

Pre-Feasibility Study

FRESH FRUITS PROCESSING

(Mango)



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1 INTRODUCTION

1.1 Project Brief

The project involves processing of fresh mangoes for export from Pakistan. The process would include undertaking value-added activity(s), which will increase the quality and shelf life of Pakistani mangoes for the international market.

Pakistani Mangoes have huge demand in the international market due to its rich flavor, aroma, and health value, i.e., nutrients and minerals contents. It has been observed that in order to enter into the international markets with longer shelf life, good quality mangoes will require physical infrastructure facilities like modern processing and logistics¹.

The major scope of processing activities will include post harvest handling, pre-cooling, grading, ripening, packing and logistics. Mango processing unit will also provide services to other exporters of mangoes who do not have their own processing facilities; this may also include provision of cold transportation service up to the port of exit.

1.2 Opportunity Rationale

Mango is known as the king of fruits. It is one of the most popular tropical fruits in the world. It is an important export commodity as it earns about \$24 million annually. Around 60-70 per cent good quality mango is exported to Middle East and 15-16 per cent to Europe.

The volume of exports varies from year to year as in 2003 and 2004 it was around, 59,000 and 77,000 tons, respectively. Pakistani mango occupies a central position in international market due to its unique taste and flavor.

The soil and climate of certain areas are favorable for mango plantation with main areas located in southern Punjab and Sindh. Multan, Rahim Yar Khan, Muzaffargarh, Bahawalpur, the D.G. Khan, Sujaabad, Kabirwala, and Khanewal are noted for huge mango orchards.

Sahiwal, Vehari, Okara, Faisalabad, Jhang, Toba Tek Singh and Sargodh are other growing areas in Punjab. In Sindh, Mirpurkhas, Hyderabad, Nawabshah, Naushahroferoz and Khairpur are noted for mango orchards.

Fewer orchards are also found in the NWFP and Balochistan. Such orchards cover around three hundred thousand acres. Its production keeps fluctuating with the yearly average of 1.1-1.3 million tons. The share of Punjab alone is 67 per cent. Pakistan ranks fifth largest mango producer in the world.

Pakistan has direct competition with India, which is world's largest producer of mangoes. Pakistan has cost advantage over India in terms of transportation costs because of lesser distances of ports, especially for Middle Eastern markets.

¹ It is has been assumed that 25 percent of the project capacity will be utilised for providing processing services to other exporters.

