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# Pre-Feasibility Study

## OFF-SEASON VEGETABLE FARMING (HIGH TUNNEL)



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**Ministry of Industries & Production**  
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## 1 DISCLAIMER

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### ***Document Control***

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## 1 EXECUTIVE SUMMARY

Tunnel farming is practiced in many areas of Pakistan and is gaining popularity. Faisalabad, Mamokanjan, Gujranwala, Okara & Sahiwal are the most prominent cities for tunnel farming.

The proposed project is a medium sized off-season vegetable tunnel farm, spreading over 9 acres. Off-season vegetables will be cultivated in this project using high tunnel technology. The three vegetables cultivated in this particular project are Tomato, Sweet Pepper and Cucumber. The total time; from land preparation to harvesting, is around 7 months.

The estimated yield of the farm varies according to the type of vegetables selected. The proposed vegetable mix for this pre-feasibility will be cultivated on 9 acres of land. The numbers of plantations each year are 10,000 plants of tomato, 15,000 plants of sweet pepper and 15,000 plants of cucumber. The estimated produce would be 50 tons of tomato, 20 tons of sweet pepper and 40 tons of cucumber respectively.

Complete adherence to best agronomic practices is critical to the success of this project. Therefore, technical knowledge & experience of the entrepreneur is absolutely necessary.

The cost for setting up the high tunnel farm is estimated at Rs. 10.21 million out of which Rs. 3.36 million is the capital cost and Rs. 6.85 million is for working capital. The project NPV is projected at Rs. 1.72 million with an IRR of 29% and payback period is 3.87 years respectively.

## 2 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.

### 3 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 **Off-season Vegetable Farming (High Tunnel)** 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.

### 4 BRIEF DESCRIPTION OF PROJECT & PRODUCT

Vegetables can be cultivated in off-season, with introduction of techniques like tunnel technology, in which temperature and moisture is controlled for growth of vegetables in specific conditions. The production of vegetables all-round the year, enables the technically competent growers to fully utilize their resources and achieve higher income as compared to traditional crops.

The proposed project is designed as a medium sized off-season vegetable farming unit on 9 acres of land. Off-season vegetables, such as, tomatoes, chillies / hot pepper, cucumber, brinjal, sweet peppers, ridge-gourd (teenda) and bitter-gourd (karela) can be cultivated using high tunnel technology. However, for the purpose of this pre-feasibility, three crops are being proposed, namely, tomato, sweet pepper, and cucumber.

The farm will provide employment opportunities to 10 individuals directly, while seasonal pickers and packers would also be required. The estimated yield potential of the farm varies according to the selected type of vegetable. With above-mentioned vegetable mix, combined yield of 110 tons per season excluding wastage.

#### 4.1 High Tunnel Structure Specification

The proposed off-season vegetable farm is recommended with the use of high tunnels of bamboo structure, for which construction cost is quite low. The details of high tunnel structure is given in the following table:

**Table 1 : Specifications of High Tunnel**

Material Specification	Material	Description
	Bamboo	Diameter 2~3 inch Length 8.5~20 ft
	Plastic	0.10 mm thick
Tunnel Specification	Dimensions	Requirement
	Height	10 ft
	Width	30~32 ft
	Length	200 ft
	No. of tunnels	6 per acre

The cost of such tunnel amounts to Rs. 3,181,500 excluding the cost related to plastic used as a shield (Cover) and mulch.

**Figure 1 - High Plastic Tunnel**

#### 4.2 Support Structure

Each tunnel will be 200 feet long, 10 feet high and 30~32 feet wide. The tunnel is built by 2~3 inch diameter bamboo having 8.5~20 feet length. The bamboos are fixed at regular distance of approximately 10~15 feet. Each tunnel structure will then be covered by 0.10 mm thick plastic sheet. Approximately 6 tunnels can be constructed on an acre of land depending on the type of vegetable, i.e. tomato, sweet pepper and cucumber.

