Pre-Feasibility Study

OLIVE CULTIVATION

Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

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1 EXECUTIVE SUMMARY

Pakistan, a developing country, having population of 177.10 million is the sixth most populous country in the world, whose demand is rising due to steady economic growth. Despite the fact that Pakistan is overwhelmingly an agrarian economy, it is unable to produce edible oil sufficient for domestic requirements. Agriculture contributes 23 percent of the GDP, 42 percent of the total work force is employed to the agriculture sector and also contributes substantially to Pakistan's export earnings.

Agriculture Commodities and Textiles Products accounts for 62.6% of Pakistan's total exports, 33% of which are Raw or Low value added products. One of the challenges to the economy of Pakistan is the edible oil deficit. Edible oil is considered as a necessity and not a luxury product and hence its demand is relatively inelastic and grows with time. There are many reasons behind the shortcoming like; lack of awareness of farmers, ignorance of policy makers regarding oilseed crops and technological deficiency in oilseed production etc. The crop that is responsible for 57 % of edible oil production is cotton seed which is primarily a fiber crop. The statistics shows that the demand for edible oil is increasing day by day due to eating habits of people of Pakistan. Local production does not meet the demand which indicates a huge potential for growing oil seeds.

Olives have been mentioned seven times in the Quran and its health benefits have been propounded in Prophetic medicine. The Vitamin E contained in Olives is the body's primary fat-soluble antioxidant. Anti-oxidants help to strengthen the body's immune system; reducing the severity of asthma, cancer, osteoarthritis, and rheumatoid arthritis, premature ageing, as well as delaying the effects of ageing. Olive Oil is sold at the highest price as compared to other edible Oils.

Growing Olive trees is a profitable business and olive trees have more than 250 years of life and it can grow on barren lands. On an average an olive plant produces 20 to 35 kg of olive fruits per year which contain more than 12 % of oil contents. The olive fruit can be sold out in the market at the rate of Rs. 73/- per kg and extracted oil can be sold at the rate of Rs. 500/- per liters. Growing Olive in 50 acres with modern farm management techniques can be a long lasting business. It is recommended that land should be purchased in the suggested rural areas. The total cost of project in this feasibility is Rs. 37.781 million. The olive plants start giving fruits at the age of four to six years so cost incurred for initial four years is included in pre operating cost in this pre-feasibility.

2 INTRODUCTION

2.1 General

Pakistan, a developing country, having population of 177.10 million is the sixth most populous country in the world, whose demand is rising due to steady economic growth. Despite the fact that Pakistan is overwhelmingly an agrarian economy, it is unable to produce edible oil sufficient for domestic requirements. Agriculture sector contributes 23 percent of the GDP, 42 percent of the total work force is employed to the agriculture sector and also contributes substantially to Pakistan's export earnings. Agriculture Commodities and Textile products accounts for 62.6% of Pakistan's total exports, 33% of which are Raw or Low value added products. One of the challenges to the economy of Pakistan is the edible oil deficit. Edible oil is considered as a necessity and not a luxury product and hence its demand is relatively inelastic and grows with time. There are many reasons behind the shortcoming like; lack of awareness of farmers, ignorance of policy makers regarding oilseed crops and technological deficiency in oilseed production etc. The crop that is responsible for 57 % of edible oil production is cotton seed which is primarily a fiber crop. On the other hand, smuggling is also an important factor in edible oil deficit. Demand for Edible oil in the neighboring countries (Afghanistan in particular) has been very high due to which smuggling of edible oil from Pakistan has been increased.[1]

High dependency on few crops leads to disastrous effects on overall oil production when for some reasons the yield of those crops is declined. Indigenous production of edible oil is below the consumption levels with a very wide gap between the production and consumption. Pakistan is heavily dependent on imported edible oils to meet the local demand which is increasing by each passing year. This gap is bridged through import of edible oil worth more than Rs. 45.0 billion annually. Presently the oilseed production only met about 30% of the requirements and 70% remaining demand proportion is covered with imports.[2] This increasing percentage of edible oil imports contributes heavily to the ever increasing food expenditure of household. The most common Pakistani food includes a good quantity of edible oil which is the reason behind high consumption growth rates.

At the time of independence Pakistan was self-reliant in edible oil but Pakistan began to import some small quantities of edible oil to supplement domestic production. Since 1969-70, edible oil consumption began to grow at exorbitant rates and domestic production failed to cope up with it, as a result edible oil deficit started to grow.