1.3 Viable Economic Size (Processing Capacity)

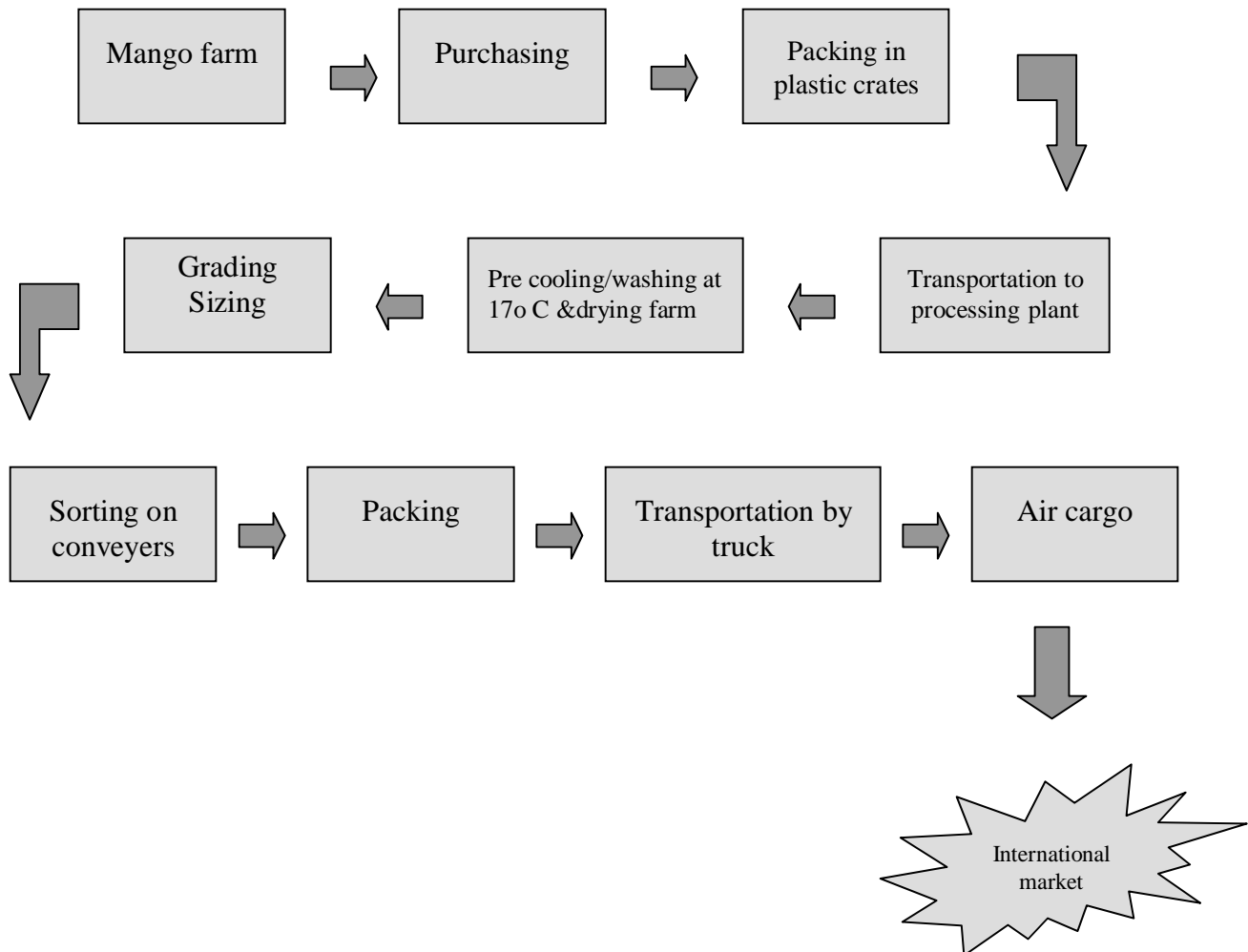
A plant with processing capacity of 1.5 tons per hour is considered to be an economically viable setup. The total operational days of plant shall be 70 days. This means, that for a total 70 operational days, with 8 hours of operations per day, a total of 840 metric tons of fresh mangos can be processed.

1.4 Total Project Cost

Total project cost for setting up a mango processing unit is estimated to be Rs. 10.2 Million

2 PROCESSING

2.1 Process Flow Chart



2.2 Harvesting

The main consideration during harvesting should be to ensure that mangoes are harvested at correct maturity and staining of latex (Sap) on the fruit is avoided. Mangoes should be harvested by cutting the stem 1 to 2 centimeters away from the fruit; this technique reduces latex exudation and staining, as well as the possibility of fungal organisms entering the fruit.

The most suitable equipment comprises of a long mast with a cutting blade and a small bag under the blade to catch the fruit. Mangoes should never be knocked from the tree, dropped, or thrown onto the ground.

After harvest, latex should be allowed to drain away from the fruit; this is normally carried out by placing the mango with the stem downward on grass below the tree. The fruit can normally be placed directly into a ventilated field crate. The crate should not contain more than three layers of fruit. If possible, the fruit in the crate should be left under the tree until taken to the processing unit.²

2.3 Hydro-Cooling/Cleaning

Hydro cooling is done to remove field heat from the fruit. It is important to remove the field heat as soon as possible. The heat reduction process is often carried at the time of cleaning mangoes on the farm with water. Field heat removal can also be done through “forced air cooling” and or in cold stores, but once the fruit moves through the cold chain, it should not be allowed to heat up again.

In this project, it is assumed that field heat removal function will be performed at the processing facility. Mangoes delivered at the processing unit are gently dumped into water holding tanks (at normal water temperature) with overhead sprayers to wash and clean the field dust. The fruit is gradually cooled down at 17°C through different stages. The water may contain a mild solution of chlorine. This process helps stop latex flow and also reduce field heat. The time in residency of the fruit in the hydro-coolers is approximately 10-15 minutes.

After hydro-cooling, washing and cleaning, mangoes are passed through drying tunnel that blows excess water off the fruit. Mangoes are then moved from the pre-cooling area to live belts that take it past the grader/sorters.

2.4 Grading, Sizing, and Sorting

Due to the normal ovate or oblong shape of mangoes, they do not lend themselves very well to mechanical graders, although weight based equipment works well.

