp	40 tons	40 tons														
	Concentrate																
<b>22. Repair/maintenance Procedures:</b>		<b>Company's engineering staff</b>		-													
		<b>Service providers</b>		-													
		<b>Other</b>		-													
<b>Quality Control</b>																	
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>														
	None																
<b>24. specific quality problem</b>	100% Spoilage	<b>25. Quality Certifications obtained:</b>	None														
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>	-																
<b>Human Resource Information:-</b>																	

27. Staffing Details:	Permanent	-	28. Qualifications / Experience of Managerial and Supervisory Staff:	-	
	Seasonal	-		-	
	Ladies workers	-		-	
29. Skills gaps and need for training or technical assistance:		No one has been employed for the pulping unit.			
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	Issue				
	Financial	--			
	Raw Material	--			
	Marketing	--			
	Packaging	-			
31. Procurement of fruit / vegetables:	Direct from farms	-	32. Import of raw material	Items	--
	Through contractor	✓		Issues	--
	From whole sale market	✓			
	Other	-			
33. Reasons if fruit processing business has been closed:	Management issues		34. Role played by the fruit processors association if it exists :	None	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:	None				
36. company's Business plan:	future	-			
37. Company's need for support:	Area of support	Company's desire for support			
	Processing Capacity enhancement				
	Training				
	Lab up gradation				
	Technical assistance				
	Local market linkage				
Export market linkage					

		Quality Certifications										
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Not willing to invest										
<b>Participants Information</b>												
<b>39. Participants of the meeting:</b>	<table border="1"> <thead> <tr> <th>Unit Management</th> <th>FIRM Team</th> </tr> </thead> <tbody> <tr> <td>Sh. Muhammad Akmal ( Proprietor)</td> <td>Tanveer-ul-Islam</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>				Unit Management	FIRM Team	Sh. Muhammad Akmal ( Proprietor)	Tanveer-ul-Islam				
Unit Management	FIRM Team											
Sh. Muhammad Akmal ( Proprietor)	Tanveer-ul-Islam											

## 7.7.2 Pulping Units in Sindh

### 7.7.2.1 Al- Raheem Agro Processing Company

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>					
<b>Date of Study:</b>				<b>Form Code:</b>	Sindh -3
<b>Company Information</b>					
<b>1. Unit Name:</b>	Al- Raheem Agro Processing Company			<b>2. Year of Establishment:</b>	1995
<b>3. Address:</b>	Al Raheem Agro Processing Company,F/276, S.I.T.E. KARACHI				
<b>4. Tel:</b>	021-32574563 021-32580303	<b>5. Fax:</b>	021-32580405	<b>6. E-mail:</b>	<a href="mailto:Aliqraprinters@yahoo.com">Aliqraprinters@yahoo.com</a>
<b>7. Contact Person(s):</b>	<b>Name</b>		<b>Position</b>		<b>Phone/Cell No</b>
	M. Munaf Kapadia		Director		0300-9801774
<b>Product(s) Information:</b>					
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit/ vegetable pulps			
	<b>Consumer Product</b>	-			
	<b>Others</b>	-			
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>					

s.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	2	2	2	2	2		pulp
2	Citrus							
3	Guava	1	2	2	1	1		Pulp
4	Peach							-
5	Apple	1	2	2	1	1		Pulp
6	Strawberry							-
7	Falsa							-
8	Jaman							-
9	Cherry							-
10	Carrot							
11	Tomato	1.5	2	2	1.5	1.5	1200 kg/hr	Puree 3-fold
12								

Notes:

<b>10. Market/Use of The Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>	-
	<b>Local Market</b>	✓
	<b>Export market</b>	
<b>Unit's Information:</b>		
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
	Sorting conveyor, rotary washer, cooking kettles, Mango de-stoner, 2-stage refiner, jacketed tank for cooling	Local
<b>12. Capacity gaps in processing equipment:</b>	Pasteurizer for mango pulp does not exist. Machinery is in poor condition; needs overhauling	
<b>13. Modifications made in the original plant:</b>	-	

<b>14. Technical gaps in processing equipment:</b>	New pasteurizer for mango pulp is required Overhauling of processing line																		
<b>15. Country or origin (main plant):</b>	Local	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td></td></tr> <tr><td>poor</td><td>✓</td></tr> </table>	Good		Fair		poor	✓	<b>17. condition of building/processing hall:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td></td></tr> <tr><td>poor</td><td>✓</td></tr> </table>	Good		Fair		poor	✓		
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<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic Freezing Chemical Preservation ✓ Canning																		
<b>19. Product Storage Facility:</b>	<table border="1"> <thead> <tr> <th>Parameters</th> <th>Freezing Store</th> <th>Chilling Store</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>-10 C</td> <td>0-5 C</td> </tr> <tr> <td>Condition</td> <td>Good</td> <td>Good</td> </tr> <tr> <td>Capacity</td> <td>80 tons Product storage</td> <td>400 tons product Storage</td> </tr> </tbody> </table>	Parameters	Freezing Store	Chilling Store	Temperature	-10 C	0-5 C	Condition	Good	Good	Capacity	80 tons Product storage	400 tons product Storage						
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Temperature	-10 C	0-5 C																	
Condition	Good	Good																	
Capacity	80 tons Product storage	400 tons product Storage																	
<b>20. Pulp/Concentrate produced (1 years):</b>	<table border="1"> <thead> <tr> <th>Product</th> <th></th> </tr> </thead> <tbody> <tr> <td>Pulp</td> <td>1100 tons</td> </tr> <tr> <td>Concentrate</td> <td></td> </tr> </tbody> </table>	Product		Pulp	1100 tons	Concentrate		<b>21. Losses/wastages ( years):</b> <table border="1"> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>											
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<b>22. Repair/maintenance Procedures:</b>		<table border="1"> <tr> <td>Company's engineering staff</td> <td>✓</td> </tr> <tr> <td>Service providers</td> <td></td> </tr> <tr> <td>Other</td> <td></td> </tr> </table>			Company's engineering staff	✓	Service providers		Other										
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Brix, Acidity and pH	-																		
	-																		
	-																		
	-																		
<b>24. Specific quality issues:</b>	Poor life of unpasteurized mango pulp	<b>25. Quality Certifications obtained:</b>	None																