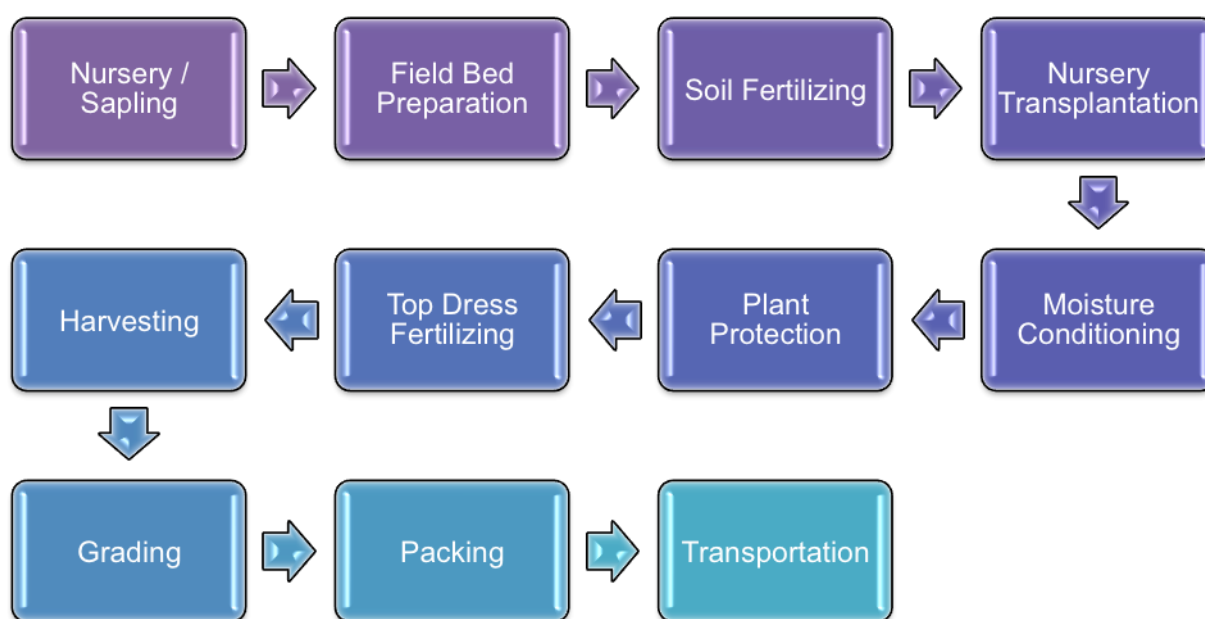
#### 4.3 Installed and Operational Capacities

Following table provides information on the total production, inclusive of 10% wastage:

**Table 2: Total Production Capacity**

Vegetables	Area (Acres)	No of Plants / Acre	Total Production (kgs)
Tomato	4	10,000	50,000
Sweet Pepper	2	15,000	20,000
Cucumber	3	15,000	40,000

#### 4.4 Production Process Flow



## 5 CRITICAL FACTORS

Following principles need to be pursued for best productivity of vegetables:

- ⇒ Proper soil analysis for determining soil nutritional level.
- ⇒ Use of high quality hybrid seeds.
- ⇒ Fertile land and its maintenance within the tunnel during the period of cultivation.
- ⇒ Timely control of pests, diseases and implementation of all recommended agronomic measures.
- ⇒ Selection of profitable vegetables on the basis of best analysis of cost and revenues for a given season. Cost efficiency through better management.
- ⇒ Maintenance and control of internal temperature and humidity of the tunnel.
- ⇒ Timely irrigation, fertilization, training and grading of plantation.



- ⇒ Fertilization as per expert(s) recommendation.
- ⇒ Appropriate post-harvest arrangement for washing, grading, packing, and transportation of product to the market.

## 6 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

As per the information gathered from Agriculture Department, Government of Punjab, and National Agricultural Research Center, Islamabad, following are the potential areas of off-season vegetable production:

Mamonkangan, Nankana Sahib, Faisalabad, Kamalia in Toba Tek Singh, Rahim Yar Khan, Chack Shahzad, Islamabad, Swat, Tarnab, Mardan, Khairabad, Mirpur Khas, Chiniot, etc., in addition to few other locations in Sindh and Balochistan.

## 7 POTENTIAL TARGET CUSTOMERS / MARKETS

Keeping in view the product price level, demand and purchasing power of customers; whole sale vegetable markets in metropolitan cities / urban areas are the potential markets for off season vegetables.

## 8 PROJECT SUMMARY

A detailed financial model has been developed to analyze the commercial viability of Off Season Vegetable Farming (High Tunnel). Various cost and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as annexure.

### 8.1 Project Economics

The following table shows internal rate of return, payback period and net present value of the project.

**Table 3 : Project Economics**

Description	Details
Internal Rate of Return (IRR)	29%
Payback Period (Yrs.)	3.87
Net Present Value (NPV) Rs.	1,716,532

Returns on investment and its profitability are highly dependent on the entrepreneur having some practical knowledge about agriculture and farming, selection of fertile land, selection of high yield seed, cultivation, vegetables and selection of right time



for vegetable cultivation.