At sizing and sorting stage, it is observed that mangoes should be of uniform size and color. Mangoes are sorted into color ranges and sizes by hand (normally this process is done on a conveyer belt which feeds fruit onwards to packing lines). After sorting mangoes are moved to the packing area. The fruit handlers wear soft white cotton gloves. Handling of the fruit involves sorting, hand wiping, cleaning.

² This paragraph is added for the knowledge of the exporter to ensure the measures to be taken at the time of harvesting. In the pre- feasibility study, it is assumed that unit is purchasing mangoes after harvesting by the farmers/farm contractors.

2.5 Packing

The packers only pack one size of fruit so that packing personnel do not have to make decisions and therefore, they only put pre-sized mangos into the standard carton efficiently. Packing is done into mango cartons made of cardboard paper. Uniform size/weight mangoes are individually wrapped in soft tissue papers before placing them into the carton.

Typical sizes of 4.5 kg net weight mango cartons are (10.9 cm x 34 cm x 26.9 cm) and (10.2 cm x 43.2 cm x 27.9 cm). Smaller carton sizes for 4 kg & 2 kg net weight pack are now also being used. The carton should have a minimum bursting strength of 250-275 psi (lb per sq. inch). Ventilation and hand holes' openings should be designed to provide adequate handling, circulation of air and maximum cooling.

Mangoes are packed into the cartons by count. These counts are 6, 8, 10, 12, 14, 16, and 18 numbers of mangoes per carton, depending on the size of the mango. These counts must make the minimum guaranteed net weight. Mangoes are packed side by side, or on edge, rather than flat so as to maximize the number that will be accommodated in a single layer. Details of pre-harvest and post harvest processes are normally communicated to the buyer.

2.6 Cooling

Mangoes may be stored in refrigerated, humidity controlled facilities before and after packing. The proper temperature for holding Pakistani mangoes is 17 degrees Celsius at a relative humidity of 90-95% for mature green mangoes.

At the mature green stage, mangoes may be stored for up to two weeks with no adverse affect. Raising temperature to 21 degrees Celsius is frequently used to trigger ripening just before retail sale.

Depending on the cultivator, mangoes are placed in gassing chambers where ethylene gas is introduced to trigger additional color change. This is usually done just before shipping to market as it also induces ripening. However, this final preparation work is normally carried out by wholesale distributor at the time of delivery or by the retail chain after receipt of the fruit.

2.7 Ripening

The ripening of mangoes can be induced, according to destination and length of journey, by raising the temperature to 20 degree centigrade and/or by introducing ethylene into their holding atmosphere. But due to climatic conditions it is not recommended to ripe Pakistani mango before exporting it. In UAE due to high temperature there is no need to follow any processes to ripe the mangos. But in Europe ripening should be done after reaching the destination. For that purpose they have established ethylene chambers for ripening, Pakistani exporters acquire those chambers on rent for 1 or 2 days to ripe the their slots.³

³ Rent cost for acquiring ripening chambers in Europe is not included in this model

3 CURRENT INDUSTRY STRUCTURE

Mangoes come in market early in the May and remains in market till August/September. The typical mango season is from June to September, with export surpluses available in July. Most of the traders do not follow the recommended processing methods.

The main orchards of mango are in district Multan, and district Rahim Yar Khan, which include: Rahimabad, Jamaludin wali, Sadiqabad, Shaikh Wahan, Mianwali Qureshian Zahirpir, Bagho Bahar, Tirandah Mohammad Panah.

Whereas, Hyderabad, Tandojam, Tando Allahyar, Tando Jan Muhammad, Mirpur Khas, Digri, Umer Kot, Nawab Shah, Naushero Feroz, Khairpur Mirus, Ghotki, Bahawalpur, Shuja abad, Muzaffargarh, Khan Garh, KoatAddu, Khanewal, Sahiwal, Vihari, Okara, Faisalabad, Jhang, Toba Tek Singh and Sargodha are also very famous for mango production.

There are number of varieties available which are famous in Pakistan, however, the common varieties are: Sindhri, Langra, Chaunsa, Fajri, Samar Bahist, Anwar Ratole, Dasehri, Saroli, Tota Pari, Neelam, Maldah, Collector, Bengan Phali, etc.

