USAID FIRMS PROJECT

Situation Analysis and Pre-feasibility Study of Pulping Unit in Swat

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Data Page

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Abstract

The report presents the situation analysis of peach pulping in the Swat area of Pakistan. It describes the current status of [redacted], the only peach pulping facility in Swat District and identifies its technical gaps and indicates the requirements to enhance its capacity. The report also covers a plan to upgrade this pulping unit so that it can adequately meet the requirements of the local and national markets along with cost estimates to implement the suggested plan. With the inclusion of market demand, product cost and average market price of the product, this study achieves its objective of being a “Situation Analysis and Pre-Feasibility Report”.

Acronyms

KP	Khyber Pakhtunkhwa
PH	Post Harvest
SS	Stainless Steel

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Executive Summary

USAID-Firms Project had undertaken pre-feasibility study and business development plan for rehabilitation of a peach pulping unit in Swat District. The information gathered on existing food processing units of Swat area revealed that a unit namely [redacted] located in Mangora is the only facility that can process peaches into pulp. All other units produce value-added consumer products by using the pulp as base raw material. The said pulping unit established in 1994 possesses a small peach processing capacity of less than one ton per hour. Because of poor condition of the machinery, the frequently occurring power breakdowns further reduce the plant output. Due to this insufficient pulping capacity, [redacted] is not able to meet the market demand for peach pulp. Thus, capacity constraint stands out to be a major bottleneck in the growth of pulping business. Despite the fact that the poor product is fairly acceptable in the low end market, the semi skilled /unskilled staff of the unit needs a comprehensive technical training to improve product quality.

The chemically preserved un-pasteurized pulp produced is sold in the local market and also used to cater to its in-house needs of consumer product manufacturing. Popularity of value added peach products is growing rapidly. Peach nectar and drinks are newly emerging consumer products having a consistently growing demand. The market survey conducted by the consultant revealed that [redacted] can sell more than 1,500 tons pasteurized pulp during the upcoming peach season if its capabilities, with regard to quality, quantity, are enhanced to meet the market demand.

The estimated cost to be incurred for rectifying the identified gaps would be around PKR 13.0 million. Fabrication of the required local machinery and its installation should take around 10 weeks. Capabilities of the semi skilled workforce present at the processing facility can be enhanced with a two weeks on-the-job training session.

1. Introduction

1.1 Peach Production

Pakistan grows around 7 million tons fruits and 6 million tons vegetables annually. Most of this horticultural produce is consumed in fresh form, only a small percentage is processed into value added products.

Peach is an important stone fruit grown under temperate conditions of Khyber Pakhtunkhwa (KP) and Balochistan provinces. Average annual production for the last five years has been around 80,000 tons except in 2009-10 when peach growers could not perform well due to a massive anti terrorism operation by the government in Swat which is the major peach production cluster in the province. KP contributes to over two third of the total peach production of Pakistan. National peach production and provincial shares in total production are shown in the following table.

Table 1: National Peach Production and Area under Cultivation

Year	Production (Metric Tons)	Land under cultivation (Hectares)	Yield (MT/Hectare)
2005-06	70,305	15,231	4.62
2006-07	71,266	15,396	4.63
2007-08	82,392	15,624	5.27
2008-09	83,670	15,774	5.30
2009-10	53,994	15,349	3.52
Source: Ministry of Food and Agriculture, Government of Pakistan			