<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Thrown in open area away from the factory No effluent treatment system	
<b>Human Resource Information:</b>			
<b>27. Staffing Details:</b>	<b>Permanent</b>	9	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>
	<b>Seasonal</b>	25	
	<b>Contractual</b>		
		One Food Technologist and two chemists	
<b>29. Skills gaps and need for training or technical assistance:</b>		lack of awareness about plant hygiene, cooling of product Support for plant overhauling	
<b>Commercial Information</b>			
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>		
	<b>Financial</b>		
	<b>Raw Material</b>		
	<b>Marketing</b>		
	<b>Packaging</b>		
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>		<b>32. import of raw materials:</b>
	<b>Through contractor</b>	✓	
	<b>From whole sale market</b>	✓	
	<b>Other</b>		
		items	-
		Issues	-
<b>33. Reasons if fruit processing business has been closed:</b>	-		<b>34. Role played by the fruit processors association if it exists :</b>
		-	
<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>			
		-	
<b>36. Company's future Business plan:</b>	To improve pulp business by improving the conditions and capacity of the plant		
<b>37. Company's need for support:</b>	<b>Area of support</b>	<b>Company's desired area</b>	
	Processing Capacity enhancement	New Pasteurize is required	
	Training	Training on fruit processing and plant hygiene	
	Lab up gradation	-	
	Technical assistance	Over hauling of the plant	
	Local market linkage		
	Export market linkage	-	

		Quality Certifications	HACCP									
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Willing to invest										
<b>Participants Information</b>												
<b>39. Participants of the meeting:</b>	<table border="1"> <thead> <tr> <th>Unit Management</th> <th>FIRM Team</th> </tr> </thead> <tbody> <tr> <td>M. Munaf Kapadia</td> <td>Tanveer-ul-Islam</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Unit Management	FIRM Team	M. Munaf Kapadia	Tanveer-ul-Islam						
Unit Management	FIRM Team											
M. Munaf Kapadia	Tanveer-ul-Islam											

7.7.2.2 *Maaza Pakistan Limited*

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	Jan 24, 2012	<b>Form Code:</b>	Sindh-2
<b>Company Information</b>			
<b>1. Unit Name:</b>	Maaza Pakistan Limited	<b>2. Year of Establishment</b>	2002
<b>3. Address:</b>	Head Office: plot # 19 &20 Sector15, Korangi Industrial Area, Karachi Factory: plot # 701,702 &703 Shah Murad Road, Thatta, Sindh		
<b>4. Tel:</b>	021-3512 1517-8	<b>5. Fax:</b>	
		<b>6. E-mail:</b>	<a href="mailto:info@maaza.com.pk">info@maaza.com.pk</a>
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Yousuf Saleem Akhter	GM-Operations	--
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	Industrial products	Fruit/vegetable pulping	
	Consumer products	Fruit Juice drinks	
	Others	--	
<b>9. Capacity for Fruits/Vegetables Pulping:</b>			

S.no	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	10	10	10	10	10		Pulp
2	Citrus	--						--
3	Guava	5	5	5	5	5		Pulp
4	Peach	5	5	5	5	5		Pulp
5	Apple	--	-	-	-	-		
6	Strawberry	--	-	-	-	-		
7	Falsa	--	-	-	-	-		
8	Jaman	--	-	-	-	-		
9	Cherry	--	-	-	-	-		
10	Carrot	--	-	-	-	-		
11	Tomato	--	-	-	-	-		
12								

Notes: Mango Pulp is preserved using canning technology

<b>10. Market/use of the pulp produced</b>	In house use for the production of value added consumer products	✓
	Local market	--
	Export	--
<b>Unit's Information:</b>		
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
	Sorting, washing, conveying system	Italy
	2 Mango de-stoners	Italy and Pakistan
	2-stage Refiner	Italy
	Contherm ( pre heater)	Sweden
	Plate heat exchanger	NKR, Pakistan
	Canning unit	Italy
<b>12. Capacity gaps in processing equipment:</b>	Less processing/packaging capacity of canning unit. Installation of Aseptic processing /packaging can increase the capacity by 5 times.	