The statistics of Pakistan's mango production, world's top ten mango producing and leading exporters of mangoes is provided in the following table 3-A, 3-B & 3-C:

Table 3-A: Pakistan's Production of Mangoes in '000' Tons

Table 3-1

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
908	915	917	916	938	990	1037	1035	1056	1674	1888

Source: Economic Survey Of Pakistan (2005-2006)

Table 3-B: World Top Importers of Mangoes

Importers	Trade Value 2005	Trade Value 2004
USA	\$837,731,808	\$202,577,251
Netherlands	\$292,834,871	\$59,508,282
France	\$237,871,571	\$64,198,954
China, Hong Kong SAR	\$181,331,354	\$44,441,371
United Kingdom	\$173,322,576	\$42,845,890
Germany	\$166,052,920	\$46,730,000
Japan	\$143,865,212	\$41,071,780
Canada	\$132,548,877	\$35,809,013
China	\$116,996,653	\$37,388,601

Table 3-C: World's Top Exporters (values in tons)

Exporters	Value 2005	Value 2004
Mexico	195218	227277
Brazil	72552	111181
Netherlands	54613	45788
India		156222
Peru	57618	59829
Philippines	32611	35841
France	12921	9818
Pakistan	84954	82291
USA	14344	18281
Ecuador	42128	41064

Source: UNO Statistics

3.1 UK. Market Scenario

Generally, mango exporters from Pakistan to UK, prefer to deal with buyers who are suppliers to the ethnic Asian community in different parts of the country. Their response to the idea of mainstreaming mango, through supermarkets in the U.K market, has not been positive due to the following reasons:

3.2 Higher UK quality standards

Pakistani exporters find quality requirements of supermarkets to be very stringent. Due to poor product quality, such as fruit blemish/marks, node leaks, lack of uniformity in size & color and short shelf life etc., it had been difficult for Pakistani exporters to cater to the higher end of UK retail market.

3.3 Lack of cargo space and poor infrastructure

Due to shortage of cargo space and unreliable service of national carrier, meeting delivery schedules for exporters becomes difficult.

Exporters from Multan and other areas of Southern Punjab found it difficult to export without direct flights and adequate cargo space.

Mangoes are exported mainly by air, however, shortage of air cargo space calls for exploring alternate mode of transportation for mango exports. The mode of transportation by sea is another possibility for exporting mangoes to U.K. given that the size of consignment is large enough. The un-ripened mangoes have storage life of about 25 days in cold storage, according to the market; it takes about 18 to 20 days for a shipment via sea to arrive at London from Karachi. This provides a fair period of time for mangoes to be ripened after their at the destination port.

4 MARKETING

Middle East is the major market for Pakistan mango exports as compared to European markets. Far Eastern and Central Asian Countries are also new emerging markets. List of major importing countries is provided in the Table 4-A below:

Table 4-A: MARKET SIZE

Major Importers of Pakistani Mangoes (Metric Tons)

Region	2005	2004
Canada	353	238
Netherlands	337	393
UAE	36,454	32621
France	12148	1399
UK	11165	9595
Germany	1191	980
Malaysia	374	148
Saudi Arabia	14942	13148

Source: FAO Statistics

The present demand of Middle East is estimated at 360 to 480 tons per day during the season. Amongst the European Union (EU) countries, U.K. is regarded as the most promising market for mangoes in Europe. In terms of volume of import, France is closely behind U.K. In the recent years, markets in Germany and Holland have also shown opportunities for import of mangoes. The growth rate of European mango market as a whole works out to 20% per annum. Although, EU is a growing consumer market, however, Pakistan's share of export to EU is not increasing significantly. The main reason for attaining small market share in EU is due to the lack of appropriate technology, low quality standards and non-compliance of delivery schedules by producers and exporters. For example, palletizing is preferred in Europe, and in some cases, is a pre-requisite of the buyer, but Pakistani exporters are still hesitant to use pallets as this take up a large space in the container hold.

Export prices for United Kingdom are usually relatively very low as compared to prices received by other mango exporting countries such as Mexico, South Africa and Philippines.