Cultivation of edible oil is not popular among the farming community due to a number of reasons. Reported area under sunflower, rapeseed and mustard, sesame, cottonseed and canola in 2004-05 was 7,70,000 acres, 6,12,000 acres, 66,000 acres,

[1] *Economic Survey of Pakistan, 2010-11*
[2] *Pakistan Oil Seed Development Board*

79,79,000 acres and 288,000 acres respectively. Ratio of edible oil extracted from cotton has declined and it is estimated that in 2008, the country would get some 500,000 tons edible oil from cotton seeds which is 16.7% less than previous year. The private sector has announced to purchase sunflower seeds at Rs1200 per 40 kilogram this year against Rs900 per 40 kilogram last year. This increase in the purchase price of sunflower seeds (33%) apparently seems to give incentive to the farmers to bring more area under sunflower cultivation.[3]

There is a lot of potential for olive cultivation in Pakistan. The estimates have revealed that if eight million wild olive trees present in different provinces are grafted and converted into the productive olive then there is a potential of earning a maximum of one billion dollars annually. [4]

Similarly, we may earn a maximum of 9 billion dollars annually if olive cultivation is made on cultivable potential waste lands. The olive appears to have been native to Asia, being one of the earliest trees cultivated by man. The trees belong to oleaceae family and comprise 30 genera with 600 species. The plant is xerophitic upon species of tree the olea-europea or Europium olive. Olive is an integral part of the diet of the people of the Mediterranean lands and is a source of fat in diet of these people. Olive oil is widely used in countries where fats are scarce. In Indo-Pak sub-continent a wild olive, olea cuspida is found within the northwest Himalayas and other adjoining hills but cultivated olive olea Europea is not grown anywhere on commercial scale. This plant is locally known as Zytoon in Urdu. The importance of olive oil has also been narrated several times in the Holy Quran. During the mid of last century (around 1950s), a number of grafted olive plants of several varieties were imported and planted in Kashmir, Fort Sandeman (Zhob), Peshawar, Swat, Rawalpindi, Sargodha, and Jhelum districts. [5]

2.2 Project Brief

The proposed project is designed as Olive farming unit, spreading over a land area of 50 acres. Growing Olive in 50 acres with modern farm management techniques can be a long lasting business. It is recommended that land should be purchased in the suggested rural areas. The total cost of project in this pre-feasibility is Rs. 37.781 million including land, plantation and working capital. The olive plants starts giving fruits at the age of four to six years so the cost incurred during the initial four years is required which is included in pre operating cost in this pre-feasibility. However the fruit bearing capacity of plant depends upon the nature of plant and land on which it is cultivated. Plants usually start giving fruits at the age of four to six years.

[3] *Pakistan Oil Seed Development Board*
[4] *Pakistan Oil Seed Development Board*
[5] *Economic Survey of Pakistan 2010-11*

2.3 Opportunity Rationale

There are several reasons for growing oil fruits:

- Cultivation on marginal lands without replacing other crops;
- To lessen the import bill of edible oil;
- Olive is labor extensive venture, creation of more jobs will improve the socio-economic conditions;
- Drought resistant and environment friendly;
- Wide adaptability, not only in arid areas but also in plains of the Punjab;
- Fruit bearing in Lahore, Kasur, Sahiwal, Faisalabad, Layyah, Bhakkar and Mianwali showing great potential in Punjab;
- More economic returns compared to other field crop;
- No extra care and attention compared to other fruit crops;
- Longest productive life (200-250 years) than all other fruit trees.

2.4 Advantages of Olive Oil

- The Vitamin E contained in Olives is the body's primary fat-soluble antioxidant. Anti-oxidants help to strengthen the body's immune system; reducing the severity of asthma, cancer, osteoarthritis, and rheumatoid arthritis, premature ageing, as well as delaying the effects of ageing.
- Used as a balm, it fortifies and moisturizes the skin, combating dry skin and softening it. It also combats against acne.
- Help against wrinkles and delaying the effects of old age.
- Help combat against strokes, heart-disease, high blood pressure and diabetes.
- The decoction of olive leaves in water is effective against mouth and lip ulcers and allergic dermatitis also.
- Tea of Olive leaves helps against high blood pressure.