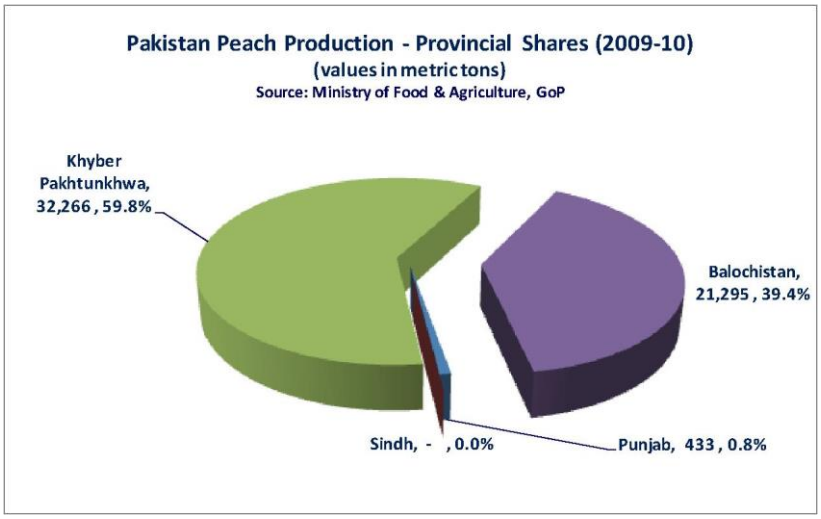

Figure 1: Pakistan Peach Production- Provincisl Shares (2009-10)

1.1.1 Swat - The Hub of Peach Production

Swat is the most important district of KP with respect to horticulture production. The fruit basket of Swat has great diversity; with apple and peach being the main contributors to the local fruit production. Apple is the largest while peach is the second largest fruit of Swat with respect to production. During 2009-10, share of fruit amongst the major fruits produced in the valley was 37%. Relative shares of different fruits are shown in Figure 2.

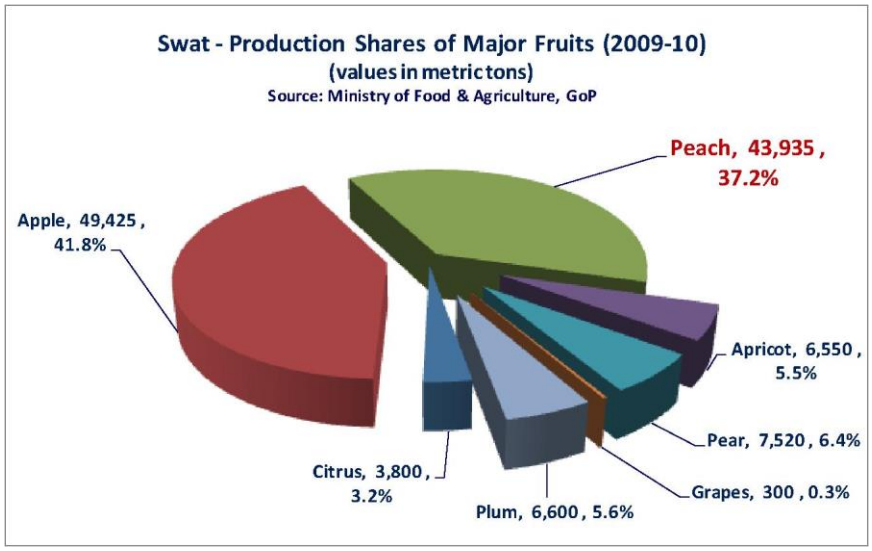

Figure 2: Swat- Production Shares of Major Fruits (2009-10)

KP District-wise Production

Swat is the major peach producing district of KP province. It contributes about 75 percent of the total provincial production. District-wise peach production is shown in Table 2.

Table 2: District-wise Peach Production in KP	
District	Production (Metric Tons)
Swat	43,935
Mardan	3,635
South Waziristan	1,604
Kurram	1,355
Buner	1,037
Haripur	1,019
Peshawar	930
Nowshera	750
Other Districts	3,569
Total Production	57,834
Source: Ministry of Food and Agriculture, Government	

The early varieties of peach fruit are cultivated in May followed by mid & late varieties and the harvesting season prolongs tilt mid October.