<b>13. Modifications made in the original plant:</b>	Mango de-stoner used as Peach de-stoner as and when required																	
<b>14. Technical gaps in processing equipment:</b>	Darkening of pulp color during long storage. Possible causes include poor quality of tin plate used and improper processing of fruit.																	
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor		<b>17. condition of building/processing hall:</b>	<table border="1"> <tr><td>Good</td><td></td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td></td></tr> </table>	Good		Fair	✓	Poor		
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<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic Freezing Preservation Canning	3.5 Kg Tin Can packaging with 800-1,000 Kg pulp packaging per hr	-- -- -- ✓															
<b>✓19. Product Storage Facility:</b>	<table border="1"> <thead> <tr> <th>Parameters</th> <th>Freezing Store</th> <th>Chilling Store</th> </tr> </thead> <tbody> <tr><td>Temperature</td><td>--</td><td>--</td></tr> <tr><td>Condition</td><td>--</td><td>--</td></tr> <tr><td>Capacity</td><td>--</td><td>--</td></tr> <tr><td></td><td>--</td><td>--</td></tr> </tbody> </table>		Parameters	Freezing Store	Chilling Store	Temperature	--	--	Condition	--	--	Capacity	--	--		--	--	
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<b>20. Pulp/Concentrate produced (1 years):</b>	<table border="1"> <thead> <tr> <th>Product</th> <th>Tons</th> </tr> </thead> <tbody> <tr><td>Pulp</td><td>100 tons</td></tr> <tr><td>Concentrate</td><td>--</td></tr> <tr><td></td><td></td></tr> </tbody> </table>	Product	Tons	Pulp	100 tons	Concentrate	--			<b>21. Losses/wastages (3 years):</b> Short shelf life of the canned pulp								
Product	Tons																	
Pulp	100 tons																	
Concentrate	--																	
<b>22. Repair/maintenance Procedures:</b>		<table border="1"> <tr><td>Company engineering staff</td><td>✓</td></tr> <tr><td>Service providers</td><td>-</td></tr> <tr><td>Other</td><td>-</td></tr> <tr><td></td><td></td></tr> </table>			Company engineering staff	✓	Service providers	-	Other	-								
Company engineering staff	✓																	
Service providers	-																	
Other	-																	
<b>Quality Control</b>																		
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b> Brix, acidity, pH and microbiology		<b>Equipment/instruments gaps</b> None															
<b>24. Specific quality issues:</b>	Color darkening Shortens shelf life of the products	<b>25. Quality Certifications obtained:</b>	None															
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>	Peel, stone etc is thrown in open area of barren land away from the factory. No effluent treatment system																	
<b>Human Resource Information:</b>																		

27. Staffing Details:	Permanent	5	28. Qualifications / Experience of Managerial and Supervisory Staff:	GM: Food Technologist having 15 years experience in food Processing	
	Seasonal	80		Plant manager: Food technologist with 15 years experience in food processing	
	Contractual				
29. Skills gaps and need for training or technical assistance:		Technical audit of the processing plant Training in better processing Process standardization.			
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	Issue	Constraints (access and costs etc)			
	Financial	--			
	Raw Material	--			
	Marketing	--			
	Packaging	Less processing/packaging capacity, needs 5- ton/hr pulp processing/packaging by Aseptic technology			
31. Procurement of fruit / vegetables:	Direct from farms		32. Import of raw materials:	items	Tin plate
	Through contractors	✓		Issues	Poor tin coating
	From whole sale market	✓			
	Other				
33. Reasons if fruit processing business has been closed:	Operative		34. Role played by the fruit processors association if it exists :	Insignificant	
35. Any assistance from/collaboration with any donor, government or private agency during the last 3 years:	100% foreign investment. Owned by Maaza International Company LLC, (MIC), UAE - an affiliate of Al-Omran Group (have registered brand "Maaza").				
36. Company's future Business plan:	Export of <i>Aseptic</i> mango pulp				

<b>37. Company's need for support:</b>	<b>Area of support</b>	<b>Company's desired area</b>
	Processing Capacity enhancement	Aseptic processing facility of 5-6 ton pulp/hr capacity
	Training	On job training
	Lab up gradation	--
	Technical assistance	Technical audit of processing plant and process standardization
	Local market linkage	--
	Export market linkage	--
	Quality Certifications	ISO-22000
<b>38. Management Capacity and Willingness for capital Investment</b>	Willingness expressed for investment to acquire aseptic processing facility	
<b>Participants Information</b>		
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>	<b>FIRM Team</b>
	Yousif Saleem Akhter GM operations	Saleem Ranjani, FIRMs project
		Tanveer-ul-Islam, Consultant

## 7.7.2.3 Pakola Products Limited

<b>Date of Study:</b>	Jan 26, 2012	<b>Form Code:</b>	Sindh-1
<b>Company Information</b>			
<b>1. Unit Name:</b>	Pakola Products Limited	<b>2. Year of Establishment:</b>	1950 (soft drinks), 2009 (Pulping)
<b>3. Address:</b>	Head Office: D-113, S.I.T.E., Manghopeer Road, Karachi-75700		
<b>4. Tel:</b>	021-3256 9801-6	<b>5. Fax:</b>	021-3256 3118-9
		<b>6. E-mail:</b>	pak.beverages@cyber.net.pk
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Mr. Muhammad Sadiq Edhi	G.M-Operations	0300-8270 522
	Shaikh Abdul Nasir	Group G.M- Technical	0301-8273751
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	Industrial products	Fruit/vegetable processing for pulp production	
	Consumer products	Consumer pack juice drinks in Tetra pack, glass and PET bottles	
	Others	Plain and flavored milk	