2.5 Viable Economic Farm Size

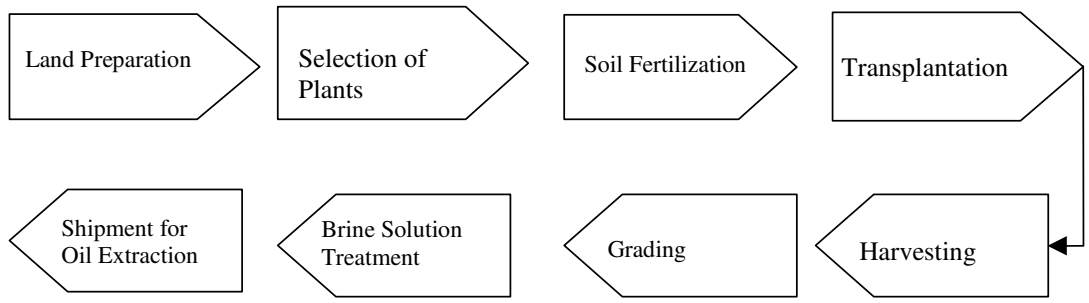
The proposed project can be started at any capacity but due to its economic commercial viability we are proposing 50 acres land for its cultivation in this Pre-feasibility study.

2.6 Project Cost

The proposed project of Olive farming needs capital investment of about Rs. 37.195 million. This includes machinery and equipment. In addition to this, a sum of Rs. 0.586 million is also required as working capital. The total project cost amounts to Rs. 37.781 million.

2.7 Process Flow Chart

Figure 2-1: Production flow of Olive Fruit Production



3 CURRENT INDUSTRY STRUCTURE

3.1 Present Production of Oil Seeds in Pakistan

The Production of Oil seed crops in Pakistan is very low and potentials have not been utilized so far. The demand of edible oil and oil seeds is fulfilled by imports. The major oilseed crops include sunflower, canola, rapeseed & mustard and cottonseed. The total availability of edible oil in 2009-10 was 2.9 million tons. Local production of edible oil was 662 thousand tons which accounted for 23 percent of total availability in the country, while the remaining 77 percent availability was ensured through imports. During the year 2010-11 (July- March), a quantity of 1.7 million tons edible oil/oilseeds worth US$ 1.65 billion has been imported. The local production in 2010-11 is provisionally estimated at 696 thousand tons. Total availability from all sources is thus reduced to 2.35 million tons so far. The area and production of oilseed crops during 2009-10 and 2010-11 is given in Table below.

Table 3-1: Area and Production Major Oil Seed Crops in Pakistan[6]

Crop	Production (2009-10)			Production (2010-11)		
	Area (000Acres)	Seeds (000 Tons)	Oil (000Tons)	Area (000Acres)	Seeds (000 Tons)	Oil (000Tons)
Cotton Seeds	7,591	3,240	389	6,450	2,934	352
Rapeseeds /Mustard	486	160	51	439	157	50

[6] *Economic Survey of Pakistan, 2010-11*

Sunflower	872	513	195	1,108	643	244
Canola	142	70	27	233	131	50
Total	**9,091**	**3,983**	**662**	**8,230**	**3,865**	**696**

The above mentioned table clearly shows almost negligible production of oil seeds which cannot meet the demand of edible oil in the country. It indicates the potential of edible oil seeds farming in general. Olive oil has shows tremendous demand all over the world and if locally produced it can benefit both the farmers and the country.

4 TECHNICAL ANALYSIS

Olive fruit production in Pakistan is not an organized sector so there is need to understand its technical parameters which are explained in the following headings.

4.1 Suggested Areas for Olive Cultivation

Followings are suggested areas for Olive cultivation by Pakistani agrarians:

Table 4-1: Suggested Areas for Olive Cultivation[7]

Sr. No.	Area
1	Narowal
2	Sialkot
3	Gujrat
4	Jhelum
5	Rawalpindi
6	Islamabad
7	Attock
8	Chakwal
9	Khushab
10	Mianwali

[7] *Barani Agriculture Research Institute(BARI), Chakwal*

4.2 Plantation & Growth Requirements

Olive plants show its growth well on poor soils even without fertilizer. It can also thrive in rocky and shallow soils. There are few essential requirements for healthy growth of plants. Following are the requirements:

- Hot dry summer
- Being successfully grown under rain fed conditions (200-900 mm annual rainfall)
- Winter chilling requirement (150-300 hours at temperature below 7°C)
- Flowering temperature 25°- 30°C (March)
- Varieties vary in temperature requirement
- Italian – most cold tolerant (-8°C)
- North African (Moroccan & Tunisian) most tolerant to high temperature (36°- 41°C)
- Variety of soil type (from sandy to clay) best soil light well drained

4.3 Planting an Olive Tree

It is very important to grow the olive plants according to recommended standards as it affects the fruit bearing capacity of the plants. Plants should be planted in square system and distance should be 20x20 feet between the plants on the plain land and on sloppy land it may not be less the 15x15 feet.