As regards the markets in USA and Japan, Pakistan is not in a position to make any advancement due to quarantine restrictions imposed by these countries. *Hot water or Vapor Heat Treatment of fruits is required to export to these countries and to control fruit flies and anthracnose. The food technologists at Post Harvest Research Center, Ayub Agriculture Research Institute, Faisalabad are studying this technology for adoptability and suitability on our local varieties and local temperature conditions.*

4.1 Market Penetration

Pakistani mangoes are currently being exported to Europe and Middle East at very low prices. The prices obtainable in the chain stores (supermarkets) are much higher than those offered by current buyers who are suppliers to small grocery retail shops and stalls at Sunday markets. Pakistani has been unsuccessful in entering in the higher end of the market, regular wholesalers and agents. Generally, Pakistani mango exports are targeted to ethnic Asian community. With regular, consistent and continuous supply of high quality mangoes, Pakistan can enter middle and higher end market segments in UK and other EU countries.

In order to evaluate performance of the mango exports in the target markets, feedback and data on mango exports is available from the Federal Bureau of Statistics, Government of Pakistan, and from private sector exporters in Pakistan through local Chambers of Commerce & Industry offices.

It is believed that targeting higher end of the market will not be easier or perhaps possible without proper marketing strategy. Entering the said segment of the market would require establishment of a “brand name”. Other important factors for successful marketing include creating product and brand awareness in the international as well as in the local markets.

The important factor in enhancing mango exports would be the willingness of the exporter to enter the middle and upper segments of the market, and their ability to improve their product to meet the requirements of these segments. There is a tremendous information gap on the production, packaging and marketing techniques prevalent in developed markets. The average Pakistani producer and distributor are viewed as extremely primitive by the buyers. The production techniques and packaging and transport which are followed in the developed markets should be followed to improve the current export status. It may also encourage exporter to acquire patents, especially for new varieties such as Almas, and enhance the marketability of the product.

In this project it is assumed that thirty five (35%) of the production shall be exported to UAE market, twenty (20%) of the production shall be exported to European markets and twenty five (25%) of the production capacity would be offered against services to exporters who wish to have their mangoes processed from this plant.

5 RAW MATERIAL

Table 5-A: Raw and Processing Material

Description	Price (Rs.)	Availability
Mangoes (average price per kg)	20	Local
Card Board box Carton Size 10.2 cm x 43.2 cm x 27.9 cm for 5 kg (each)	25	Local

6 MANPOWER REQUIREMENT

Table 6-A Manpower Required in the Year 1 of the Operation.

Positions	Number (Year 1)	Salary/month (Rs.)	Annual Salary	Number (Year 10)
PRODUCTION STAFF				
Processing Plant Operators	1	12,000	144,000	4
Supervisor	3	8,000	288,000	5
Helper (for 3 months)	2	5,000	30,000	4
Direct Labour (for 3 months)	25	4,000	300,000	50
ADMINISTRATIVE STAFF:				
Chief Executive	1	50,000	600,000	1
Director (Marketing)	1	30,000	360,000	1
Director (Operations)	1	30,000	360,000	1
Director (Finance/Admin)	1	30,000	360,000	1
Accounts Officer	1	15,000	180,000	1
Personal & Admin. Officer	1	12,000	144,000	1
Admin Officer	1	8,000	96,000	1
Food Technologist	1	25,000	300,000	1
Skilled Machine Mechanic	1	7,000	84,000	2
Peon	1	4,000	48,000	1
Gardener	1	3,500	42,000	1
Security Guards	2	4,000	96,000	1
Total			3,432,000	

The direct labor and helper staff shall be employed for three (3) months only due to seasonal nature of business. The manpower for the plant will be gradually increased in relation to the increase in the production capacity over the years; the increase is accommodated in the financial model. The total projected manpower at the year 10th of operations is shown in the last column of above table.

7 MACHINERY & EQUIPMENT

Table 7-A: Processing Equipment List

Processing Machinery	Quantity	Price (Rs.)	Availability
Mango washing grading drying plant	1	200,000	Local
Ice Bank for Water Chilling for Mangoes	1	1,180,500	Local
Cold Storage (9,000 cu. ft.)	1	2,102,000	Local
Plastic Crates (2'x 1'x1') (for 15 kg)	2,000	700,000	Local
Diesel generator (125 KW)	1	1,020,000	Imported
Water Pump of 4 HP motor and water tank fiber glass (1,500 gallons)	1	121,000	Local
Fork lifter	1	450,000	Second hand

Table 7-1: Office Equipment

Equipment	Quantity	Cost
Furniture		120,600
Air Conditioner	2	50,000
Computers	3	75,000
Fax Machine	1	10,000