## 9. Present Capacity for Fruits/Vegetables Pulping:

Sr.#	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	15	15	15	15	15		Pulp
2	Citrus	--	-	-	-	-	-	-
3	Guava	5	5	5	5	5	-	Pulp
4	Peach	--	-	-	-	-	-	-
5	Apple	5	5	5	5	5		pulp
6	Strawberry							
7	Falsa	--	-	-	-	-	-	-
8	Jaman	--	-	-	-	-	-	-
9	Cherry	--	-	-	-	-	-	-
10	Carrot							
11	Tomato	8	8	8	8	8	300 kg	Pulp
12								

Notes:

<b>10. Market/use of the pulp produced</b>	In house use for the production of value added consumer product	✓																
	Local market	-																
	Export	--																
<b>Unit's Information:</b>																		
<b>11. List of Main Machinery:</b>	<b>Components</b>		<b>Origin</b>															
	Fruit sorting, brushing, washing and conveying system		Local															
	Mango de-stoner, 2-stage Refiner		Italy															
	Chopper for apple/guava/tomato & strawberries		Italy															
	Continuous cooker(Thermo break)		Italy															
	Aseptic processing system with 2-Head aseptic filling of 5-ton end product filling capacity		Italy															
Batch type evaporator for tomato pulp concentration With 300 kg /hr evaporation capacity.		Local																
<b>12. Capacity gaps in processing equipment:</b>	<ul style="list-style-type: none"> <li>Lack of a proper continuous <i>Evaporator</i> with 2500-3000 kg evaporation capacity for tomato paste production</li> <li>Apple juice concentrate production equipment</li> </ul>																	
<b>13. Modifications made in the original plant:</b>	Continuous cooker (thermo break) yet to be installed.																	
<b>14. Technical gaps in processing equipment:</b>	Realignment of the equipment; continuous cooker ( <i>Thermo Break</i> ) yet to be connected in the processing line which enhance processing capacities of guava, apple , carrot and tomato pulping. Re-designing and standardization of process is required.																	
<b>15. Country or origin (main plant):</b>	Italy	<table border="1"> <tr> <td><b>16. Condition of plant/ equipment:</b></td> <td> <table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table> </td> </tr> <tr> <td><b>17. condition of building/processing hall:</b></td> <td> <table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table> </td> </tr> </table>	<b>16. Condition of plant/ equipment:</b>	<table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table>	Good	✓	Fair		Poor		<b>17. condition of building/processing hall:</b>	<table border="1"> <tr> <td>Good</td> <td>✓</td> </tr> <tr> <td>Fair</td> <td></td> </tr> <tr> <td>Poor</td> <td></td> </tr> </table>	Good	✓	Fair		Poor	
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<b>18. Processing/Preservation/ packaging technologies being used and their capacities:</b>	<table border="1"> <tr> <td>Aseptic</td> <td>Aseptic processing/packaging ( 5 tons /hr of end product)</td> </tr> <tr> <td>Freezing</td> <td>--</td> </tr> <tr> <td>Preservation</td> <td>Chemical preservation 5 ton/hr</td> </tr> <tr> <td>Canning</td> <td>--</td> </tr> </table>	Aseptic	Aseptic processing/packaging ( 5 tons /hr of end product)	Freezing	--	Preservation	Chemical preservation 5 ton/hr	Canning	--									
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Parameters	Freezing Store	Chilling Store																
Temperature		0-5 C																
Condition		Excellent																
Capacity		12-1300 ton product storage																
<b>20. Pulp/Concentrate produced (1 years):</b>	<table border="1"> <tr> <td>Pulp</td> <td>1870 tons</td> </tr> <tr> <td>Concentrate</td> <td>80 tons</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>	Pulp	1870 tons	Concentrate	80 tons					<b>21. Losses/wastages (3 years):</b> Negligible								
Pulp	1870 tons																	
Concentrate	80 tons																	

<b>22. Repair/maintenance Procedures:</b>		<b>Company engineering staff</b>		✓	
		<b>Service providers</b>		--	
		<b>Other</b>		--	
<b>Quality Control</b>					
<b>23. Lab Testing and analysis being carried out:</b>	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>		
	Brix, acidity and pH				
	Microbiological analysis				
<b>24. Specific quality issues:</b>		Poor quality of tomato concentrate produced in batch type evaporator	<b>25. Quality Certifications obtained:</b>	ISO -22000	
<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Mango peel and stones thrown on open area of barren lands, 10-12 K.M away from the factory. No effluent treatment system			
<b>Human Resource Information:</b>					
<b>27. Staffing Details:</b>	<b>Permanent</b>	15	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>	A strong professional team of Food Technologists, Chemists, experienced engineers and supervisors. The team works for milk processing, consumer pack juice/drink but not fully skilled in fruit processing	
	<b>Seasonal</b>	50			
	<b>Contractual</b>	--			
<b>29. Skills gaps and need for training or technical assistance:</b>		The technical team is very well equipped with skills and knowledge of dairy and juice/drink processing. Training and technical support for process and product standardization for different fruits is very much desired			
<b>Commercial Information</b>					
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>				
	<b>Financial</b>	--			
	<b>Raw Material</b>	--			
	<b>Marketing</b>	--			
	<b>Packaging</b>	--			
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>	✓	<b>32. Import of raw materials</b>	<b>Items</b>	Aseptic bags
	<b>Through contractor</b>	✓		<b>Issues</b>	--
	<b>From whole sale market</b>				
	<b>Other</b>				
<b>33. Reasons if fruit processing business has been closed:</b>	Operative		<b>34. Role played by the fruit processors association if it exists :</b>	Insignificant	