- Layout: Square system;
- Planting Distance: 20x20 feet (in plain lands), 15x15 feet (in slopes or hilly areas);
- Pit Digging: The measurement of pit should be $1m^3$ (3x3x3 feet);
- Pit Filling: Pit must be filled by a homogenous mixture of soil, silt and FYM with the ratio 1:1:1. 2-3 irrigation must be applied for proper decay of FYM;
- Plating of olive trees can be done in two seasons: spring and autumn. Spring planting should be preferred because of provision of longer growth period.[8]

The distance between the plants is 20 feet and the space between the plants can be utilized for cultivation of other crops for initial six to ten years of age of the plants. However it is recommended that such crops should be cultivated between the plants which have low height and require less irrigation.

4.4 Fertilizers on Production

Using fertilizers containing Nitrogen, Phosphorus and Potash, the yield of the crop can be maximized. Proper fertilizer application plays vital role in good growth and optimum fruit yield. Proper combination of FYM, Phosphorus, Potassium and

[8] *Barani Agriculture Research Institute(BARI), Chakwal*

Nitrogen provided balanced nutrients to fulfill needs of developing and mature fruiting trees. Detailed year wise fertilizer's requirements are given in table below:

Table 4-2: Fertilizer Requirements[9]

Age of Plant (years)	Farm Yard Manure(FYM) Kg/plant/year	Chemical Fertilizer g/plant/year		
		N (g)	P (g)	K (g)
1		--	--	--
2	5	200	100	--
3	10	300	150	150
4	15	400	200	200
5	20	500	250	250
6	25	600	300	300
7	30	700	350	350
8	35	800	400	400
9 and more	40	1000	500	500

Table 4-3: Time of Fertilization[10]

S. No	Type of Fertilizer	Time of application	Remarks
1	FYM	December	Well Rotten
2	Urea (Nitrogen)	1. Three weeks Before flowering (First to second week of Feb.) 2. After fruit setting (Last week of April)	Any other type can also be used (DAP, Nitrophos)
3	Phosphorous	1. Three weeks Before flowering (First to second week of Feb.) 2. After fruit setting (Last week of April)	(DAP, TSP, SSP)
4	Potash	December (Also can mix with FYM)	(SOP, MOP)

4.5 Material Availability

- Fertilizers of all kinds are available locally.
- Pesticides of different natures are also available locally.
- Water is available from canal or can be used from peter engine.

[9] As per Agronomist of Barani Agriculture Research Institute(BARI), Chakwal
[10] As per Agronomist of Barani Agriculture Research Institute(BARI), Chakwal

4.6 Irrigation of Olive Orchards

Irrigation depends on following three factors:

- Age of plant
- Soil texture and structure
- Temperature and rainfall

Young plants require regular irrigation for three years however for bearing plants Three to four irrigations/year are required. Olive Plant is drought resistant but for commercial cultivation regular irrigation is necessary.

4.7 Time of irrigation

Three to four weeks before flowering:	(First week of Feb.)
After fruit setting:	(Second week of April)
Summer days:	(June)
At fruit maturity:	(July)

4.8 Selection of Plant and its Importance

For Olive cultivation, selection of plant is very important. Different varieties of olive plants are available locally. Following table shows the production capacity of different plant types at the age of 18 years:

Table 4-4: Varieties and Average Yield per Plant [11]

Variety	Average yield/plant (Kg)
Coratina	24.46
Frantoio	28.08
Leccino	19.45
Ottobrattica	19.39
Pendolino	15.23

4.9 Expected Production

Expected production and oil content is given below:

Table 4-5: Expected Production [12]

Sr. No	Yield / Plant	No. of Plant/Acre	Total Plants for 50 Acres	Total Production	Oil Content
1	25 (Kg)	180	9,000	225,000 (Kgs)	12-22%

[11] *Barani Agriculture Research Institute(BARI), Chakwal*
[12] *Barani Agriculture Research Institute(BARI), Chakwal*

However yield of plant also depends upon following factors:

- Alternate Bearing
- Soil Moisture (drought)
- Management of Irrigation
- Nutrition
- Soil type
- Pruning

5 LAND AND INFRASTRUCTURE REQUIREMENT

5.1 Total Land and Building Covered Area

Following are breakup of Land and building cost:

Table 5-1: Land Area

Description	Area
Agriculture Land (Acre)	50
Total Per Acre Cost	400,000
Total Cost of Land	**20,000,000**

Table 5-2: Covered Area requirement

Sr. No.	Particulars	Area Sq Feet	Cost per Sq Feet	Amount in Rs.
1	Management Building	400	1,200	480,000
2	Store	400	850	340,000
3	Grounds	4,000	25	100,000
	Total			**920,000**

5.2 Mode of Land Acquisition

Agricultural land can be purchased or taken on lease for the implementation of the proposed project. As project life is more than 200 years so it is proposed that land should be purchased.

