
Pre-Feasibility Study

FRUIT PULPING & GRADING UNIT (MANGO & GUAVA)



Small and Medium Enterprises Development Authority
Ministry of Industries & Production
Government of Pakistan

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1 DISCLAIMER

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2 EXECUTIVE SUMMARY

Nature has blessed Pakistan with an ideal climate for growing a large variety of fruits, most notably Mango, Citrus, Guava, Apple and etc. The growing demand of fruit drinks, juices, processed fruit and value added fruit products in local / international market provides ample opportunities for investment in fresh fruit processing on commercial basis.

This particular pre-feasibility study is for setting up a Fruit Pulping & Grading Unit mainly for Mango and Guava. The proposed unit is a large size business venture and assumed to be located in the cities nearby to Mango and Guava producing areas, such as Multan, Rahim Yar Khan, Mirpur Khas, Lahore or Karachi where basic infrastructure is available for easy transportation of raw material and finished goods. The finished product is pulp of Mango and Guava (i.e. used as basic raw material for juices, ice creams and other value added fruit products) along with graded fruits to high-end super store.

The unit will have the installed capacity of producing 4,320 tons of Mango Pulp and 2,880 tons of Guava Pulp per year on seasonal basis. Similarly, installed capacity for Fruit Grading will be 6,000 tons per year. Initial operational capacity is assumed at 60% for both fruit pulping and grading while maximum operational capacity utilization is considered as 100%. This production capacity is estimated to be economically viable and justifies the huge capital as well as operational costs of the project. However, complete adherence to best agronomic practices is critical to the success of this project. Therefore, technical knowledge and experience of the entrepreneur is absolutely necessary. The entrepreneur will establish the proposed unit on purchased land along with carrying out the necessary civil works.

The Total estimated cost for setting up the proposed Fruit Pulping and Grading unit is Rs. 757.29 million with fixed investment of Rs. 673.18 million and working capital Rs. 84.11 million. The project NPV is around Rs. 836.30 million, with an IRR of 31% and Payback Period of 4.07 years. The project will provide employment opportunities to 36 people.

3 INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the

number, scale and competitiveness of SMEs", SMEDA has carried out 'sectorial research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need based capacity building programs of different types in addition to business guidance through help desk services.

4 PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in **Fruit Pulping and Grading Unit (Mango & Guava)** by providing them with a general understanding of the business with the intention of supporting potential investors in crucial investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form basis of any Investment Decision.

5 BRIEF DESCRIPTION OF PROJECT & PRODUCT

Nature has blessed Pakistan with an ideal climate for growing a large variety of fruits, most notably Mango, Citrus, Guava, Apple and etc. Unfortunately, production of fruits in Pakistan has often not been accompanied by better post-harvest management and appropriate modernization of the processing techniques.

It has been observed that demand of value added fruits products, especially pulps, has increased tremendously due to its uses as raw material for juices, ice cream, fruits yogurts and other similar items in both local and international markets.

Pakistan is the 5th largest fresh mango exporter of the world and have huge demand in the international market due to rich flavor, aroma, and health value, i.e., nutrients and minerals contents. However, we are nowhere in the export of mango pulp that has huge exporting potentials. Similarly, fruit juices and beverages industry is recognized as the leading industries, which also requires adequate supply of fruit pulp from the local market. Additionally, in order to cater for the demand of local super store / international markets our fruit processors requires modern processing facilities.

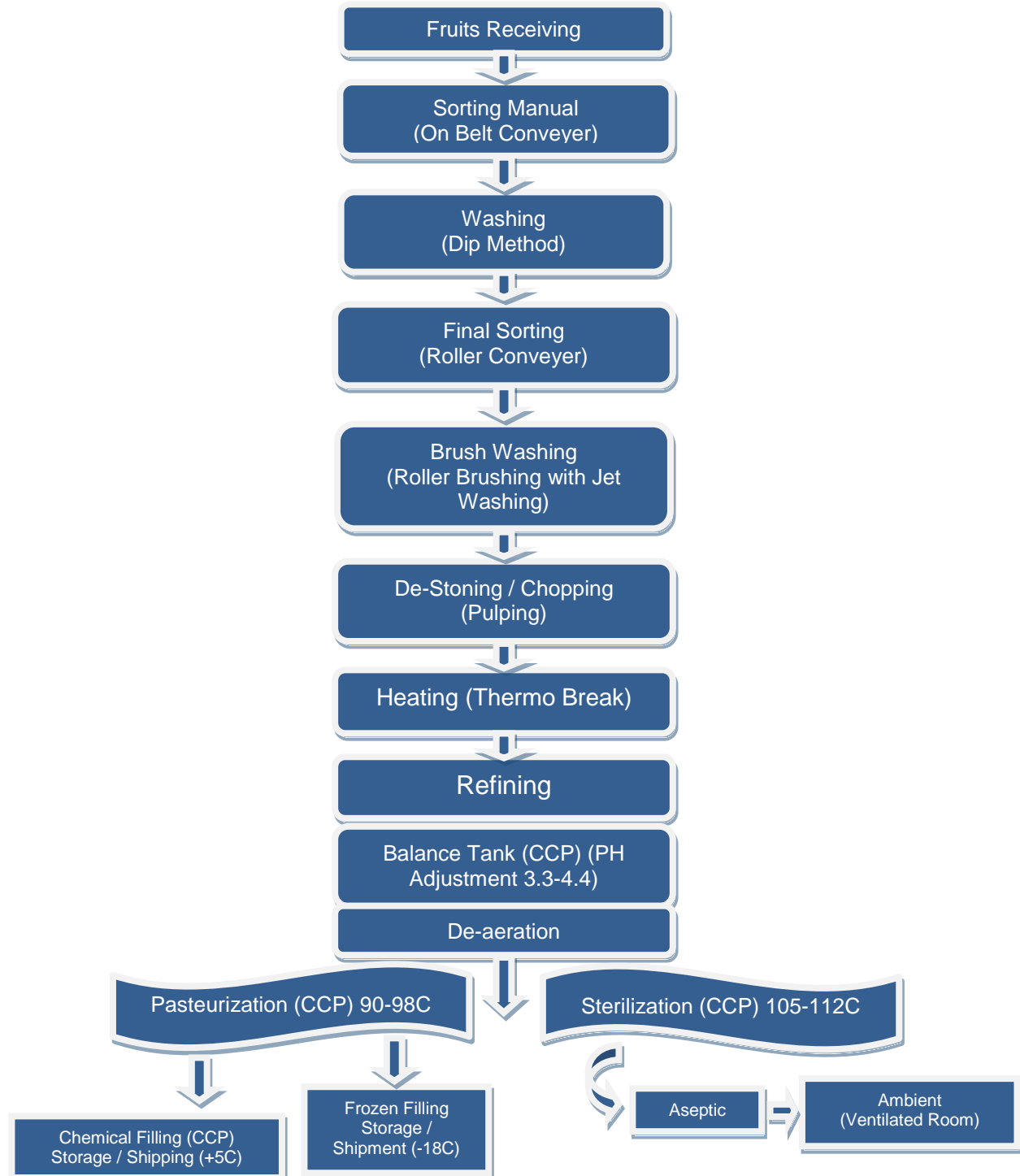
Due to stated reasons, the grading and pulping of fresh fruits is commercially viable business option for investors. Accordingly, this particular project is related to setting-up a modernly equipped 'Pulping and Grading Unit' especially for Mango and Guava fruits that has huge market potentials at both local and international market levels. According to the proposed business model, fresh fruits will be purchased directly from farmers or distributors, pulping and grading will be carried out and finished good which will be sold both in local and international markets.