**Table 4: Breakeven (100% Equity Based)**

Break-Even Analysis	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Break-Even Revenue (In Millions)	2.0	2.1	2.2	2.4	2.6	2.7	3.0	3.2	3.4	3.7
Break-even Produce (Kgs)	57,052	54,389	52,118	52,151	50,156	47,969	48,031	46,542	45,238	45,283
Margin of Safety	84%	85%	86%	86%	87%	87%	87%	87%	87%	87%

## 8.2 Project Financing

**Table 5: Project Economics Based on Debt (50%): Equity (50%)**

Description	Details
Internal Rate of Return (IRR)	29%
Payback Period (Yrs.)	3.87
Net Present Value (NPV) Rs.	4,632,580

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

**Table 6 : Project Financing**

Description	Details
Total Equity (50%)	5,103,583
Bank Loan (50%)	5,103,583
Markup to the Borrower (%age/annum)	14%
Tenure of the Loan (Years)	5

## 8.3 Project Cost

Following requirements have been identified for operations of the proposed business:

**Table 7 : Project Cost Summary**

Description	Amount Rs.
<b>Capital Cost</b>	
Farm Tools	62,500
Furniture and Fixtures	76,000
Tunnel Equipment	3,181,500
Pre-operating Cost	40,000
<b>Total Capital Cost</b>	<b>3,360,000</b>
<b>Working Capital</b>	
Cash	2,416,667
Raw Material Inventory	3,980,500
Upfront Land Lease Rental	450,000
<b>Total Working Capital</b>	<b>6,847,167</b>
<b>Total Project Cost</b>	<b>10,207,167</b>

#### 8.4 Land Requirement

The area has been calculated on the basis of minimum viable land required for setting up Off-Season Vegetable Farm (High Tunnel). However, the existing units do not follow any set pattern. Following table shows calculations for project space requirement.

**Table 8 : Land Requirement**

Vegetable	Land Utilization (Acres)	Land Lease Cost per Acre (Rs.)	Total Land Lease Cost (Rs.)
Tomato	4	50,000	200,000
Sweet pepper	2	50,000	100,000
Cucumber	3	50,000	150,000
<b>Total</b>	<b>9</b>		<b>450,000</b>

As land will be acquired on lease, hence total land lease cost during 1st year would be approximately Rs. 450,000.

## 8.5 Farm Tools

Farm tools required for an off-season vegetable farm can be purchased or rented by paying on hourly basis. In this particular Pre-feasibility, it has been assumed that machinery for hoeing and land preparation would be rented, while spray machine and some tools would be purchased.

Following table provides list of machinery and tunnel farm equipment required for Off-Season Vegetable Farming (High Tunnel).

**Table 9 : List of Machinery**

Description	Replacement Year	Quantity	Cost Rs. / Unit	Total Rs.
Farm Tools (Hand Tools)	5	1	25,000	25,000
Spray Machines	5	5	7,500	37,500
<b>Total</b>				<b>62,500</b>

## 8.6 Furniture and Fixture

Furniture and fixture required for an off-season vegetable farm are given below in the table:

**Table 10 : Furniture and Fixture Requirement**

Description	Replacement Year	Quantity	Cost Rs. / Unit	Total Rs.
Working Tables	5	4	10,000	40,000
Chairs	5	8	4,500	36,000
<b>Total</b>				<b>76,000</b>

## 8.7 High Tunnel Equipment

High tunnel structure requirements for 9 acres are given in the table below:

**Table 11 : Structure Requirement for High Tunnel**

Description	Replacement Year	Qty.	Unit Cost (Rs.)	Total Amount (Rs.)
Bamboos (Nos.)	3	94,500	30	2,835,000
Wire (G. Iron) (Kg)	3	900	280	252,000
Wire stretchers (Nos.)	3	630	150	94,500

<b>Total Equipment Cost</b>				<b>3,181,500</b>
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### 8.8 Plastic Sheet and Structure Installation Requirement

Plastic sheet and structure installation requirement for 9 acres of land are given in the table below:

**Table 12: Plastic Sheet and Structure Installation Requirement**

Description	Qty.	Unit Cost (Rs.)	Total Amount (Rs.)
Plastic Sheet - White (Kg)	2,250	370	832,500
Plastic Mulch - Black (Kg)	180	380	68,000
Structure installation cost (Acres)	9	75,000	675,000
<b>Total</b>			<b>1,575,500</b>

### 8.9 Raw Material Requirements

Following table shows raw material requirement:

**Table 13: Plants Cost**

Vegetables	Area (acres)	No. of Plants / Acre	Unit Cost Rs.	Total Cost of Plants / Acre (Rs.)
Tomato	4	10,000	7	70,000
Sweet pepper	2	15,000	5	75,000
Cucumber	3	15,000	4	60,000
<b>Total</b>	<b>9</b>			<b>205,000</b>