5.3 Utilities Required

- Electricity
- Diesel (for tube well operations)
- Water

6 MACHINERY AND EQUIPMENT

Following plant and machinery is required for an Olive Cultivation Farm at 50 Acres. The Oil extraction machinery is not included in this pre-feasibility study. Oil

Extraction Machinery is available at Agriculture Departments of almost every district. Machinery is also available at Barani Agriculture Research Institute at different districts. Currently Government of Punjab is providing facility to the Olive growers to extract Olive Oil free of cost.

Table 6-1: Tools, Equipment and Preparation cost

S.No	Description	Cost Per Acre	Total Cost (50 Acres)
1	Drip irrigation system	60,000	3,000,000
2	Tank(Water Reservoir)	10,000	500,000
3	Boring Cost		300,000
4	Diesel Pump		150,000
5	Misc. Instrument cost		200,000
6	Pit Digging (Rs. 40 per Plant x 180 No. of Plants)	7,200	360,000
7	Pit Filling (Rs. 20 per Plant x 180 No. of Plants)	3,600	180,000
8	Plant Cost (Rs. 50 per Plant x 180 No. of Plants)	9,000	450,000
	Total		**5,140,000**

Table 6-2: Details of Furniture and Fixtures

Sr. No	Particulars	Quantity	Rate	Amount in Rs.
1	Furniture Set	1	50,000	50,000
2	Electric Wiring and Lighting	1	35,000	35,000
	Total			**85,000**

Table 6-3: Details of Office Equipment

Sr. No	Particulars	Quantity	Rate	Amount in Rs.
1	Computers with UPS	2	30,000	60,000
2	Printer	1	12,000	12,000
3	Telephones	2	1,000	2,000
4	Generator 5 KVA China made	1	45,000	45,000
	Total			**119,000**

7 HUMAN RESOURCE REQUIREMENT

Following Human Resource will be required for the project:

7.1 Number of Staff Required

Table 7-1: Number of Staff required[13]

Description	Number	Monthly Salary per person (Rs.)	Annual Salary (Rs)
CEO	1	73,205	878,460
Farm Manager	1	29,282	351,384
Accountant	1	17,569	210,830
Labor	5	10,981	658,845
Total	**7**		**2,099,519**

8 KEY SUCCESS FACTORS

The commercial viability of the project depends upon the regular and consistent supply of good quality hybrid seeds and fertilizers.

The other important aspect is the need for strong linkages with the local market and progressive olive purchaser.

8.1 Guidelines for successful cultivation

Following principles need to be pursued for the best productivity of Olive fruit:

1. Timely control of pests, diseases and exercise of preventive measures.
2. Timely irrigation and fertilization.
3. Timely training and grading of plantation.
4. Post harvest includes protection from direct sunlight.

[13] *These salaries are taken at 5th year of Plant's age which is 1st year of operations.*

9 PROJECT ECONOMICS

Table 9-1: Project's Cost, Financing Plan and Expected Returns

Capital Investment	**Rs. in actuals**
Land	20,000,000
Building/Infrastructure	920,000
Machinery & equipment	5,140,000
Furniture & fixtures	85,000
Office equipment	119,000
Pre-operating costs	10,931,495
Total Capital Costs	**37,195,495**

Working Capital	**Rs. in actuals**
Equipment spare part inventory	8,567
Raw material inventory	77,140
Cash	500,000
Total Working Capital	**585,706**

Total Investment	**37,781,201**

Initial Financing		**Rs. in actuals**
Debt	50%	18,890,601
Equity	50%	18,890,601

	Equity	**Project**
Internal Rate of Return (IRR)	35%	28%
Payback Period (yrs)	4.32	4.69
Net Present Value (NPV)	12,235,429	21,343,856