<b>35. Any assistance from/collaboration with any donor, government or private agency during the last 3 years:</b>		None	
<b>36. Company's future Business plan:</b>		Export and local sale of fruit/vegetables pulps, specially mango pulp, tomato paste and apple juice concentrate	
<b>37. Company's need for support:</b>		<b>Areas of support</b>	<b>Company's desire for support</b>
		Processing Capacity Enhancement	<ul style="list-style-type: none"> <li>Apple juice concentrate producing plant</li> <li>Evaporator for tomato paste production.</li> </ul>
		Training/technical assistance	<ul style="list-style-type: none"> <li>Fruit processing</li> <li>Process and product standardization</li> </ul>
		Lab up gradation	--
		Local market linkage	--
		Export market linkage	Export market linkage for mango pulp
		Quality Certifications	--
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Management expressed its willingness to invest for capacity enhancement	
<b>Participants Information</b>			
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRM Team</b>
	Yasin Haji Kassam	CEO	Saleem Ranjhani
	Sadiq Edhi	GM operations	Tanveer-ul-Islam
	Asif Saya	Factory Manager	

## 7.7.2.4 Popular Foods

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	March 14, 2012	<b>Form Code:</b>	Sindh-5
<b>Company Information</b>			
<b>1. Unit Name:</b>	Popular Foods (Pvt) Limited	<b>2. Year of Establishment:</b>	1986
<b>3. Address:</b>	Popular Foods , Tando Adam, Hyderabad, Sindh		
<b>4. Tel:</b>		<b>5. Fax:</b>	021-32426518
		<b>6. E-mail:</b>	iaroshan@popular. Com
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Mr. Imran	Director	
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit pulps	
	<b>Consumer Product</b>	Juice drinks in Tetra pak	
	<b>Others</b>		
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

s.no	Fruit /Vegetable	Tonnes of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	10	10	10	10	10		Pulp
2	Citrus	-						
3	Guava	5	5	5	5	5		Pulp
4	Peach	-						
5	Apple							
6	Strawberry	-						
7	Falsa	-						
8	Jaman	-						
9	Cherry	-						
10	Carrot	-						
11	Tomato	-						
12		-						

Notes:

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>	✓
	<b>Local Market</b>	
	<b>Export market</b>	-
		-
<b>Unit's Information:</b>		
<b>11. List of Main Machinery:</b>	<b>Components</b>	<b>Origin</b>
	Fruit processing line and tetra pack filling lines for juice drinks production	Italy and Sweden
	Pulp freezing and storage at -18 C	
	Aseptic processing equipment for pulps ( nonoperational)	USA
<b>12. Capacity gaps in processing equipment:</b>	Lack of aseptic processing system	
<b>13. Modifications made in the original plant:</b>	-	

14. Technical gaps in processing equipment:	-																
15. Country or origin (main plant):	Italy	16. Condition of plant/equipment:	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td>-</td></tr> </table>	Good	-	Fair	✓	Poor	-	17. condition of building/processing hall:	<table border="1"> <tr><td>Good</td><td>-</td></tr> <tr><td>Fair</td><td>✓</td></tr> <tr><td>Poor</td><td>-</td></tr> </table>	Good	-	Fair	✓	Poor	-
Good	-																
Fair	✓																
Poor	-																
Good	-																
Fair	✓																
Poor	-																
18. Processing/Preservation/packaging technologies being used and their capacities:	<table border="1"> <tr><td>Aseptic</td><td>-</td></tr> <tr><td>Freezing</td><td>✓</td></tr> <tr><td>Chemical Preservation</td><td>✓</td></tr> <tr><td>Canning</td><td>-</td></tr> </table>				Aseptic	-	Freezing	✓	Chemical Preservation	✓	Canning	-					
Aseptic	-																
Freezing	✓																
Chemical Preservation	✓																
Canning	-																
19. Product Storage Facility:	<table border="1"> <thead> <tr> <th>Parameters</th> <th>Freezing Store</th> <th>Chilling Store</th> </tr> </thead> <tbody> <tr> <td>Temperature</td> <td>0-5 C</td> <td>-18 C</td> </tr> <tr> <td>Condition</td> <td>Fair</td> <td>Fair</td> </tr> <tr> <td>Capacity</td> <td></td> <td></td> </tr> </tbody> </table>				Parameters	Freezing Store	Chilling Store	Temperature	0-5 C	-18 C	Condition	Fair	Fair	Capacity			
Parameters	Freezing Store	Chilling Store															
Temperature	0-5 C	-18 C															
Condition	Fair	Fair															
Capacity																	
20. Pulp/Concentrate produced (one years):	<table border="1"> <tr><th>Product</th><th>Mt</th></tr> <tr><td>Pulp</td><td>5000 tons</td></tr> <tr><td>Concentrate</td><td></td></tr> </table>	Product	Mt	Pulp	5000 tons	Concentrate		21. Losses/wastages (1 years):									
Product	Mt																
Pulp	5000 tons																
Concentrate																	
22. Repair/maintenance Procedures:		<table border="1"> <tr><td>Company's engineering staff</td><td>✓</td></tr> <tr><td>Service providers</td><td>-</td></tr> <tr><td>Other</td><td>-</td></tr> </table>			Company's engineering staff	✓	Service providers	-	Other	-							
Company's engineering staff	✓																
Service providers	-																
Other	-																
<b>Quality Control</b>																	
23. Lab Testing and analysis being carried out:	Testing facility available		Equipment/instruments gaps														
	Brix, Acidity, pH testing facility		Microbiological lab														
24. specific quality issue	-		25. Quality Certifications obtained:	HACCP HALAL													