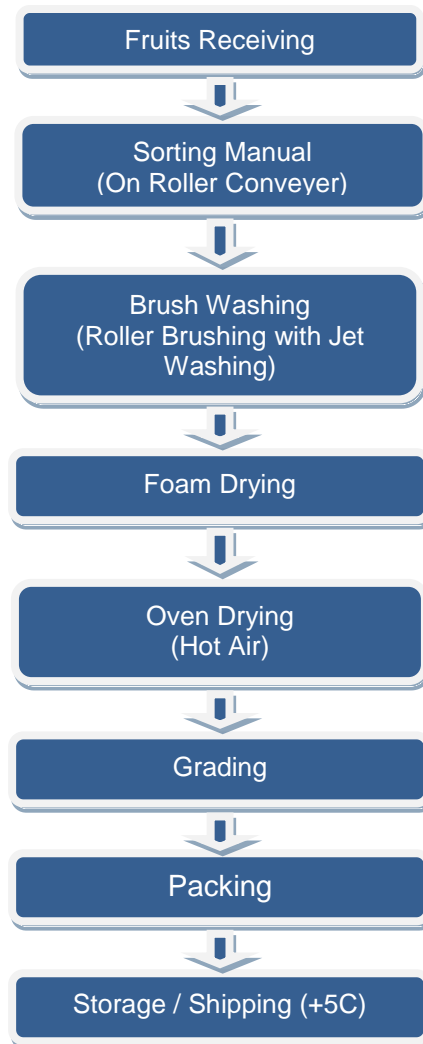
The major scope of processing activities will include post harvest handling, pre-cooling, grading, ripening, pulping, packing and logistics. For that purpose fully automatic imported machinery / plant comprising of Washing, Sorting / Grading, Pulping and Packing facilities will be installed. It is recommended to acquire Swiss or Italian technology, which is more durable and reliable.

5.1 Production Process Flow

The production process flow of the proposed venture mainly comprises of two parallel lines i.e. Pulping and Grading. The process flow for both are presented in the following diagrams:

Process Flow for Fruit Pulping (Mango and Guava)



Process Flow for Fruit Grading (Mango and Guava)**5.2 Installed and Operational Capacities**

The proposed Fruit Pulping and Grading Unit has a maximum capacity of producing 4,320 tons of Mango Pulp and 2,880 tons of Guava Pulp along with Grading of 6,000 tons annually. As the fruits (i.e. Mango and Guava) are seasonal commodities, therefore, pulping and grading of fruits will be done on seasonal basis.

Capacity utilization during first year of operation is assumed at 60% with an annual growth rate of 5% up to maximum level of 100% capacity utilization in 5th year of operation. This production capacity is estimated to be economically viable and justifies the capital as well as operational costs of the project.

Details of operational and installed capacity according to product mix are provided

in the table below:

Table 1: Installed and Operational Capacities – Fruit Pulping

Description	Processing Season	Production Capacity Per hour (tons)	Total Production Capacity per Season in tons (8 hour shift basis)	Operational Capacity 60% - in tons (Year 1)	Maximum Operational Capacity 100% - in tons (Year 5)
Mango	June ~ Aug 90 Days	10	4,320	2,592	4,320
Guava	Jan~ Mar 90 Days	5	2,880	1,728	2,880
Fruit Grading	Jan~ Dec	5	6,000	3,600	6,000

6 CRITICAL FACTORS

- ⇒ Complete adherence to best agronomic practices is critical to the success of this project; therefore, technical knowledge & experience of the entrepreneur in the field of horticulture and in fresh fruit processing business is absolutely necessary.
- ⇒ Awareness about HACCP standards and Strict Quality assurance of process and products
- ⇒ Selection of quality fruits on the basis of best analysis of cost and revenues for a given season; cost efficiency through better management.
- ⇒ Appropriate post-harvest arrangement for transportation of product to the processing unit.
- ⇒ Appropriate storage arrangement and internal control for processed fruits; cold chain refer container arrangements for transportation to local and international markets.
- ⇒ Properly trained seed staff should be engaged and comprehensive staff training programs to be adopted for capacity building.
- ⇒ Processing contract with farmers and traders for value added business opportunities.

- ⇒ Careful selection of good location and purchase of land at competitive price
- ⇒ Effective marketing and distribution of the product particularly to the exporters, industrial units and super store buyers.

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The unit can be installed anywhere in Pakistan where the raw materials (fresh fruits i.e. Mango and Guava) are easily accessible. But the most appropriate area for setting-up Fruits Pulping and Grading Unit should be that areas in which the raw material, mango, and guava are in abundance that will minimize the transportation cost.