1.2 Project Rationale

Hub of peach production, Swat, produces two third of the national production of this fruit. Due to its highly perishable nature and lack of proper post harvest care, its losses are as high as 40 percent. The fruit is harvested and transported in semi ripe or unripe condition. The fruit that once ripens right at the farm cannot be transported and a major part of such fruit is wasted. Fruit of B and C grade is not appropriate for fresh market as it does not fetch reasonable price for the farmer. Reduction in peach losses can be achieved by utilizing such type of fruit for value addition purposes. This can bring market diversity in the peach sector with increased price premium for growers. Agro processing can add value to the B and C grade fruit and the fruit in fragile condition by converting it into high value fruit pulp which is used as base raw material for the production of value added consumer products like nectars, squashes, juices and jams etc.Presence of small and medium scale agro-processing units in the fruit production area can add value to the farm products, help boost the economy and provide jobs to the local work force.

This study undertaken by USAID Firms Project aims at supporting agro processing activities in Swat area. The study focuses on selecting an existing peach processing unit for its modernization and emphasizes on enhancing its capabilities to process not only peach but also other fruits of the area. The study plans upgrade of a unit which would meet market demand for peach pulp and also act as a model leading in the promotion of value addition activities in peach production areas of Swat.

1.3 Project Methodology

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. Prior to the Situational analysis and Pre-Feasibility study of the peach pulping unit in Swat, emphasis was placed on selection of processing unit to be considered for up gradation, identification of its gaps, details of rectifications to be made and assessment of HR training needs. The indicative list of fruit pulping facilities in Swat prepared by Firms Project was studied and reviewed by the consultant to select one unit which could be supported for upgrade. The only unit, [redacted], having the basic pulping equipment and involved in production and sale of peach pulp was selected for further assessment.

For better perception and further understanding, the project was discussed with the concerned members of Firms Islamabad and Swat 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- Questionnaire
The consultant designed a simple but practical questionnaire format to gather the necessary information and pertinent data from the management of pulping unit. This database tool (attached as Annex I) was presented to the concerned members of Firms-Islamabad office and further improved as observed by them.

Deliverable 2- Survey
The consultant along with the Sector Specialist, Mr. Jamroz Khan visited the selected unit located in Mingora (Swat). The peach processing plant was thoroughly inspected. For precise and comprehensive evaluation, some of the machines were dismantled to observe their interiors. The necessary measurements were accurately taken and recorded. Operators, technician and production in-charge were interviewed in detail to assess their understanding of fruit pulping and evaluate their skills and knowledge of fruit processing for pulp production.

A detailed discussion was conducted with the unit management. Directors of the company keenly described the potential of the business, the challenges they are facing and the support they need that can help in developing sustainable business generating economic activities in Swat.

Deliverable 3- Report
At the outset, guidance for the report format and pattern was sought from the USAID Firms-VCD staff. A frequent liaison with them was maintained during the writing of this report to stay fairly in line with the desired format.

2. [redacted] Foods - An Expert Evaluation

2.1 Purpose of the Impact Assessment

Current Situation of Fruit Processing Sector of Swat

Swat is the major peach producing district of KPK province forming the biggest peach cluster in Pakistan. Despite being a significant fruit producing area, it does not have any industrial base to exploit any value addition possibilities in its agri-businesses. Eight small scale food processing units are operative in Swat producing juice drinks, squashes and pickles. Of these, only one unit namely [redacted] possesses semi automated pulping equipment. The pulp it produces is used for the in house production of different consumer products and also sold to other consumer product manufacturers of Swat, Lahore and other cities who are catering to the needs of low end markets.

The consultant visited two consumer product manufacturing units in Swat which regularly procure peach pulp from [redacted] and also contacted, on phone, a dozen other peach pulp buyers from Lahore and other cities. All of them confirmed having cordial business relations with [redacted] and expressed continued interest in buying peach pulp. Most of them keenly wanted to have increased supply of peach pulp. That was enough to convince the consultant that the pulping unit under study needs its capacity enhancement to adequately meet the market demand.

Accordingly, the Sector Specialist Firms Project based in Swat and the Consultant unanimously selected [redacted] for further assessment. Key rationale for this decision is based on the following points:

- It is the only fruit processing unit of Swat which has basic pulping equipment.
- It owns enough building space required for the extension of existing pulping line.
- It enjoys good business relations with peach pulp customers.
- It is successfully running consumer product manufacturing line using its own pulp.
- It is willing to meet the growing market demand by expanding/up grading the current pulping facility.