<b>26. Details of solid waste disposal and effluent treatment arrangements:</b>		Sold to brick kilns as fuel and nursery growing No effluent treatment	
<b>Human Resource Information:</b>			
<b>27. Staffing Details:</b>	<b>Permanent</b>	35	<b>28. Qualifications / Experience of Managerial and Supervisory Staff:</b>
	<b>Seasonal</b>	120	
	<b>Contractual</b>		
			Four qualified Food Technologists Supervisory staff 5-10 years experience
<b>30. Skills gaps and need for training or technical assistance:</b>		None	
<b>Commercial Information</b>			
<b>30. Factors hampering the fruit /vegetable pulping business:</b>	<b>Issue</b>		
	<b>Financial</b>	-	
	<b>Raw Material</b>	-	
	<b>Marketing</b>	-	
	<b>Packaging</b>	-	
<b>31. Procurement of fruit / vegetables:</b>	<b>Direct from farms</b>	<input checked="" type="checkbox"/>	<b>32. Import of raw materials:</b>
	<b>Through contractor</b>	<input checked="" type="checkbox"/>	
	<b>From whole sale market</b>	<input checked="" type="checkbox"/>	
	<b>Other</b>	<input type="checkbox"/>	
	<b>Local</b>	-	
	<b>Imported</b>	-	
<b>33. Reasons if fruit processing business has been closed:</b>	operative		<b>34. Role played by the fruit processors association if it exists :</b>
	-		
<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>	None		
<b>36. Company's future Business plan:</b>	To set up aseptic processing plant		
<b>37. Company's need for support:</b>	<b>Support area</b>	<b>Company's Support</b>	<b>Desired</b>
	Processing Capacity enhancement	Aseptic processing plant	5 ton/hr
	Training	-	
	Lab up gradation	-	
	Technical assistance	-	
	Local market linkage	-	
	Export market linkage	-	
	Quality Certifications	-	

<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>	Management willing to invest									
<b>Participants Information</b>										
<b>39. Participants of the meeting:</b>	<table border="1"> <thead> <tr style="background-color: #cccccc;"> <th>Unit Management</th> <th>FIRM Team</th> </tr> </thead> <tbody> <tr> <td>Mr. Imran Ahmed</td> <td>Dr Waqqar Ahmed</td> </tr> <tr> <td></td> <td>Tanveer-ul-Islam</td> </tr> <tr> <td colspan="2" style="text-align: center;">(Video conferencing)</td> </tr> </tbody> </table>		Unit Management	FIRM Team	Mr. Imran Ahmed	Dr Waqqar Ahmed		Tanveer-ul-Islam	(Video conferencing)	
Unit Management	FIRM Team									
Mr. Imran Ahmed	Dr Waqqar Ahmed									
	Tanveer-ul-Islam									
(Video conferencing)										

7.7.2.5 *Iftikhar and Company*

<b>QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units</b>			
<b>Date of Study:</b>	Jan 24, 2012	<b>Form Code:</b>	Sindh-4
<b>Company Information</b>			
<b>1. Unit Name:</b>	Iftikhar And Company	<b>2. Year of Establishment:</b>	2004
<b>3. Address:</b>	Iftikhar And Company, new Fruit& Vegetable market, Super High way, Karachi		
<b>4. Tel:</b>	021-6871 092-93	<b>5. Fax:</b>	
		<b>6. E-mail:</b>	
<b>7. Contact Person(s):</b>	<b>Name</b>	<b>Position</b>	<b>Phone/Cell No</b>
	Waheed Ahmed	Director Marketing	0321-2422 946
<b>Product(s) Information:</b>			
<b>8. Type of Manufacturing:</b>	<b>Industrial Product</b>	Fruit pulps and Juice Concentrates	
	<b>Consumer Product</b>	-	
	<b>Others</b>	Fresh fruits processors for export and local market Fruit growers and orchard contractors Commission agent fruit /vegetable wholesale market	
<b>9. Present Capacity for Fruits/Vegetables Pulping:</b>			

s.no	Fruit /Vegetable	Tonnes of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	10	10	10	10	10		Pulp
2	Citrus							
3	Guava	10	10	10	10	10		Pulp
4	Peach							
5	Apple	3	10	10	3	3		Pulp
6	Strawberry	5	5	5	5	5		Pulp
7	Falsa							
8	Jaman							
9	Cherry							
10	Carrot	5	5	5	5	5		Pulp
11	Tomato	5						4 fold puree
12	APPLE*	10	10	10	10	10	8000 kg/hr	Clear apple Juice Concentrate

Notes: Apple\* is also processed into clear apple juice concentrate, besides its processing for apple pulp.