10 FINANCIAL ANALYSIS

10.1 Projected Income Statement

Calculations **SMEDA**

Income Statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	8,149,775	10,852,069	13,930,282	17,515,617	21,678,717	25,186,750	27,720,623	30,492,685	33,541,953	36,896,149
Cost of sales										
Cost of goods sold 1	925,677	971,961	1,020,559	1,071,587	1,125,166	1,181,425	1,240,496	1,302,521	1,367,647	1,436,029
Cost of goods sold 2	-	-	-	-	-	-	-	-	-	-
Operation costs 1 (direct labor)	658,845	724,730	797,202	876,923	964,615	1,061,076	1,167,184	1,283,903	1,412,293	1,553,522
Operating costs 2 (machinery maintenance)	102,800	113,080	124,388	136,827	150,509	165,560	182,116	200,328	220,361	242,397
Total cost of sales	1,687,322	1,809,771	1,942,150	2,085,337	2,240,291	2,408,062	2,589,797	2,786,751	3,000,301	3,231,948
Gross Profit	6,462,453	9,042,299	11,988,133	15,430,281	19,438,426	22,778,688	25,130,826	27,705,933	30,541,653	33,664,200
General administration & selling expenses										
Administration expense	1,440,674	1,584,742	1,743,216	1,917,538	2,109,291	2,320,221	2,552,243	2,807,467	3,088,214	3,397,035
Administration benefits expense	43,220	47,542	52,296	57,526	63,279	69,607	76,567	84,224	92,646	101,911
Electricity expense	120,000	132,000	145,200	159,720	175,692	193,261	212,587	233,846	257,231	282,954
Travelling expense	28,813	31,695	34,864	38,351	42,186	46,404	51,045	56,149	61,764	67,941
Communications expense (phone, fax, mail, internet, etc.)	14,407	15,847	17,432	19,175	21,093	23,202	25,522	28,075	30,882	33,970
Office expenses (stationary, entertainment, janitorial services, etc.)	14,407	15,847	17,432	19,175	21,093	23,202	25,522	28,075	30,882	33,970
Promotional expense	81,498	108,521	139,303	175,156	216,787	251,867	277,206	304,927	335,420	368,961
Professional fees (legal, audit, consultants, etc.)	40,749	54,260	69,651	87,578	108,394	125,934	138,603	152,463	167,710	184,481
Depreciation expense	580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400
Amortization of pre-operating costs	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149
Bad debt expense	81,498	108,521	139,303	175,156	216,787	251,867	277,206	304,927	335,420	368,961
Subtotal	3,538,815	3,772,525	4,032,248	4,322,925	4,648,151	4,979,115	5,310,052	5,673,702	6,073,717	6,513,734
Operating Income	2,923,638	5,269,774	7,955,885	11,107,356	14,790,274	17,799,573	19,820,774	22,032,231	24,467,935	27,150,466
Other income (interest on cash)	60,460	230,048	623,270	1,227,909	2,135,907	3,364,278	4,878,089	6,670,946	8,774,666	11,238,741
Earnings Before Interest & Taxes	2,984,097	5,499,821	8,579,155	12,335,265	16,926,182	21,163,850	24,698,863	28,703,177	33,242,601	38,389,207
Interest expense on long term debt (Project Loan)	2,927,403	2,786,236	2,621,090	2,427,892	2,201,878	1,937,474	1,628,158	1,266,303	842,983	347,759
Interest expense on long term debt (Working Capital Loan)	43,896	36,736	28,342	18,502	6,968	-	-	-	-	-
Subtotal	2,971,299	2,822,972	2,649,432	2,446,394	2,208,846	1,937,474	1,628,158	1,266,303	842,983	347,759
Earnings Before Tax	12,798	2,676,850	5,929,723	9,888,870	14,717,336	19,226,376	23,070,704	27,436,875	32,399,618	38,041,448
Tax	-	669,212	1,482,431	2,472,218	3,679,334	4,806,594	5,767,676	6,859,219	8,099,904	9,510,362
NET PROFIT/(LOSS) AFTER TAX	**12,798**	**2,007,637**	**4,447,292**	**7,416,653**	**11,038,002**	**14,419,782**	**17,303,028**	**20,577,656**	**24,299,713**	**28,531,086**