The writer was impressed to see the moral of the unit management as they had performed meritoriously during the recent turmoil caused by terrorism followed by the anti terrorist operations. Continuation of agro-processing activities in this far flung area of KPK under all odds in respect of availabilities of proper human resource and necessary utilities is really commendable. Accordingly, the unit needs a serious intervention and strong support to produce quality pulps.

2.2 Technical Overview

[redacted] located in Mangora (Swat), was established in 1994 as a cottage level consumer product manufacturing unit. In the beginning, this unit produced peach pulp only to fulfill the in-house needs for manufacturing consumer products like squash nectars and juice drink. As popularity of peach based products increased, the other consumer product manufacturers of the valley also started small scale production of peach pulp by manual operation of de-stoning and refining etc. However, [redacted] which was producing peach pulp by semi automatedprocess remained the market leader. Besides producing pulp for its own in-house consumption, it started marketing pulp of peach and other fruits to cater for the needs of local consumer items manufacturers.

Fruit processing (pulp extraction) capacity of the present machinery at [redacted] is below one ton per hour. Hardly five tons of pulp can be processed and packed in an eight hour shift. It can only produce unpasteurized pulp which is preserved with high dose of chemical preservatives.
Details of the processing equipment with [redacted] along with identified technical and capacity gaps of the plant are shown in Table 3.

Table 3: Gaps in Peach Pulping Equipment at [redacted] Foods

Unit operation	Equipment required	[redacted] Foods current status	Gaps
Fruit sorting and conveying	Belt conveyer	Not available (manual floor sorting is in practice)	The missing equipment is causing inefficient manual sorting
Fruit washing and conveying of washed fruit	Stainless Steel(S.S) fruit washer with attached bucket elevator	Washer not available The under capacity bucket elevator of one ton capacity is used, fruit is manually washed in SS tubs	The missing equipment results in inefficient manual washing and fruit conveying
Peach de-stoning	Peach de-stoner	The available de-stoner is originally for mango de-stoning. The modified de-stoner of 4 ton capacity is serving the purpose	For optimum results the present machine needs to be used for mango. Proper Peach de-stoner is required

Chopping of apple, pear, tomatoes and carrots	S.S Chopper	Not available (Manual knife-cutting is done)	Absence of chopper is causing inefficient pulping operation for the mentioned fruits & vegetables
Enzyme inactivation and softening of chopped fruit/raw pulp	Thermo Break	Not available	Absence of Thermo break is causing adverse effect on product quality
Refining	Double Refiner	Under-capacity Single refiner is available (600-700 kg pulp refining capacity)	Under capacity equipment is leading to low output of the processing unit
Pulp receiving	Pulp receiving trough With Float and level controller	Absent	Absence of the required plant component is threat to product safety
Pasteurization	Plate Heat Exchanger	Not available (Resulting in the production of **un-pasteurized** pulp)	Absence of pasteurizer is threat to product quality and safety
Chemical mixing and filling/packaging	Blending tanks	Available	No gaps
Product handling and conveying	S.S Pumps	Not available (Manual handling and conveying of product)	Missing equipment is cause of Inefficient and unsafe operation

2.3 Proposed Technical Upgrade of the Existing Unit

As discussed above, the present processing plant is of very small capacity. Manual handling of fruit and product causes inefficient operations and makes unsafe product. The present plant can hardly produce 4 to 5 tons of **unpasteurized** pulp.

After the upgrade, the locally fabricated automated plant with enhanced processing capacities will be capable of producing 20-25 tons pasteurized peach pulp on single shift basis. The upgraded plant will also be equipped to produce pulps from other fruits and vegetables like pear, apple, plum, mango, tomatoes and carrots.

The machines and components required for up gradation of plant, along with the estimated cost, are listed in Table 4.