8 LAND & BUILDING

8.1 Land

The Processing plant is proposed to be set up within or in the vicinity of Multan District. The requirement of land is 18461sq. ft (approximately 4.5 Kanals). The land cost has been estimated to be Rs 1,538,417 at Rs. 375,000/Kanal. The land requirement has been proposed keeping in view the future expansion needs (if any)

Table 7-A: Buildings

Land & Building	Area (Sq. Ft)	Construction Cost (Rs/sq. ft)	Total Construction Cost (Rs)
Factory	6,000	300	180,000
Store Room	300	-	-
Generator Room	100	300	30,000
Management Room	500	300	150,000
Toilets	72	300	21600
Pavement/driveway	5,745	100	574,450
Grounds	5,745	100	574,450
Total Building Cost			3,150,500
Total Land Cost	18461		1,538,417
Grand Total of Land & Building Cost			4,688,917

8.2 Infrastructure Requirement

- Electricity (3 - Phase)
- Telephone facility
- Access roads
- Water (own tube well)
- Drainage

9 SWOT ANALYSIS

9.1 Strengths

- Varieties like “Chaunsa” mango are recognized as one of the best varieties

- Pakistan is included among the top ten mango producing countries in the world
- Priority fruit crop supported by major programs
- Availability of raw material (mangoes) with a consistent growth in production
- Availability of farm labor and technical expertise

9.2 Weaknesses

- Irregular & inconsistent supply of quality fruits
- Short storage life and inadequate post harvest facilities
- Non availability of cold storage and reefer container facilities at airports & seaports
- Limited air space and high freight costs

9.3 Opportunities

- Prospective markets within geographic proximity i.e., Middle Eastern countries.
- Domestic competition level is moderate for a modern processing unit.
- Presence of premium domestic markets.
- Lower tariff imposed by importing countries under GATT and by EU countries.
- Expansion opportunity in new markets like Far East and Central Asia.

9.4 Threats

- Competition from other mango producing countries.
- Trade protectionism, which may be applied by countries due to “fruit/white fly virus etc.
- Ruthless competition amongst local exporters.
- Trade restriction if imposed by the importing countries.
- Illegal supplies of mangoes by local exporters through ferryboats to Dubai.

10 KEY ASSUMPTIONS

10.1 Machinery Assumptions

Capacity of processing plant (Tons/hour)	1.5
Waste production (% of production)	20%
Machine maintenance cost (% of machine cost)	5%
Machine maintenance growth rate	2.5%
Total production capacity (Tons) including wastage	840

10.2 Operating Assumptions

Hours operational per day	8
Annual Production Growth Rate (%)	8%
Days operational per month	26 days
Day operational per season	70 days

10.3 Economy Related Assumptions

Electricity cost growth rate	10%
Inflation rate	10%
Interest rate on long-term loan	14%
Mango purchase price growth rate	5%
Other raw material price growth rate	10%
Wastage price growth rate	5%
Insurance rate for plant	3.5%

10.4 Cash Flow Assumptions

Accounts receivables will not be outstanding on year closing due to seasonal nature of operations, and there is sufficient time of 8 months to collect the amount, however, in the beginning of the season, working capital will be needed. For initial working capital calculations following assumptions have been taken into account:

Accounts receivable (average)	15 days
Accounts payable (average)	10 days
Mango purchase price (Rs per Metric Ton)	20,000

10.5 Revenue Assumptions

Maximum capacity utilization i.e., at 100% will increase from 50% to 100% over the seasons at the rate of 8% annually. The Dollar rate is assumed to be Rs.60.

Annual Increase in Production capacity (average increase over the seasons)	8%
Mango C&F sales price for UAE (US\$ 0.90/kg) (Rs./kg) (Average)	54.40
Mango C&F sales price for UK (US\$ 2.47/kg) (Rs./kg) (Average)	150
Waste mango sale price (Rs/metric ton)	15,000
Service charges to other exports (Rs/Kg)	10
Sales price (for all options) growth rate per annum	5%
Market mix UK and Middle East respectively	20%, 35%
Capacity utilization for other exports	25%

10.6 Other Assumptions

Mango packaging per carton (kg)	4.5
Cartons per pallets	143
Air freight for UK (Rs per kg)	77
Sea Freight to UAE via reefer container (Rs. per Ton)	35
Promotional expenses (% of Sales)	1%