As per current agricultural practices, major mango orchards are in South Punjab and Rural Sindh, while orchards of guava are mainly in upper Punjab, Hyderabad, Larkana, Moro, Haripur, Kohat and Bannu. Therefore, following urban areas could be the most appropriate locations for the proposed unit:

Multan, Bahawalpur, Rahim Yar Khan, Khairpur, MirpurKhas, Hyderabad, Lahore and Karachi.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

The proposed unit will produce pulp and graded fruit of Mango and Guava. Both of these products are not directly catered to general consumers but target the industrial consumers. For instance pulp is used as basic raw material for production of juices, ice creams, frozen deserts, flavored yogurts, jelly, jams and many others. Accordingly, the main buyers of fruit pulp will be manufacturing concerns of stated value added fruit products and fruit juice producers both in local and international markets. On the other hand, major buyers of graded fruits are either export markets or local super / departmental stores of big cities.

The main export markets for Pakistani processed fruits / pulp are including USA, Europe, Middle East, Far East, Canada, Russia and Sri Lanka.

9 PROJECT COST SUMMARY

9.1 Project Economics

All the figures in this financial model have been calculated for installed capacity of 4,320 tons of Mango Pulp and 2,880 tons of Guava Pulp along with 6,000 tons of

grading fruits per year with an initial operating capacity of 60% (for both Pulping & Grading).

The following table shows Internal Rate of Return, Payback Period and Net Present Value of the proposed venture.

Table 2: Project Economics

Description	Details
Internal Rate of Return (IRR)	31%
Payback Period (Yrs.)	4.07
Net Present Value (Rs.)	836,301,204

9.2 Project Financing

Following table provides details of the equity required and variables related to bank loan:

Table 3: Project Financing

Description	Details
Total Equity (50%)	Rs. 378,646,872
Bank Loan (50%)	Rs. 378,646,872
Annual Markup to the Borrower– Long Term Loan	14%
Tenure of the Loan (Years)	5
Annual Markup to the Borrower – Short Term Debt	15%

9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 4: Project Cost

Description	Amount Rs.
Capital Cost	
Land	37,500,000
Building / Infrastructure	143,261,428
Plant and Machinery	461,458,133
Furniture and Fixtures	1,230,250

Office Vehicles	2,724,800
Office Equipment	1,702,050
Pre-operating Cost	18,824,000
Misc. and Contingency	6,478,767
Total Capital Cost	673,179,428
Working Capital	
Equipment Spare Part Inventory	3,000,000
Upfront Insurance Payment	2,619,764
Cash	5,054,554
Raw Material Inventory	73,440,000
Total Working Capital	84,114,318
Total Project Cost	757,293,745

9.4 Space Requirement

Approximately 5 acres of land would be required for establishment of proposed unit, it is recommended that required land should be procured in the industrial estates of identified potential cities. The cost of land is estimated at a rate of Rs. 7.5 million per acre; hence total cost of required land is Rs. 37.50 million.

The infrastructural requirements of the project mainly comprises of the construction of Management Building, Sorting, Processing Hall, Cold Store and other facilities. The cost of construction of building for the proposed unit is provided in the table below:

Table 5: Space Requirement

Description	Unit	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Office Block	sq. ft.	2,320	2,500	5,800,000
Committee Room	sq. ft.	1,600	2,500	4,000,000
Micro Lab, Lab & Office	sq. ft.	1,300	2,500	3,250,000
Processing Hall	sq. ft.	13,020	1,800	23,436,000
Sorting Hall	sq. ft.	2,400	1,800	4,320,000
Cold Storage	sq. ft.	5,460	2,000	10,920,000
Freeze Room	sq. ft.	620	2,000	1,240,000
Machine Room	sq. ft.	600	2,000	1,200,000

Lobby	sq. ft.	480	1,800	864,000
Store	sq. ft.	1,700	1,800	3,060,000
Shed	sq. ft.	3,500	1,500	5,250,000
Fruit Ripening Area	sq. ft.	25,000	1,200	30,000,000
Utility Hall	sq. ft.	2,790	1,800	5,022,000
Dining	sq. ft.	600	2,000	1,200,000
Kitchen	sq. ft.	400	2,000	800,000
Masjid	sq. ft.	1,200	2,000	2,400,000
Toilets	sq. ft.	600	2,000	1,200,000
Change Room	sq. ft.	400	2,000	800,000
Guard Room	sq. ft.	120	1,500	180,000
Total Building Cost	sq. ft.	64,110		104,942,000
External Development				
Pavement / Driveway	sq. ft.	25,200	150	3,780,000
Main Gate	no.	1	200,000	200,000
Grounds Landscaping	sq. ft.	43,400	25	1,085,000
Overhead Water Tank	gallons	10,000	400	4,000,000
Under Ground Water Tank	gallons	10,000	70	700,000
External Development	lumpsum			3,000,000
Plant Electrification	lumpsum			10,000,000
Boundary Wall	r. ft.	2,283	1,000	2,282,500
Misc. & Contingency	%	3%		3,899,685
Design & Supervision Charges	%	7%		9,372,243
Total External Development Cost				38,319,428
Total Building and External Development Cost				143,261,428

9.5 Machinery & Equipment Requirement

Plant, machinery and equipment required for the proposed project are stated below:

Table 6: Machinery & Equipment

Sr. #	Description	Total Cost Rs. Mn.
A	Fruit Pulping Plant	231.423
B	Fruit Grading and Packaging Line	31.587
C	Utilities Machinery and Equipment	64.200
D	Laboratory Equipment – Microbiological Lab	4.254
E	Laboratory Equipment – Analytical Lab	1.994
F	Cold Store	20.000
G	Metal Drums	108.000
	Total Machinery & Equipment Cost	461.458

Detailed Machinery Specifications are mentioned in the following tables:

A - Fruit Pulping Plant

Sr. #	Description	Total Cost Rs. Mn.
1	Fresh fruit treatment composed by Inoxall 10b with belt conveyor on bottom, water recycling/filtering group, sorting line selinox roller type, accessories	11.232
2	Fruit puree extraction, treatment and aseptic line	
2.1	Brusher mod. 10b with bypass with feeding elevator	11.280
2.2	Maxi mango destoner	7.824
2.3	Chopper 4p for guava treatment complete with dosing group	5.076
2.4	Heating group composed by tank 1000, monoscrew pump, scrape surface pre-heater 5000	28.032
2.5	Pulping/refining group composed by 2-stages pulper / refiner super bicreamer with bin brl 300 and monoscrew pump extraction pump	10.308
2.6	Buffer mixing tank 5.000 complete with extraction monoscrew	2.712
2.7	Aseptic treatment group composed by de-aerator 6/5000/s/ra and tubular sterilizer sttc 5000	40.248
2.8	2 Heads aseptic filler gemina	21.336
2.9	Scaffolding	4.152

2.10	Accessories	7.344
3	Electric panel with PLC	8.772
4	Cleaning of the plant including n°2 centrifugal pumps	0.960
5	Waste elimination system including a set of screw conveyor	3.756
	Total Ex-works price	163.032
6	Other Costs	
6.1	Packing Cost	4.248
6.2	Spare Parts	1.800
6.3	N°80 man / absence / days for technical assistance to supervise the plant erection, pre-commissioning, and start-up phases and for training	7.800
	Import incidentals & local transportation cost	54.543
	Total other costs	68.391
	Total - A	231.423

B - Fruit Grading and Packaging Line

Capacity: 4-5 Tons per hour

Sr. #	Machinery & Equipment	Description	Total Cost Rs. Mn.
1	Feeder	Fruit Feeding	
2	Brush washer	Rotating brushed for cleaning of the fruit	
3	Drying	1st drying with foam rollers then with hot air	
4	Waxing	Wax application by spraying	
5	Drying	Drying of applied wax using air	
6	Sorting	Roller sorter for sorting of damaged and bruised fruit	
7	Grader (Sizer)	Mechanical (By Size) Electronic (By Weight)	
	Total - B		31.587

C - Utilities Machinery and Equipment

Sr. #	Machinery / Equipment	Description	Qty.	Unit Cost Rs. Mn.	Total Cost Rs. Mn.
1	Boiler	Smoke tube packaged boiler, 3-4 ton/hr x 10kg cm2 dual burner (gas & heavy oil)	1	6.800	6.800
2	Water Treatment Plant (Water Softner)	To convert hard water in soft water by Zeolite ion exchange process Required degree of hardness after treatment is 0.	1	3.500	3.500
3	Belt Conveyer	To Convey fruit @ 10ton/hr from sorting area to washing unit, Length 18m, Width 0.9m; belt made in reinforced rubber 2 ply belt thickness 2mm Drive: geared with starter and safety interlocking system supporting structure in MS	1	1.200	1.200
4	Stainless steel tanks with agitators	1500 L	2	0.650	1.300
		2500 L	2	1.100	2.200
5	Generator 250KVA	Turbo Type, 250KVA, 400 Volts, 50 Cycles, 1500 RPM, Power Factor 0.8	1	5.300	5.300
6	Water chiller	-	1	4.800	4.800
7	Centrifugal Pump	Capacity 12,000 - 15,000 Ltr/hr	2	0.240	0.480
8	Monix pump	Capacity 10,000 - 12,000 Ltr/hr	2	0.220	0.440
9	CIP System	Set of 04 SS Tanks of 500L each, heat exchange system, pumps and valves for water, steam & air	1	2.300	2.300
10	Piping, and valves for water, steam and air	-			6.200
11	Fuel tank for generator	-	1	0.200	0.200
12	Fans	Industrial	20	0.080	1.600
13	Storage tank for air	1000 Ltr MS Tank	1	0.400	0.400
14	Waste Screw Conveyer	-	1	2.200	2.200

15	Fork lift truck	Battery operated with solid rubber tyres, capacity 2.5 tons, fork length 4 ft, stacking height 12 ft	1	4.200	4.200
16	Waste Hopper Bin	MS Sheet hopper with the stand. Bottom height 12 ft, bottom opening gate 2x 2 ft with hydraulic controlled opening. 10-12 tons holding of solid waste of fruit processing	1	1.300	1.300
17	Air Compressor	With dryer and filter oil free screw type capacity 08 bar consumption 300-350 ltr/min.	1	2.200	2.200
18	SS Vat 3mm sheet of SS316 L Food Grade	Double jacketed with the option of steam and water circulation. Foldable lid of 316 L SS sheet and a channel stand for the vat. A screw type mixer at the bottom.	1	0.880	0.880
19	Weigh Bridge	30 x 10 feet size, 60 tons capacity	1	2.100	2.100
20	Cooling Tower		1	1.900	1.900
21	Effluent Water Treatment Plant		1	4.200	4.200
22	Workshop Items		-		2.500
23	Electrical Panels		-		2.500
24	Others (Installation, Labor charges, welding plants, tools etc.)		-		3.500
Total - C					64.200

D - Laboratory Equipment - Microbiological Lab

Sr. #	Equipment	Description	Qty.	Unit Cost Rs. Mn.	Total Cost Rs. Mn.
1	Water Bath	6-8 holes with adjustable temperature	1	0.150	0.150
2	Spirit Lamp	burner with stand and stainless steel tongs	2	0.001	0.002
3	Oven	incubator with 3-5 shelves	1	0.150	0.150
4	Auto Clave	Electric autoclave, temperature range 125-135 C	1	0.310	0.310
5	Colony Counter	With adjustable magnifying glass	1	0.050	0.050
6	Microscope	4, 10, 40 and 100X binocular	1	0.062	0.062
7	Lab ware	Autoclavable and non auto clavable	-		0.210
8	Media	Different types of medias	-		1.100
9	Incubator	3-5 Shelves, Temp range 10 - 60 C	1	0.580	0.580
10	Laminar Air Flow Cabinet		1	0.140	0.140
11	Misc.		-		1.500
Total - D					4.254