Table 4: Machinery required for Upgrade of the Pulping unit			
Description of the machinery	**Capacity**	**Qty**	**Estimated Cost**
Belt conveyor	5 ton /hour	1	300,000
SS fruit washer with attached bucket	5 ton /hour	1	1,200,000
Peach De-stoner	4 ton/hour	1	400,000
Apple Chopper	3 ton/hour	1	300,000
Thermo Break	3500 Kg/hour	1	1,200,000
Two-stage Refiner	3500 Kg/hour	1	750,000
Pulp receiving trough with level controller	200 kg	1	125,000
Wide gap plate Heat Exchanger	3500 Kg/hour	1	3,000,000
Mono pumps	8000 kg/hour	4	2,000,000
Electric panel			150,000
Pipes, valves and installation material			500,000
Transportation Charges			200,000
Installation charges			1,200,000
Contingencies			1,100,000
Total Cost			**12,425,000**

2.4 Proposed Upgrade of Quality Assurance Laboratory

The available product testing laboratory at [redacted] needs to be better equipped. Presently, only the brix level of the product is tested. In addition to chemical analysis of water, product testing for Acidity percentage, pH value and chemical preservative level must be done in case of chemically preserved pulp. Requirements for quality assurance lab are shown in Table 5.

Table 5: Requirements for Quality Assurance Laboratory			
Test to be conducted	**Instrument required**	**Qty**	**Estimated cost (PKR)**
pH value	pH meter	1	25,000
Acidity	Titration equipment & Electromagnetic Stirrer	1	35,000
Preservative level	Titration equipment	3	30,000
Water TDS	Conductivity meter	1	20,000
Glass ware			25,000
Chemical reagents			40,000
Total cost			**175,000**

2.5 Product Costing

The study objectives aim at enhancing the value addition levels of the processing industry. Presently, the production cost (excluding costs of sales) of peach pulp is estimated at Rs. 43 per kg. Information collected from peach pulp buyers during telephonic interviews revealed that the average sales price of peach pulp stands at Rs. 65 per kg. Although it shows that the pulp producer is already having a fair margin, after the proposed upgrade, the better quality product would fetch more market prices. Detailed costing is shown in Table 6.

Table 6: Cost of Peach Pulp Production (per Kg)

Materials used	Quantity	Per unit cost	Total cost
Peach Fruit	1.2 5 kg	Rs.18/Kg	Rs. 22.50
Citric acid	10gm	Rs.150/ kg	Rs. 01.50
Pot. metabi Sulphite	2gm		Rs. 00.50
Processing Cost[1]			Rs. 10.00
Poly Bag			Rs. 00.30
Packaging (plastic drum)		Rs. 7.50/kg	Rs. 07.50
Wastage/losses		(2%)	Rs. 0.70
Total Cost of Peach Pulp			**Rs. 43/Kg**

2.6 Assessment of Other Business Functions

2.6.1 Market Overview

The recently conducted study “Profiling and Capacity Need Assessment of Pulping Units in Pakistan” revealed that Pakistan produces around fifty thousand tons of pulps and concentrates of different fruits. Due to popularity of mango and apple based drinks and nectars, pulps/concentrates of these two fruits are demanded the most. However, Pakistan’s fruit processing industry has found yet another business opportunity. Peach nectar is a newly emerging consumer product having a consistently growing demand. Nestle is the pioneer producer which is marketing peach nectar based on imported peach pulp. As a trendsetter, Nestle has created a demand and has paved way for other consumer product manufacturers to go for peach products. Presently, Nestle is importing about 1,000 tons of frozen peach pulp per year.