<b>10. Market/Use of Pulp produced</b>	<b>In-house use for the production of value added consumer products</b>		-								
	<b>Local Market</b>		✓								
	<b>Export market</b>		✓								
<b>Unit's Information:</b>											
<b>11. List of Main Machinery:</b>	<b>Components</b>		<b>Origin</b>								
	Fruit sorting, brushing washing and conveying.		Italy								
	Mango de-stoner, chopper and 2-stage refiner										
	Aseptic processing/packaging equipment with 5 ton/hr packing capacity		Italy								
	Clear apple juice concentrate plant		Italy								
<b>12. Capacity gaps in processing equipment:</b>	-										
<b>13. Modifications made in the original plant:</b>	-										
<b>14. Technical gaps in processing equipment:</b>	-										
<b>15. Country or origin (main plant):</b>	Italy	<b>16. Condition of plant/equipment:</b>	<table border="1"> <tr> <td><b>Good</b></td> <td>✓</td> </tr> <tr> <td><b>Fair</b></td> <td>-</td> </tr> <tr> <td><b>Poor</b></td> <td>-</td> </tr> </table>	<b>Good</b>	✓	<b>Fair</b>	-	<b>Poor</b>	-		
<b>Good</b>	✓										
<b>Fair</b>	-										
<b>Poor</b>	-										
			<table border="1"> <tr> <td><b>17. condition of building/processing hall:</b></td> <td></td> </tr> <tr> <td><b>Good</b></td> <td>✓</td> </tr> <tr> <td><b>Fair</b></td> <td>-</td> </tr> <tr> <td><b>Poor</b></td> <td>-</td> </tr> </table>	<b>17. condition of building/processing hall:</b>		<b>Good</b>	✓	<b>Fair</b>	-	<b>Poor</b>	-
<b>17. condition of building/processing hall:</b>											
<b>Good</b>	✓										
<b>Fair</b>	-										
<b>Poor</b>	-										
<b>18. Processing/Preservation/packaging technologies being used and their capacities:</b>	Aseptic	Aseptic processing/packaging equipment with 5 ton/hr product filling capacity									
	Freezing	-									
	Chemical Preservation										
	Canning	-									
<b>19. Product Storage Facility:</b>	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>								
	Temperature	-	0 to +5 C								
	Condition	-	Fair								
	Capacity	-	3000 tons product storage								
		-									
<b>20. Pulp/Concentrate produced (1years):</b>	<b>Product</b>		<b>21. Losses/wastages ( years):</b>								
	Pulp	2500 tons									
	Concentrate	700 tons									
			Insignificant								

22. Repair/maintenance Procedures:		Company's engineering staff		✓	
		Service providers		-	
		Other		-	
				-	
<b>Quality Control</b>					
23. Lab Testing and analysis being carried out:	Testing facility available		Equipment/instruments gaps		
	Brix, acidity and pH		Micro biology lab		
24. Any specific quality issues	-		25. Quality Certifications obtained:	ISO-9000 HACCP HALAL	
26. Details of solid waste disposal and effluent treatment arrangements:		Thrown on barren lands 10 kilometers away from the factory			
<b>Human Resource Information:</b>					
27. Staffing Details:	Permanent		29. Qualifications / Experience of Managerial and Supervisory Staff:	3 Food Technologists 3-4 years experienced	
	Seasonal			One part time Food Analyst with 5 year experienced	
	Contractual			One mechanical engineer with 20 year experience	
	1				
29. Skills gaps and need for training or technical assistance:	-				
<b>Commercial Information</b>					
30. Factors hampering the fruit /vegetable pulping business:	Issue				
	Financial				
	Raw Material	Could not meet apple Juice concentrate export orders due shortage of apple fruit in 2011			
	Marketing				
	Packaging				
31. Procurement of fruit / vegetables:	Direct from farms	✓	32. Import of raw materials:	Items	Aseptic bags
	Through contractor	✓		issues	None
	From whole sale market	✓			
	Other				

<b>33. Reasons if fruit processing business has been closed:</b>		-	<b>34. Role played by the fruit processors association if it exists :</b>	-
<b>35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:</b>		-		
<b>36. Company's future Business plan:</b>		-		
<b>37. Company's need for support:</b>	<b>Area of support</b>	<b>Company's desired area</b>		
	Processing Capacity enhancement	None		
	Training	-		
	Lab up gradation	-		
	Technical assistance	-		
	Local market linkage	-		
	Export market linkage	-		
	Quality Certifications	-		
		-		
<b>38. Management Capacity and Willingness for capital Investment for BMR:</b>		Company wants do on its own		
<b>Participants Information</b>				
<b>39. Participants of the meeting:</b>	<b>Unit Management</b>		<b>FIRMS Team</b>	
	Mr. Wajahat Khan		Tanveer-ul-Islam	

### 7.7.3 Pulping Units in Khyber Pakhtunkhwa

#### 7.7.3.1 Qarshi Industries (Private) Ltd.

QUESTIONNAIRE - Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units								
Date of Study:		Feb 02, 2012			Form Code:		k-1s	
Company Information								
1. Unit Name:		Qarshi Industries (Private) Ltd.			2. Year of Establishment:		2001*	
3. Address:		Plot 56/1-4, Phase-3, Hattar Industrial Estate, Hattar, District Haripur, KPK						
4. Tel:		0995-111 200 300 0995-617 173		5. Fax:		0995-617 275		
				6. E-mail:		<a href="mailto:waqar.cheema@qarshi.com">waqar.cheema@qarshi.com</a>		
7. Contact Person(s):		Name		Position		Phone/Cell No		
		Mr. Farooque Sarwer		Director- Supply Chain		0333-423 7729		
		Mr. Waqar Ahmed Cheema		G M Technical		0300-946 0251		
Product(s) Information:								
8. Type of Manufacturing:		Industrial Product		Fruit /vegetable pulping				
		Consumer Product		Juice drinks (PET & Glass bottling)				
		Others		--				
9. Present Capacity for Fruits/Vegetables Pulping:								
Sr.#	Fruit /Vegetable	Tons of Fruit Per Hour					Concentration/Evaporation per hr	Nature of the end product
		Processing Capacity	Sorting /Washing	Conveying	Extraction	Refining		
1	Mango	3	3	3	3	3		
2	Citrus	0.5	3	3	3	3		
3	Guava	3	3	3	3	3		
4	Peach	3	3	3	3	3		
5	Apricot	3	3	3	3	3		
6	Strawberry							
7	Falsa	--	-	-	-	-		
8	Jaman	--	-	-	-	-		
9	Cherry	--	-	-	-	-		
10	Carrot	--	-	-	-	-		
11	Tomato	3	3	3	3	3		
12								
Notes:								