10.2 Projected Cash Flow Statement

Calculations **SMEDA**

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
Operating activities											
Net profit		12,798	2,007,637	4,447,292	7,416,653	11,038,002	14,419,782	17,303,028	20,577,656	24,299,713	28,531,086
Add: depreciation expense		580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400	580,400
amortization of pre-operating costs		1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149	1,093,149
Deferred income tax		-	639,301	-	-	(0)	(128,500)	(128,500)	(128,500)	(128,500)	(128,500)
Accounts receivable		(669,845)	(111,053)	(237,555)	(273,844)	(318,429)	(315,252)	(248,298)	(218,052)	(239,233)	(263,156)
Finished goods inventory		(17,761)	(1,123)	(1,376)	(1,490)	(1,613)	(1,734)	(1,879)	(2,052)	(2,224)	(2,413)
Equipment inventory	(8,567)	(1,328)	(1,534)	(1,771)	(2,046)	(2,363)	(2,729)	(3,152)	(3,641)	(4,205)	31,336
Raw material inventory	(77,140)	(7,907)	(8,717)	(9,611)	(10,596)	(11,682)	(12,879)	(14,200)	(15,655)	(17,260)	185,646
Accounts payable		92,336	5,492	5,859	6,256	6,683	7,144	7,642	8,181	8,764	(10,403)
Cash provided by operations	(85,706)	1,081,843	4,203,552	5,876,387	8,808,482	12,384,148	15,639,381	18,588,191	21,891,486	25,590,604	30,017,147
Financing activities											
Project Loan - principal repayment		(831,089)	(972,257)	(1,137,403)	(1,330,600)	(1,556,614)	(1,821,018)	(2,130,334)	(2,492,189)	(2,915,509)	(3,410,733)
Working Capital Loan - principal repayment		(41,563)	(48,724)	(57,117)	(66,957)	(78,492)	-	-	-	-	-
Additions to Project Loan	18,597,747	-	-	-	-	-	-	-	-	-	-
Additions to Working Capital Loan	292,853	-	-	-	-	-	-	-	-	-	-
Issuance of shares	18,890,601	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	37,781,201	(872,653)	(1,020,980)	(1,194,520)	(1,397,557)	(1,635,106)	(1,821,018)	(2,130,334)	(2,492,189)	(2,915,509)	(3,410,733)
Investing activities											
Capital expenditure	(37,195,495)	-	-	-	-	-	-	-	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(37,195,495)	-	-	-	-	-	-	-	-	-	-
NET CASH	**500,000**	**209,190**	**3,182,571**	**4,681,867**	**7,410,924**	**10,749,042**	**13,818,362**	**16,457,857**	**19,399,297**	**22,675,095**	**26,606,413**

10.3 Projected Balance Sheet

Calculations **SMEDA**

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											
Current assets											
Cash & Bank	500,000	709,190	3,891,761	8,573,629	15,984,553	26,733,595	40,551,957	57,009,814	76,409,111	99,084,206	125,690,620
Accounts receivable		669,845	780,898	1,018,453	1,292,297	1,610,726	1,925,978	2,174,276	2,392,328	2,631,560	2,894,717
Finished goods inventory		17,761	18,885	20,261	21,751	23,363	25,098	26,977	29,029	31,253	33,666
Equipment spare part inventory	8,567	9,895	11,428	13,200	15,245	17,608	20,338	23,490	27,131	31,336	-
Raw material inventory	77,140	85,047	93,764	103,375	113,971	125,653	138,532	152,731	168,386	185,646	-
Total Current Assets	585,706	1,491,737	4,796,736	9,728,917	17,427,817	28,510,945	42,661,903	59,387,288	79,025,985	101,964,002	128,619,002
Fixed assets											
Land	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000
Building/Infrastructure	920,000	874,000	828,000	782,000	736,000	690,000	644,000	598,000	552,000	506,000	460,000
Machinery & equipment	5,140,000	4,626,000	4,112,000	3,598,000	3,084,000	2,570,000	2,056,000	1,542,000	1,028,000	514,000	-
Furniture & fixtures	85,000	76,500	68,000	59,500	51,000	42,500	34,000	25,500	17,000	8,500	-
Office vehicles	-	-	-	-	-	-	-	-	-	-	-
Office equipment	119,000	107,100	95,200	83,300	71,400	59,500	47,600	35,700	23,800	11,900	-
Total Fixed Assets	26,264,000	25,683,600	25,103,200	24,522,800	23,942,400	23,362,000	22,781,600	22,201,200	21,620,800	21,040,400	20,460,000
Intangible assets											
Pre-operation costs	10,931,495	9,838,345	8,745,196	7,652,046	6,558,897	5,465,747	4,372,598	3,279,448	2,186,299	1,093,149	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	10,931,495	9,838,345	8,745,196	7,652,046	6,558,897	5,465,747	4,372,598	3,279,448	2,186,299	1,093,149	-
TOTAL ASSETS	**37,781,201**	**37,013,682**	**38,645,132**	**41,903,763**	**47,929,114**	**57,338,693**	**69,816,100**	**84,867,937**	**102,833,084**	**124,097,552**	**149,079,002**
Liabilities & Shareholders' Equity											
Current liabilities											
Accounts payable		92,336	97,827	103,687	109,942	116,625	123,769	131,411	139,592	148,355	137,953
Total Current Liabilities	-	92,336	97,827	103,687	109,942	116,625	123,769	131,411	139,592	148,355	137,953
Other liabilities											
Deferred tax		-	639,301	639,301	639,301	639,301	510,801	382,301	253,801	125,301	(3,199)
Long term debt (Project Loan)	18,597,747	17,766,658	16,794,402	15,656,999	14,326,399	12,769,784	10,948,766	8,818,432	6,326,243	3,410,733	-
Long term debt (Working Capital Loan)	292,853	251,290	202,566	145,449	78,492	-	-	-	-	-	-
Total Long Term Liabilities	18,890,601	18,017,948	17,636,268	16,441,748	15,044,191	13,409,085	11,459,567	9,200,733	6,580,043	3,536,034	(3,199)
Shareholders' equity											
Paid-up capital	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601	18,890,601
Retained earnings		12,798	2,020,435	6,467,727	13,884,380	24,922,382	39,342,164	56,645,193	77,222,849	101,522,562	130,053,648
Total Equity	18,890,601	18,903,399	20,911,036	25,358,328	32,774,981	43,812,983	58,232,765	75,535,793	96,113,449	120,413,163	148,944,249
TOTAL CAPITAL AND LIABILITIES	**37,781,201**	**37,013,682**	**38,645,132**	**41,903,763**	**47,929,114**	**57,338,693**	**69,816,100**	**84,867,937**	**102,833,084**	**124,097,552**	**149,079,002**