[redacted] the only commercial producer of peach pulp in Swat area, has been receiving demand for peach pulp from different consumer product manufacturers. Due to capacity constraint, it was not able to meet the demand from all of them. Some of the demand is being fulfilled, while remaining buyers are being declined. A list along with contact details of such potential buyers of peach pulp was shared with the consultant. The consultant conducted telephonic interviews of a dozen buyers of peach pulp. These buyers are, primarily, manufacturing juices/nectars and squashes for the low end market. All of them were unanimous on the need for enhanced peach pulping capacity so that sufficient volumes can be produced to fulfill their needs. It is estimated that the

interviewed buyers alone are ready to buy 1,200 tons of peach pulp during the forthcoming season. In addition to this, another pulp trader from Punjab is willing to buy 500 tons pulp in the coming season. List of pulp buyers is attached as Annexure II.

2.6.2 HR Overview

[redacted] started its business of consumer product manufacturing at cottage level in 1994. Initially, the pulp required to cater to the in-house needs was produced only at small scale. With the passage of time and increase in demand, they kept improving the production scale but were never able to have an exposure of process / product standardization and good food processing environment. Instead of improving hygiene condition, cleaning of pulp extraction equipment, better sorting of fruit and implementing the standard processing procedures, emphasis has been on preserving the produced pulp by adding extra dose of chemical preservatives. A comprehensive training can improve the working environment and technical skills of work force. The chart provided in Table T7 summarizes the present skill levels of the work force and training required to improve it up to the desired level.

Table 7: Training Needs Assessment

Knowledge and skills desired for fruit pulping process	**Current Capability of staff at** [redacted]
• Cleaning In Place (CIP) of plant followed by final inspection • Test for detergent residue in the	• Staff responsible was completely ignorant of CIP protocols • The test has never been done
• Optimum fruit maturity • Fruit sorting • Washing of fruit • Final inspection of fruit	• Such evaluation can only be conducted at the time of processing
Product testing: Chemical testing: • Brix • acidity • pH • Sulfur-dioxide	• Only brix degree is checked. Responsible staff is not aware of the remaining tests
Organolepltic evaluation: • Taste • Color • Texture and appearance • Aroma	The Staff has insufficient awareness about the importance of these quality characteristics

Table 7: Training Needs Assessment	
Knowledge and skills desired for fruit pulping process	**Current Capability of staff at** [redacted]
Adjustment/fine tuning of de-stoner and refiner.	This skill is very much needed for optimum yield and desired quality of the product
Concept of plant and personnel hygiene	No awareness

3. Project Implementation

3.1 Summary of Study Results

- Fruit processing unit namely [redacted], Mangora is the only processing facility in Swat and it has fair potential, if upgraded.
- Technical & capacity gaps in the present plant and the equipment required for upgrade have been identified and enlisted. Total estimated cost of intervention is PKR12.60 million.
- The upgraded processing facility will process 25-30 tons of peach fruit in an eight hourly shift. It will also be equipped to process apples, pears, plums, mangoes, tomatoes and carrots for pulp production.
- All the machinery will be locally fabricated. Some of the machines will partially be made up of imported components which are readily available.
- The upgraded facility will be capable of producing “pasteurized chemically preserved” pulp. Though strongly recommended, it takes 8-10 months to develop an Aseptic processing facility. Aseptic or frozen product processing plant can be implemented in the next phase.
- As per implementation plan, commercial production can be started in September.
- Training needs of workforce at Master Foods have been assessed. A two week on-the-job training will achieve the minimum desired level of skills in the staff.
- Market demand for the current year is estimated to be around 1,500 tons of peach pulp and it is likely to grow significantly in the ensuing years. Product cost has been worked out and average market price is also indicated.

3.2 Expected Outcomes

- Breakthrough for the utilization and value addition of B&C grade fruit.
- Creation of value addition culture in fruit growing area.
- Reduction in post harvest losses. (Wastage and ripe fruit from 2000 tons peaches utilized)
- Creation of a model in attracting investment in agro processing sector.
- Restarting of economic activity in the terrorism affected area.
- Production of [redacted] increased from 36,000 kg. to 1,700,000 kg.
- Increase in gross profit from PKR 9,000,000 to 42,500,000
- Enhanced productivity and profitability of [redacted].
- Availability of well trained man power.
- Better quality pulp production for consumer product manufacturers.Increase in employment. (Jobs created 150)

3.3 Proposed Implementation Plan

The following plan targets implementation and start of trial/commercial production during the current calendar year (2012). Because the peach season ends in the end of September, the implementation activities need to be undertaken on war footings. Although the fruit (peach) is also available in early October, it comes in small quantities. It is critical that order for the machinery is placed by the end of June so that we do not miss the season ahead.