E - Laboratory Equipment - Analytical Lab

Sr. #	Equipment	Description	Qty.	Unit Cost Rs. Mn.	Total Cost Rs. Mn.
1	Weigh Balance	0.1g readability and capacity of 600-1200g	1	0.022	0.022
2	pH meter	Bench type with pH and temperature probes	1	0.037	0.037
3	Conductivity meter	Protube with multiple probe including conductivity / TDS / Salt and Temperature	1	0.041	0.041
4	Viscometer	Spindle Type	1	0.570	0.570
5	Viscometer	Time / Flow Type	1	0.260	0.260
6	Centrifuge	General Purpose variable speed with 15ml conical test tubes	1	0.290	0.290
7	Refractometer Hand type	0-32 brix and 0-53 brix	2	0.014	0.028

8	Refractometer Abbe's	0-95 brix	1	0.300	0.300
9	Thermometer	Digital probe type with wide temperature range	1	0.046	0.046
10	Magnifying glass	General Purpose	1	0.005	0.005
11	Desiccator	-	3	0.002	0.006
12	Stirrer	Hot plate type magnet stirrer	1	0.021	0.021
13	Burette	Digital auto burette	2	0.060	0.120
14	Glass ware	-	-		0.150
15	Refrigerator	12 Cubic Feet Size	1	0.040	0.040
16	Misc.		-		0.058
Total - E					1.994

F – Cold Store

Sr. #	Description	Total Cost Rs. Mn.
1	Cold Store	20.000
Total - F		20.000

G – Metal Drums

Description	Quantity	Unit Rate	Total Cost Rs. Mn.
Metal Drums	36,000	3,000	108.000
Total - G			108.000

9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for Fruit Pulping & Grading unit are given below:

Table 7: Furniture & Fixture

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Managers Tables Along With Side Tables	10	20,000	200,000
Manager / Officers Chairs	10	7,500	75,000
Visitor Chairs	20	6,000	120,000
Officers Tables alongwith Side Tables	10	20,000	200,000
File Racks	10	15,000	150,000

Sofa Set	2	30,000	60,000
Split AC 1.5 Ton	7	55,000	385,000
Misc. & Contingency		5%	40,250
Total			1,230,250

9.7 Office Equipment Requirement

Following office equipment will be required for Fruit Pulping & Grading unit.

Table 8: Office Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Laptop	1	150,000	150,000
Computers With LCD	10	75,000	750,000
Printer	3	20,000	60,000
Scanner	1	15,000	15,000
Networking Equipment & Accessories			150,000
Telephone Exchange	1	125,000	125,000
Telephone Sets	15	2,000	30,000
Fax Machine	1	15,000	15,000
Photo Copy Machine	1	200,000	200,000
Water Dispenser	2	18,000	36,000
Refrigerator	1	50,000	50,000
Electric Water Cooler	2	20,000	40,000
Misc. & Contingency		5%	81,050
Total			1,702,050

9.8 Raw Material Requirement

Fresh fruits of mango and guava are the main raw material for the proposed business, which will be procured either directly from fruit farms or from distributors of local fruit mandi. After that, fresh fruit will be processed and marketed through distributors and retailers in local market and through exporters in international market. According to the estimated installed and operational capacity of the proposed plant, following table provides the details of seasonal requirements of fresh fruits as a raw material:

Table 9: Raw Material Requirement

Description	Cost / Kg (Rs.)	Total Cost (Rs. Mn.) / Per Season
Mango Pulping		
Cost of Mango	35	151.20
Aseptic Bag	6	15.55
Chemical + Polythene Bag	1.5	3.89
Ripening & Unloading of Fruit	0.5	1.29
Total Mango Pulping		171.93
Guava Pulping		
Cost of Guava	20	34.56
Aseptic Bag	6	10.36
Chemical + Polythene Bag	1.5	2.59
Ripening & Unloading of Fruit	0.5	0.86
Total Guava Pulping		48.37

The raw material requirement in subsequent years will be determined according to the capacity utilization of the unit. The purchasing cost of raw material is assumed to increase at 5% annually. However, it is only estimated, as the market price of fruits may vary due to Government pricing strategy and other seasonal fluctuations.

9.9 Human Resource Requirement

To smoothly run the operations of the proposed Fresh Fruit Processing Unit, details of required human resource along with their monthly salaries are recommended as under:

Table 10: Human Resource Requirement

Description	No. of Employees	Monthly Salary per Person (Rs.)
CEO/Owner	1	125,000
Manager Plant	1	75,000
Manager Finance & Admin	1	75,000
Manager Marketing	1	75,000
Assistant Manager – Plant	1	40,000
Quality Control Officer	1	35,000

Electrical Incharge	1	30,000
Plant Foreman	1	30,000
Mechanical Foreman	1	30,000
Boiler Engineer	1	25,000
Accounts officer	2	20,000
Store Keeper	1	20,000
Assistant to Quality Assurance Officer	1	15,000
Assistant to Admin & HR	1	15,000
Office coordinator	1	15,000
Filler Operator	3	15,000
Supervisors	1	15,000
Boiler Operator	1	15,000
Cold Store Operator	1	15,000
Mechanic	2	18,000
Electrician	1	18,000
Assistant Operator	3	13,000
Weigh Bridge Operator	1	13,000
Driver	1	14,000
Lifter Operator	1	13,000
Office Boy	2	13,000
Gardener	1	13,000
Sweeper	2	13,000
Total	36	11,196,000

9.10 Utilities and other costs

During the first year the electricity expenses are estimated to be around Rs. 8,870,400 whereas, gas expenses are estimated to be Rs. 3,024,000 and fuel expense is around Rs. 13,896,000. Furthermore, promotional expense being essential for marketing of Fruit Pulping & Grading unit is estimated as 30% of administrative cost.

9.11 Revenue Generation

Based on the assumed capacity utilization for pulping and grading of Mango and Guava, sales revenue during the first year of operations is estimated as under:

Table 11: Revenue Generation – Year 1

Description	No. of units sold (tons)	Sale Price / Tons (Rs.)	Sales Revenue (Rs.)
Mango Pulping	2,592	125,000	324,000,000
Guava Pulping	1,728	70,000	120,960,000
Fruit Grading	3,600	4,500	16,200,000
Total			461,160,000

10 CONTACT DETAILS

In order to facilitate potential investors, contact details of private sector Service Providers relevant to the proposed project be given.