10. Market/Use of Pulp produced	In-house use for the production of value added consumer product		-				
	Local Market		-				
	Export market		-				
<b>Unit's Information:</b>							
11. List of Min Machinery:	<b>Components</b>			<b>Origin</b>			
	Fruit sorting, washing and conveying system			Italy			
	Mango de-stoner, peach/apricot de-stoner and citrus extractor			Italy			
	Chopper for apple, guava, tomato, strawberries			Italy			
	Continuous cooker (thermo break) and single stage refiner			Italy			
	Bottling line for glass and PET bottle juice filling						
12. Capacity gaps in processing equipment:	Aseptic processing equipment						
13. Modifications made in the original plant:	None						
14. Technical gaps in processing equipment:	--						
15. Country or origin (main plant):	Italy	16. Condition of plant/equipment:	Good	✓	17. condition of building/processing hall:	Good	✓
			Fair			Fair	
			Poor			Poor	
18. Processing/Preservation/packaging facilities available and their capacities:	Aseptic	--					
	Freezing	Freezing facility					
	Chemical Preservation	Chemical preservation of pulp @2 ton /hr					
	Canning	--					
19. Product Storage Facility:	<b>Parameters</b>	<b>Freezing Store</b>	<b>Chilling Store</b>				
	Temperature	-18 C	--				
	Condition	good					
	Capacity	1000 ton of product					

20. Pulp/Concentrate produced (3 years):	<b>Product</b>	<b>Mt</b>	21. Losses/wastages (3 years):								
	Pulp	--									
	Concentrate	---									
22. Repair/maintenance Procedures:			<table border="1"> <tr> <td>Company engineering staff</td> <td>✓</td> </tr> <tr> <td>Service providers</td> <td>-</td> </tr> <tr> <td>Other</td> <td>-</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Company engineering staff	✓	Service providers	-	Other	-		
Company engineering staff	✓										
Service providers	-										
Other	-										
<b>Quality Control</b>											
23. Lab Testing and analysis being carried out:	<b>Testing facility available</b>		<b>Equipment/instruments gaps</b>								
	Facility is non operative. Chemical and microbiological testing facility is available		--								
24. Specific quality issues:	--	25. Quality Certifications obtained:	Fruit processing facility is not certified. However, the mother company has obtained HACCP, ISO-9001, ISO-14001, ISO-17025 (Norway & PNAC) Organic certification, PCP Certification								
26. Details of solid waste disposal and effluent treatment arrangements:		Facility is non operative									
<b>Human Resource Information:</b>											
27. Staffing Details:	Permanent	-	28. Qualifications / Experience of Managerial and Supervisory Staff:								
	Seasonal	-									
	Contractual	-									
29. Skills gaps and need for training or technical assistance:	Needs process and product standardization and training for fruit processing										
<b>Commercial Information</b>											

30. Factors hampering the fruit /vegetable pulping business:	<b>Issue</b>				
	<b>Financial</b>	The processing facility has been taken over for just 26 million PKR: stakes are not high. Factory premises is used for other purposes			
	<b>Raw Material</b>	--			
	<b>Marketing</b>	--			
	<b>Packaging</b>	--			
31. Procurement of fruit / vegetables:	Direct from farms		32 Import of raw materials:	Items	--
	Through contractor			Issues	--
	From whole sale market				
	Other				
33.Reasons if fruit processing business has been closed:	Non availability of utilities and labor problems		34. Role played by the fruit processors association if it exists :	None	
35. Any assistance from/collaboration with any donor, government or a private agency during the last 3 years:	--				
36. Company's future Business plan:			--		
37. Company's need for support:	<b>Area of support</b>	<b>Company's desired area</b>			
	Processing Capacity enhancement	-			
	Training	-			
	Lab up gradation	-			
	Technical assistance	-			
	Local market linkage	-			
	Export market linkage	-			
Quality Certifications	-				
38. Management Capacity and Willingness for capital Investment for BMR:				Not willing	
<b>Participants Information</b>					
39. Participants of the meeting:	<b>Unit Management</b>		<b>FIRM Team</b>		
	Mr. Farooq Sarwar( Dir. Supply Chain) Mr. Waqar Ahmed Cheema (GM)		Dr. Waqar Ahmed Tanveer-ul-Islam		

<b>Notes:</b>	<p>*The facility (originally named as <i>Sinsase Pvt. Ltd</i>) was established in 1991. It became a sick unit because of the management issues and was taken over by Agriculture development Bank of Pakistan, the financing bank.</p> <p>In 2001, it was taken over by Qarshi Industries in an open bidding for 10% of the original price.</p>
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