10.7 Financials Assumptions

Project life (Years)	10
Debt	40%
Equity	60%
Debt tenure (Years)	10
Debt payments per year	2

11 FINANCIAL ANALYSIS

11.1 Project Economics

11.1.1 Project Cost/Capital Requirements

Capital Requirement	Total Cost Rs.
Land	1,538,417
Building	3,150,500
Office Equipment	
Furniture	120,600
Air Conditioner	50,000
Computers	75,000
Fax Machine	10,000
Plant & Machinery	
Mango Washing, Grading Drying, Plant	200,000
Ice Bank for Water Chilling for Mangoes	1,180,500
Cold Store (with Ammonia Compressor) (9000 cu.ft) @ Rs.140 per Cu.ft	2,102,000
Plastic Crates (2000@Rs350)	700,000
Diesels Generator	1,020,000
Water Pump and Water Tank	121,000
Fork lift Truck	450,000

Preliminary Expenses	50,000
Working capital	1,429,962
Total Investment Cost	12,197,979

11.1.2 Financing Plan

Description		
Equity	60%	7,318,787
Debt	40%	4,879,191

11.1.3 Project Returns

Net Present Value	8230.25
Internal Rate of Return	31%
Payback Period (Years)	4.79

11.2 Projected Income Statement

	Year - I	Year - II	Year - III	Year - IV	Year - V	Year - VI	Year - VII	Year - VIII	Year - IX	Year - X
Sales/Revenue	22,848	25,910	29,382	33,319	37,783	42,846	48,588	55,098	62,482	70,854
Cost of Sales	10,944	11,718	12,687	14,073	15,593	17,451	19,481	22,090	24,911	28,114
Gross Profit	11,904	14,192	16,695	19,246	22,190	25,396	29,107	33,009	37,571	42,741
Operating Expenses:										
<i>Administrative Expenses</i>	2,880	3,168	3,485	3,833	4,217	4,638	5,102	5,612	6,354	6,989
<i>Marketing Expenses</i>	12,049	8,198	8,830	9,517	10,265	11,077	11,960	12,919	13,960	15,090
Operating Profit	(3,026)	2,826	4,380	5,896	7,709	9,680	12,045	14,477	17,257	20,662
<i>Financial Charges</i>	666	598	529	461	393	324	256	188	120	51
<i>L C + Bank Charges</i>	100	110	121	133	146	161	177	195	214	236
Profit before Taxation	(3,792)	2,118	3,730	5,302	7,170	9,194	11,611	14,095	16,923	20,375
Taxation	77	218	274	332	400	475	562	656	763	890
Profit after Taxation	(3,869)	1,901	3,456	4,970	6,770	8,720	11,049	13,438	16,160	19,485
Acc. Profit b/f	-	(3,869)	(1,968)	1,488	6,458	13,228	21,947	32,996	46,434	62,594
Accumulated Profit c/f	(3,869)	(1,968)	1,488	6,458	13,228	21,947	32,996	46,434	62,594	82,079

11.3 Projected Cash Flow Statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Profit before Financial Charges & Taxation	(3,026)	2,826	4,380	5,896	7,709	9,680	12,045	14,477	17,257	20,662
Amortization	8	8	8	8	8	8	5	0	0	0
Depreciation	1,604	1,243	969	761	653	530	435	362	455	376
	(1,414)	4,076	5,357	6,664	8,369	10,217	12,484	14,839	17,711	21,038
Working Capital Change	(426)	48	83	(53)	(79)	(338)	(868)	(65)	(94)	(1,278)
Cash from other Sources										
Owners	7,319	-	-	-	-	-	-	-	-	-
Bank Finance	4,879	-	-	-	-	-	-	-	-	-
	12,198	-	-	-	-	-	-	-	-	-
Total Sources	10,358	4,124	5,440	6,611	8,290	9,879	11,616	14,774	17,617	19,760
Applications:										
Fixed Assets	10,718	-	-	1,000	-	-	-	1,000	-	-
Preliminary Expenses	50	-	-	-	-	-	-	-	-	-
Re -Payment of Loan	1,154	1,086	1,017	949	881	812	744	676	607	539
L C Charges	100	110	121	133	146	161	177	195	214	236
Tax	77	218	274	332	400	475	562	656	763	890
	12,099	1,413	1,412	2,414	1,427	1,448	1,484	2,527	1,585	1,665
Cash Increase/(Decrease)	(1,742)	2,711	4,028	4,198	6,864	8,431	10,133	12,247	16,032	18,095
Opening Balance	-	(1,742)	969	4,998	9,195	16,059	24,490	34,623	46,869	62,902
Closing Balance	(1,742)	969	4,998	9,195	16,059	24,490	34,623	46,869	62,902	80,997
	-1742	969	4998	9195	16059	24490	34623	46869	62902	80997