10.1 Machinery Suppliers

Name	Address	Phone	Email/Website
Faheem baig	Shahra-e-Faisal Karachi-75530	0092-21-35660920-22	faheem@helperco.com.pk
Helperco (Pvt) Limited Lahore	Room # 3, 3rd Floor Al-Hafeez Tower	0092-42-35785395-96	www.helpercopvtltd.enic.pk
Bertuzzi Food Processing	21052 Busto-Varese-Italy	+390331356299	www.burtuzzi.it
Jaffer Brothers Pvt. Ltd.	3, Mall mansion, 30-Shahrah-e-Quaid-e-Azem Lahore	+92-42-37320186	
SigmaTech Imports	1-Mozang road, Behind High Court Lahore	+92-51-2803154	
S.T Associates	Office No. 10, 2 nd floor, Mujahid Plaza, Blue Area Islamabad	0321-5155764	
Afga Tech	C-10, Ground Floor, Ruqia square, Block No. 14, Feral Area, Karachi	+92-300-8299892	
Kold Kraft	247-S Industrial Estate KotLakhat, Lahore	+92-42-35116727-28	
Al-Aziz Enterprises	10-km, Lahore Road Sargodha	+92-300-9606642	

10.2 Raw Material Suppliers

Name	Address	Phone	Email/Website
Wax (Polish) Al-Aziz Enterprises	10-km,Lahore Road, Sargodha	+92-300-9606642	
Packaging Zahid Packages	4-km,Kot-Momin Bhawal Road, Bhalwal	+92-0486- 892245-46	
Roshan Packages	71-A,Ahmed Block,New Garden Town	+92_425855324	sales@roshanp ackages.com.pk

10.3 Technical Expert/ Consultants

Name	Address	Phone
Dr. MAslam Pervez	Director Institute of Horticultural Sciences, Faculty of Agriculture, University of Agriculture Faisalabad	+92-41-9201281

11 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk
Ministry of Education, Training & Standards in Higher Education	http://moptt.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jammu Kashmir	www.ajk.gov.pk
Trade Development Authority of Pakistan (TDAP)	www.tdap.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Punjab Small Industries Corporation	www.psic.gov.pk

Sindh Small Industries Corporation	www.ssic.gos.pk
Pakistan Horticulture Development and Export Company (PHDEC)	www.phdec.org.pk
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Pakistan Readymade Garment Technical Training Institute	www.prgmea.org/prgtti/
Livestock & Dairy Development Department, Government of Punjab.	www.livestockpunjab.gov.pk
Punjab Industrial Estates (PIE)	www.pie.com.pk
Faisalabad Industrial Estate Development and Management Company (FIEDMC)	www.fiedmc.com.pk
Pakistan Horticulture Development Export Company (PHDEC)	www.phdec.org
Ministry of National Food Security and Research (MNFSR)	www.mnsfr.gov.pk
Pakistan Agriculture Research Council (PARC)	www.parc.gov.pk
National Agriculture Research Council (NARC)	www.narc.gov.pk
Agriculture University of Faisalabad (UAF)	www.uaf.edu.pk

12 ANNEXURES

12.1 Income Statement

Income Statement										
	60%	65%	70%	75%	80%	85%	90%	95%	100%	100%
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	461,160,000	549,549,000	651,004,200	767,254,950	900,245,808	1,052,162,288	1,225,459,606	1,422,894,765	1,647,562,359	1,812,318,595
<i>Cost of sales</i>										
Raw Material Cost of Mango Pulp	171,936,000	195,577,200	221,152,680	248,796,765	278,652,377	310,871,558	345,616,026	383,057,762	423,379,632	444,548,614
Raw Material Cost of Guava Pulp	48,384,000	55,036,800	62,233,920	70,013,160	78,414,739	87,481,443	97,258,781	107,795,149	119,142,007	125,099,107
Labor Wages for Pulp & Grading	10,118,623	11,509,934	13,015,079	14,641,963	16,398,999	18,295,133	20,339,884	22,543,371	24,916,357	26,162,175
Production Labor	5,868,000	6,454,800	7,100,280	7,810,308	8,591,339	9,450,473	10,395,520	11,435,072	12,578,579	13,836,437
Machinery Maintenance	500,000	550,000	605,000	665,500	732,050	805,255	885,781	974,359	1,071,794	1,178,974
Electricity Cost	8,870,400	10,570,560	12,522,048	14,758,128	17,316,204	20,238,313	23,571,682	27,369,342	31,690,817	34,859,899
Gas Cost	3,024,000	3,603,600	4,268,880	5,031,180	5,903,251	6,899,425	8,035,801	9,330,457	10,803,688	11,884,056
Fuel Cost	13,896,000	16,559,400	19,616,520	23,119,470	27,126,845	31,704,500	36,926,417	42,875,674	49,645,517	54,610,069
Total cost of sales	262,597,023	299,862,294	340,514,407	384,836,474	433,135,803	485,746,100	543,029,892	605,381,186	673,228,391	712,179,331
Gross Profit	198,562,977	249,686,707	310,489,793	382,418,476	467,110,005	566,416,188	682,429,715	817,513,579	974,333,968	1,100,139,265
<i>General administration & selling expenses</i>										
Administration expense	5,328,000	5,860,800	6,446,880	7,091,568	7,800,725	8,580,797	9,438,877	10,382,765	11,421,041	12,563,145
Administration benefits expense	266,400	293,040	322,344	354,578	390,036	429,040	471,944	519,138	571,052	628,157
Utilities (Electricity, Gas, Water etc)	1,330,560	1,585,584	1,878,307	2,213,719	2,597,431	3,035,747	3,535,752	4,105,401	4,753,623	5,228,985
Travelling expense	839,700	923,670	1,016,037	1,117,641	1,229,405	1,352,345	1,487,580	1,636,338	1,799,972	1,979,969
Communications expense (phone, fax, mail, internet, etc.)	1,119,600	1,231,560	1,354,716	1,490,188	1,639,206	1,803,127	1,983,440	2,181,784	2,399,962	2,639,958
Office vehicles running expense	156,000	171,600	188,760	207,636	228,400	251,240	276,364	304,000	334,400	367,840
Office expenses (stationary, entertainment, janitorial services, etc.)	1,119,600	1,231,560	1,354,716	1,490,188	1,639,206	1,803,127	1,983,440	2,181,784	2,399,962	2,639,958
Promotional expense	3,358,800	3,190,860	3,031,317	2,879,751	2,735,764	2,598,975	2,469,027	2,345,575	2,228,297	2,116,882
Insurance expense	2,619,764	2,349,613	2,079,462	1,809,311	1,539,161	1,400,659	1,120,528	840,396	560,264	280,132
Professional fees (legal, audit, consultants, etc.)	559,800	615,780	677,358	745,094	819,603	901,563	991,720	1,090,892	1,199,981	1,319,979
Depreciation expense	54,147,075	54,147,075	54,147,075	54,147,075	54,147,075	54,479,778	54,479,778	54,479,778	54,479,778	54,479,778
Amortization of pre-operating costs	3,764,800	3,764,800	3,764,800	3,764,800	3,764,800	-	-	-	-	-
Amortization of Contingency Cost	647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877
Miscellaneous expense	1,119,600	1,231,560	1,354,716	1,490,188	1,639,206	1,803,127	1,983,440	2,181,784	2,399,962	2,639,958
Subtotal	76,377,575	77,245,378	78,264,365	79,449,613	80,817,894	79,087,403	80,869,764	82,897,510	85,196,169	87,532,618
Operating Income	122,185,402	172,441,328	232,225,429	302,968,863	386,292,111	487,328,785	601,559,950	734,616,069	889,137,799	1,012,606,647
Other income (interest on cash)	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	1,089,920	-	-	-	-	-
Earnings Before Interest & Taxes	122,185,402	172,441,328	232,225,429	302,968,863	387,382,031	487,328,785	601,559,950	734,616,069	889,137,799	1,012,606,647
Interest on short term debt	-	-	-	-	-	-	-	-	-	-
Interest expense on long term debt (Project Loan)	43,995,670	36,530,573	27,950,624	18,089,327	6,755,325	-	-	-	-	-
Interest expense on long term debt (Working Capital Loan)	3,257,134	-	-	-	-	-	-	-	-	-
Subtotal	47,252,804	36,530,573	27,950,624	18,089,327	6,755,325	-	-	-	-	-
Earnings Before Tax	74,932,598	135,910,755	204,274,805	284,879,535	380,626,706	487,328,785	601,559,950	734,616,069	889,137,799	1,012,606,647
Tax	26,226,409	47,568,764	71,496,182	99,707,837	133,219,347	170,565,075	210,545,983	257,115,624	311,198,230	354,412,326
NET PROFIT/(LOSS) AFTER TAX	48,706,189	88,341,991	132,778,623	185,171,698	247,407,359	316,763,710	391,013,968	477,500,445	577,939,569	658,194,320