Table 8: Proposed Implementation Schedule for [redacted] Foods Upgrade Project

Week Ending	May-18	May-25	Jun-01	Jun-08	Jun-15	Jun-22	Jun-29	Jul-06	Jul-13	Jul-20	Jul-27	Aug-03	Aug-10	Aug-17	Aug-24	Aug-31	Sep-07	Sep-14	Sep-21
Project approval and fulfillment of procurement formalities																			
Order placing for equipment																			
Completion of machinery fabrication and arrival																			

Table 8: Proposed Implementation Schedule for [redacted] Foods Upgrade Project																			
Week Ending	May-18	May-25	Jun-01	Jun-08	Jun-15	Jun-22	Jun-29	Jul-06	Jul-13	Jul-20	Jul-27	Aug-03	Aug-10	Aug-17	Aug-24	Aug-31	Sep-07	Sep-14	Sep-21
at [redacted] Foods																			
Installation and commissioning																			
Commencement of commercial production																			

4. Annexes

Annex 1- Survey Questionnaire

QUESTIONNAIRE – Tool for Profiling and Capacity Need Assessment of Fruit Pulping Units			
Date of Study:	April 18, 2012	Form Code:	Swat-1

Company Information					
1. Unit Name:	[redacted], Mangora, Swat	**2. Year of Establishment:**	1994		
3. Address:	[redacted] Managora, Swat				
4. Tel:	[redacted]	**5. Fax:**	----	**6. E-mail:**	[redacted]
7. Contact Person(s)	**Name**	**Postion**	**Phone/Cell Number**		
	[redacted]	[redacted]	[redacted]		
	[redacted]	[redacted]	[redacted]		
Product(s) Information:					
8. Type of Manufacturing:	**Industrial Products**	Fruit/vegetable pulps			
	Consumer Products	Jams, squash, Syrup and Fruit juice drinks packed in PET bottles			
	Others	Synthetic Vinegar			

9. Present Capacity for Fruits/Vegetables Pulping:								
		Tons of Fruit Per Hour						
Sr. #	**Fruit /Vegetable**	**Processing Capacity**	**Sorting /Washing**	**Conveying**	**Extraction**	**Refining**	**Concentration /Evaporation per hr**	**Nature of the end product**
1	Mango	1	1	1	1	1	-	Pulp
2	Guava	-	-	-	-	-	-	-
3	Peach	1	1	1	1	1	1	Pulp
4	Apple *	0.5	0.5	0.5	0.5	0.5	0.5	Pulp
5	Strawberry *	0.5	0.5	0.5	0.5	0.5	0.5	Pulp
6	Cherry	-	-	-	-	-	-	--
7	Carrot	-	-	-	-	-	-	-
8	Tomato	0.5	0.5	0.5	0.5	0.5	0.5	Pulp
Notes:*Apples and strawberries are first boiled in the kettles and then passed through Refiner for pulp production								

10. Market/Use of Peach Pulp	In-house use for the production of consumer products (Approximate per annum demand for assorted pulps)	40-50 tons

	Local Market (Approx per annum demand for Peach pulp)	1500-1700 tons

Unit Information			
11. List Main Machinery:	**Components**	**Origin**	
	Elevator conveyer (capacity : 1 ton /hour)	Local	
	De-stoner (capacity:3-4 ton/hour)	Local	
	Refiner (capacity: 1 ton/hour)	Local	
12. Capacity gaps in processing equipment:	The present processing capacity of 0.5-1 ton fruit/ hr is quite insufficient. Keeping in view the pulp demand, fruit processing capacity needs to be enhanced up to 4 tons/hr.		
13. Technical gaps in processing equipment:	Presently, the pulp produced is not being pasteurized. Pasteurization plays a critical and vital role for better quality pulp and improved consumer products made from the pulp. A Pasteurizer must be added in the fruit pulping line.		
14. Country or origin (main plant):	**Local**		
15. Condition of plant/ equipment:	Good Fair ✓ Poor		