11 KEY ASSUMPTIONS

Table 11-1: Economy related Assumptions

Electricity Growth Rate	10%
Wage Growth Rate	10%
Cost of Goods Sold Growth Rate	5%
Traveling Expenses	2% of Administration Expenses
Communication Expenses	1% of Administration Expenses
Office Expenses (Stationery, Entertainment, etc)	1% of Administration Expenses
Promotional Expenses	1 % of Revenue
Professional Fee (Consultant)	0.5% of Revenue
Bad Debt Expense	1% of Revenue
Administrative Benefit Expense	3% of Administration Expenses

Table 11-2: Cash Flow Assumptions

Accounts Payable cycle (in days)	30
Accounts Receivable cycle (in days)	30
Equipment Spare Part inventory (in months)	1
Raw Material Inventory (in months)	1

Table 11-3: Financial Assumptions

Project Life (years)	10
Debt Ratio	50%
Equity Ratio	50%
Interest Rate on Long Term Loan	16%
Interest Rate on Short Term Loan	16%
Debt Tenure (Years)	5
Payments in a Year for Long Term Loan	4

Table 11-4: Depreciation Assumption

Depreciation Method	Straight Line Method
Building depreciation rate	5%
Machinery & Equipment depreciation rate	10%
Office Equipment and Vehicle depreciation rate	10%
Furniture & Fixtures depreciation rate	10%

Table 11-5: Pre Operating Cost

Particulars	Year 1	Year 2	Year 3	Year 4
Admin Expenses				
CEO	50,000	55,000	60,500	66,550
Farm Manager	20,000	22,000	24,200	26,620
Accountant	12,000	13,200	14,520	15,972
Labor	7,500	8,250	9,075	9,983
Total Salary at the end of 4th year				**6,655,194**
Cultivation Cost				
Diesel for Pump (25 liter per day x Rs. 95 diesel rate x 330 No of days to be irrigate)	783,750	822,938	864,084	907,289
Fertilizer and Sprays (Rs. 1600 per acre x 50 No. of Acres)	80,000	84,000	88,200	92,610
Repairing (Rs. 440 per acre x 50 No. of Acres)	22,000	23,100	24,255	25,468
Miscellaneous (Rs. 1,200 per acre x 50 No. of Acres)	60,000	63,000	66,150	69,458
Total Cultivation Cost Year Wise (@ 5 % Growth)	**945,750**	**993,038**	**1,042,689**	**1,094,825**
Total Cultivation Cost at the end of 4th year				**4,076,301**
Miscellaneous Expenses for 4 years				**200,000**
Total Pre Operating Cost				**10,931,495**