12.2 Balance Sheet

Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	5,054,554	18,313,340	134,060,052	236,768,304	368,949,938	540,268,509	844,519,272	1,212,825,976	1,655,542,309	2,204,948,639	3,304,314,060
Accounts receivable		37,903,562	41,535,986	49,337,803	58,284,623	68,527,428	80,235,949	93,600,900	108,836,481	126,183,169	142,186,889
Equipment spare part inventory	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519	3,828,845	4,020,287	4,221,301	4,432,366	4,653,985	-
Raw material inventory	73,440,000	91,891,800	114,299,262	141,445,337	174,260,655	213,850,497	261,526,579	318,844,487	387,647,771	447,733,176	-
Pre-paid insurance	2,619,764	2,349,613	2,079,462	1,809,311	1,539,161	1,400,659	1,120,528	840,396	560,264	280,132	-
Total Current Assets	84,114,318	153,608,314	295,282,262	432,833,630	606,680,895	827,875,938	1,191,422,614	1,630,333,060	2,157,019,192	2,783,799,101	3,446,500,948
<i>Fixed assets</i>											
Land	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000	37,500,000
Building/Infrastructure	143,261,428	136,098,357	128,935,285	121,772,214	114,609,142	107,446,071	100,283,000	93,119,928	85,956,857	78,793,785	71,630,714
Machinery & equipment	461,458,133	415,312,319	369,166,506	323,020,693	276,874,880	230,729,066	184,583,253	138,437,440	92,291,627	46,145,813	-
Furniture & fixtures	1,230,250	1,107,225	984,200	861,175	738,150	615,125	492,100	369,075	246,050	123,025	-
Office vehicles	2,724,800	2,179,840	1,634,880	1,089,920	544,960	4,388,318	3,510,654	2,632,991	1,755,327	877,664	-
Office equipment	1,702,050	1,531,845	1,361,640	1,191,435	1,021,230	851,025	680,820	510,615	340,410	170,205	-
Total Fixed Assets	647,876,661	593,729,586	539,582,511	485,435,437	431,288,362	381,529,605	327,049,827	272,570,049	218,090,270	163,610,492	109,130,714
<i>Intangible assets</i>											
Pre-operation costs	18,824,000	15,059,200	11,294,400	7,529,600	3,764,800	-	-	-	-	-	-
Legal, licensing, & training costs	6,478,767	5,830,890	5,183,013	4,535,137	3,887,260	3,239,383	2,591,507	1,943,630	1,295,753	647,877	-
Total Intangible Assets	25,302,767	20,890,090	16,477,413	12,064,737	7,652,060	3,239,383	2,591,507	1,943,630	1,295,753	647,877	-
TOTAL ASSETS	757,293,745	768,227,990	851,342,187	930,333,803	1,045,621,317	1,212,644,927	1,521,063,947	1,904,846,739	2,376,405,215	2,948,057,470	3,555,631,662
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable		28,045,383	32,700,498	37,985,114	43,993,849	50,837,022	58,643,367	67,563,225	77,772,292	87,636,012	53,166,919
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities											
Total Current Liabilities	-	28,045,383	32,700,498	37,985,114	43,993,849	50,837,022	58,643,367	67,563,225	77,772,292	87,636,012	53,166,919
<i>Other liabilities</i>											
Deferred tax		26,226,409	73,795,173	80,755,173	80,755,173	80,755,173	64,604,139	48,453,104	32,302,069	16,151,035	(0)
Long term debt (Project Loan)	336,589,714	286,603,137	229,151,464	163,119,841	87,226,922	-	-	-	-	-	-
Long term debt (Working Capital Loan)	42,057,159	-	-	-	-	-	-	-	-	-	-
Total Long Term Liabilities	378,646,872	312,829,546	302,946,637	243,875,014	167,982,095	80,755,173	64,604,139	48,453,104	32,302,069	16,151,035	(0)
<i>Shareholders' equity</i>											
Paid-up capital	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872	378,646,872
Retained earnings		48,706,189	137,048,179	269,826,802	454,998,500	702,405,859	1,019,169,570	1,410,183,537	1,887,683,982	2,465,623,551	3,123,817,871
Total Equity	378,646,872	427,353,061	515,695,052	648,473,675	833,645,373	1,081,052,732	1,397,816,442	1,788,830,410	2,266,330,854	2,844,270,423	3,502,464,744
TOTAL CAPITAL AND LIABILITIES	757,293,745	768,227,990	851,342,187	930,333,803	1,045,621,317	1,212,644,927	1,521,063,947	1,904,846,739	2,376,405,215	2,948,057,470	3,555,631,662