Unit Information			
16. Condition of building/processing hall:	Good ✓ Fair Poor		
17. Processing/Preservation/ packagingtechnologies being used and their capacities:	Aseptic	X	
	Freezing	X	
	Chemical Preservation	0.5 ton/hr	
	Canning	X	
18.Product Storage Facility:	**Parameters**	**Freezing Store**	**Chilling Store**
	Temperature	**--**	**-**
	Condition	**--**	**-**
	Capacity	**--**	**-**
			-
19.Pulp produced during last two years		**2011**	**2010**
	Peach pulp	36,000 kg	5,000 kg
	Apple pulp	22,000 kg	24, 000 kg
	Mango pulp	**30,000 kg**	**30,000 kg**
	Tomato pulp	**3,000 kg**	**-**

Quality Assurance			
	Testing facility available	**Equipment/instruments gaps**	
20. Lab Testing and analysis being carried out	Refract-o- meter TDS meter & pH meter (defective)	pH meter, conductivity meter, titration equipment, glassware and chemical reagents	

		-	
21. Specific quality issues:	Presence of black Particles in the pulp, un-pasteurized product	**22. Quality Certifications obtained:**	None

Human Resource Information:				
23. Staffing Details:	Permanent	10	**24. Qualifications/ Experience of Managerial and Supervisory Staff:**	Overall operations were being supervised by Director, who is a Business graduate.
	Seasonal	35		Production Manager: graduate with 4 years working experience. Undergraduate Supervisory staff with 2-5 year experience of working on the existing pulping equipment.
	Contractual	--		
25. Skills gaps and need for training or technical assistance:	Technical staff processing is deficient in scientific knowledge and modern techniques			
	Process and product standardization is not there. Hygiene conditions need to be improved.			
	On the Job training and technical assistance is required in the areas of fruit processing, pulp pasteurization, packaging, product-testing and Quality Assurance.			

Commercial Information				
	Issue			
26.Factors hampering the fruit /vegetable pulping business:	Financial			
	Raw Material	--		
	Marketing	--		
	Processing capacity gaps	Insufficient processing capacity and absence of pasteurization equipment is the main bottleneck.		
27. Procurement of peach fruit	Direct from farms	**28. Average purchase price of fruits**	Peach	Rs.15-20/kg
	Through contractors			
	From wholesale market			
	Other			

Annex II- Peach Pulp Buyers

Table 9: Peach Pulp Buyers

Person/Unit Name	Per annum demand for peach pulp(tons)	Ex factory price Rs/kg
[redacted]	100	70
[redacted]	150	75
[redacted]	40	70-80
[redacted]	150	65-75
[redacted]	200	65-70
[redacted]	100	75
[redacted]	60	80
[redacted]	300	65-70
[redacted]	60	70-75
[redacted]	100	75--80
[redacted]	500	65-75

Annex III- Details of Staff/Position/Salaries

Table 10: Wage and Salary Structure		
Name	**Position**	**Salary (PKR)**
[redacted]	Production In-charge	[redacted]
[redacted]	Store In-charge	[redacted]
[redacted]	Supervisor	[redacted]
[redacted]	Technician	[redacted]
[redacted]	Skilled worker	[redacted]
[redacted]	Skilled worker	[redacted]
[redacted]	Skilled worker	[redacted]
[redacted]	Skilled worker	[redacted]
[redacted]	Skilled worker	[redacted]
[redacted]	Boiler Operator	[redacted]
[redacted]	1 day time Security Guard	[redacted]
[redacted]	1 night time Security Guard	[redacted]
[redacted]	35 persons on Daily wages	[redacted]

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