11.4 Projected Balance Sheet

	Year - I	Year - II	Year - III	Year - IV	Year - V	Year - VI	Year - VII	Year - VIII	Year - IX	Year - X
Tangible Fixed Assets	9,114	7,871	6,902	7,141	6,488	5,958	5,523	6,162	5,707	5,331
Preliminary Expenses	43	35	28	20	13	5	-	-	-	-
Current Assets:										
Accounts Receivable	776	788	800	908	1,050	1,570	2,540	2,604	2,752	4,068
Cash in Hand / Bank	(1,742)	969	4,998	9,195	16,059	24,490	34,623	46,869	62,902	80,997
	8,191	9,664	12,727	17,264	23,609	32,023	42,686	55,635	71,361	90,396
Owners Equity:										
Capital	7,319	7,319	7,319	7,319	7,319	7,319	7,319	7,319	7,319	7,319
Accumulated Profit	(3,869)	(1,968)	1,488	6,458	13,228	21,947	32,996	46,434	62,594	82,079
Long Term Loan	3,903	3,415	2,928	2,440	1,952	1,464	976	488	-	-
Current Liabilities:										
Current Portion of Long Term Loan	488	488	488	488	488	488	488	488	488	-
Accounts Payable	350	410	505	560	623	805	907	906	960	998
	8,191	9,664	12,727	17,264	23,609	32,023	42,686	55,635	71,361	90,396

11.5 Decade At A Glance

	Year - I	Year - II	Year - III	Year - IV	Year - V	Year - VI	Year - VII	Year - VIII	Year - IX	Year - X
Income:										
Net sales/revenue	22,848	25,910	29,382	33,319	37,783	42,846	48,588	55,098	62,482	70,854
Profit before tax	(3,792)	2,118	3,730	5,302	7,170	9,194	11,611	14,095	16,923	20,375
Profit after tax	(3,869)	1,901	3,456	4,970	6,770	8,720	11,049	13,438	16,160	19,485
Retained earnings in business	(3,869)	(1,968)	1,488	6,458	13,228	21,947	32,996	46,434	62,594	82,079
Financial Position:										
Current assets	(966)	1,757	5,798	10,103	17,109	26,060	37,163	49,473	65,654	85,065
Less current liabilities	(838)	(898)	(993)	(1,048)	(1,111)	(1,293)	(1,395)	(1,394)	(1,448)	(998)
Net working capital	(1,804)	860	4,805	9,055	15,998	24,767	35,768	48,080	64,206	84,067
Tangible Fixed assets net	9,114	7,871	6,902	7,141	6,488	5,958	5,523	6,162	5,707	5,331
Intangible Fixed assets net	43	35	28	20	13	5	-	-	-	-
Less long term debts other liabilities	(3,903)	(3,415)	(2,928)	(2,440)	(1,952)	(1,464)	(976)	(488)	-	-
Represented by:										
Equity	3,450	5,350	8,807	13,777	20,546	29,266	40,315	53,753	69,913	89,398
Ratios:										
Current assets to liabilities	-1.15	1.96	5.84	9.64	15.40	20.16	26.64	35.49	45.34	85.24
Profit before tax to sale/revenue (%)	-16.6%	8.2%	12.7%	15.9%	19.0%	21.5%	23.9%	25.6%	27.1%	28.8%
Return on fixed assets (%)	-42.5%	24.1%	50.1%	69.6%	104.3%	146.3%	200.0%	218.1%	283.2%	365.5%
Return on equity (%)	-112.2%	35.5%	39.2%	36.1%	32.9%	29.8%	27.4%	25.0%	23.1%	21.8%
Debt to equity:										
Debt	53.1	39.0	24.9	15.0	8.7	4.8	2.4	0.9	-	-
Equity	46.9	61.0	75.1	85.0	91.3	95.2	97.6	99.1	100.0	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0