12.3 Cash Flow Statement

Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		48,706,189	88,341,991	132,778,623	185,171,698	247,407,359	316,763,710	391,013,968	477,500,445	577,939,569	658,194,320
Add: depreciation expense		54,147,075	54,147,075	54,147,075	54,147,075	54,147,075	54,479,778	54,479,778	54,479,778	54,479,778	54,479,778
amortization of pre-operating costs		3,764,800	3,764,800	3,764,800	3,764,800	3,764,800	-	-	-	-	-
amortization of training costs		647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877	647,877
Deferred income tax		26,226,409	47,568,764	6,960,000	-	-	(16,151,035)	(16,151,035)	(16,151,035)	(16,151,035)	(16,151,035)
Accounts receivable		(37,903,562)	(3,632,425)	(7,801,816)	(8,946,820)	(10,242,806)	(11,708,521)	(13,364,951)	(15,235,581)	(17,346,688)	(16,003,719)
Equipment inventory	(3,000,000)	(150,000)	(157,500)	(165,375)	(173,644)	(182,326)	(191,442)	(201,014)	(211,065)	(221,618)	4,653,985
Raw material inventory	(73,440,000)	(18,451,800)	(22,407,462)	(27,146,075)	(32,815,318)	(39,589,843)	(47,676,081)	(57,317,909)	(68,803,284)	(60,085,405)	447,733,176
Advance insurance premium	(2,619,764)	270,151	270,151	270,151	270,151	138,501	280,132	280,132	280,132	280,132	280,132
Accounts payable		28,045,383	4,655,115	5,284,616	6,008,735	6,843,173	7,806,345	8,919,859	10,209,066	9,863,720	(34,469,093)
Cash provided by operations	(79,059,764)	105,302,521	173,198,385	168,739,875	208,074,554	262,933,810	304,250,763	368,306,705	442,716,333	549,406,330	1,099,365,421
<i>Financing activities</i>											
Project Loan - principal repayment		(49,986,576)	(57,451,673)	(66,031,623)	(75,892,919)	(87,226,922)	-	-	-	-	-
Working Capital Loan - principal repayment		(42,057,159)	-	-	-	-	-	-	-	-	-
Short term debt principal repayment		-	-	-	-	-	-	-	-	-	-
Additions to Project Loan	336,589,714	-	-	-	-	-	-	-	-	-	-
Additions to Working Capital Loan	42,057,159	-	-	-	-	-	-	-	-	-	-
Issuance of shares	378,646,872	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	757,293,745	(92,043,735)	(57,451,673)	(66,031,623)	(75,892,919)	(87,226,922)	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(673,179,427)	-	-	-	-	(4,388,318)	-	-	-	-	-
Cash (used for) / provided by investing activities	(673,179,427)	-	-	-	-	(4,388,318)	-	-	-	-	-
NET CASH	5,054,554	13,258,786	115,746,712	102,708,252	132,181,634	171,318,570	304,250,763	368,306,705	442,716,333	549,406,330	1,099,365,421

13 KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Description	Details
Administration Benefit Expenses	5% of admin. expense
Traveling Expenses	7.5% of admin. expense
Communication Expenses	10% of admin. expense
Office expenses (stationary, entertainment, janitorial services, etc.)	10% of admin. expense
Office vehicles insurance rate	3%
Promotional expense % of admin expense	30% of admin. expense
Operating costs growth rate	10%
Depreciation on Building and Infrastructure	5%
Depreciation on Machinery	10%
Depreciation on Furniture and Fixture	10%
Depreciation on Office Equipment	10%
Depreciation on Office Vehicle	20%

13.2 Production Cost Assumptions

Description	Details
Mango Pulping (Rs./Kg)	
Cost of Mango	35
Aseptic Bag	6
Chemical + Polythene Bag	1.5
Ripening & Unloading of Fruit	0.5
Guava Pulping (Rs./Kg)	
Cost of Guava	20
Aseptic Bag	6
Chemical + Polythene Bag	1.5
Ripening & Unloading of Fruit	0.5
Production Cost Growth Rate	5%

13.3 Revenue Assumptions

Description	Details
Mango Pulp Price Per Kg (Rs.)	125
Guava Pulp Price Per Kg (Rs.)	70
Fruit Grading Per Kg (Rs.)	4.50
Growth in Sales Price	10%
Days Operational / Year	180
Mango Pulping during the first year (Tons)	2,592
Guava Pulping during the first year (Tons)	1,728
Grading during the first year (Tons)	3,600
Per Day Production Hours	8
Production Capacity in First Year	60%
Percentage Increase in Production Capacity every Year	5%
Maximum Production Capacity	100%
Domestic Sales	100%

13.4 Financial Assumptions

Description	Details
Debt	50%
Equity	50%
Interest Rate on Debt	14%
Debt Tenure	5
Debt Payment / Year	12