Apart from high yield seeds, following other raw material will also be required for cultivating off-season vegetables:

**Table 14: Fertilizer Requirement**

Description	Qty. Bags / Acre	Unit Costs (Rs.)	Total Fertilizer Cost / Acre (Rs.)
CAN	8	1,900	15,200
Nitrophos	4	3,800	15,200

DAP	2	8,500	17,000
SOP	8	7,000	56,000
<b>Total Cost of Fertilizer</b>			<b>103,400</b>

**Table 15: Pesticides Requirement**

Description	Unit	Qty.	Unit Costs (Rs.)	Total Cost (Rs.)
Fungicide	Area	9	40,000	360,000
Insecticide	Area	9	10,000	90,000
<b>Total Pesticide Spray Cost</b>				<b>450,000</b>

### 8.10 Human Resource Requirement

Owner / Manager will be engaged for 8 months per year, whereas, permanent and temporary labor will be engaged for 7 months and 2 months respectively.

**Table 16 : Human Resource Requirement (Permanent)**

Description	No. of Employees	Salary per Month (Rs.)	Salary / Season (Rs.)
Owner / Farm Manager	1	40,000	320,000
Permanent Labor	9	25,000	1,575,000
<b>Total Staff</b>			<b>1,895,000</b>

Five pickings per month are assumed from 1 acre with an average rate of Rs. 300 per picking per person. Following table shows the calculations for temporary labor wage:

**Table 17 : Human Resource Requirement (Temporary)**

Description	Number	Wages (Rs. per picking / person)	Total Seasonal Wages (Rs.)
Temporary Labor	7	Male: 500 Female: 500	567,000

Salaries of all employees / workers are estimated to increase at 10% annually.

### 8.11 Revenue Generation

Expected production and sale prices of vegetables are given in the table below:

**Table 18: Expected Production and Revenue Generation**

Vegetable	Land Utilization (Acres)	Sale Price (Rs./ Kg )	First Year Production excl. Wastage (Kg)	First Year Sales Revenue (Rs)
Tomato	4	35	50,000	7,000,000
Sweet pepper	2	50	20,000	2,000,000
Cucumber	3	30	40,000	3,600,000
Empty bags of Fertilizer				1,980
<b>Total Sales Revenue</b>				<b>12,601,980</b>

The price of vegetables in normal season is around one-third of the price of vegetables grown in off-season.

### 8.12 Other Costs

An essential cost to be borne by the farm is the transportation cost incurred during transfer of vegetables from the farm to the market, which is estimated as Rs. 360,000 for year one. Similarly, electricity expense is estimated to be around Rs. 52,000 for first year.

## 9 CONTACT DETAILS

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

Institution	Phone
Institute of Horticultural Sciences, Faculty of Agriculture, University of Agriculture, Faisalabad	+92-41-9201281
Horticulture Research Institute National Agricultural Research Centre Park Road, Islamabad	+92-51 9255061
Agriculture Department, Govt. of Punjab 21-Davis Road, Lahore	92-42-99200732

## 10 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)

[www.smeda.org.pk](http://www.smeda.org.pk)

Government of Pakistan	<a href="http://www.pakistan.gov.pk">www.pakistan.gov.pk</a>
Ministry of Industries & Production	<a href="http://www.moip.gov.pk">www.moip.gov.pk</a>
Ministry of Education, Training & Standards in Higher Education	<a href="http://moptt.gov.pk">http://moptt.gov.pk</a>
Government of Punjab	<a href="http://www.punjab.gov.pk">www.punjab.gov.pk</a>
Government of Sindh	<a href="http://www.sindh.gov.pk">www.sindh.gov.pk</a>
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Government of Gilgit Baltistan	<a href="http://www.gilgitbaltistan.gov.pk">www.gilgitbaltistan.gov.pk</a>
Government of Azad Jamu Kashmir	<a href="http://www.ajk.gov.pk">www.ajk.gov.pk</a>
Trade Development Authority of Pakistan (TDAP)	<a href="http://www.tdap.gov.pk">www.tdap.gov.pk</a>
Security Commission of Pakistan (SECP)	<a href="http://www.secp.gov.pk">www.secp.gov.pk</a>
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	<a href="http://www.fpcci.com.pk">www.fpcci.com.pk</a>
State Bank of Pakistan (SBP)	<a href="http://www.sbp.org.pk">www.sbp.org.pk</a>
Punjab Small Industries Corporation	<a href="http://www.psic.gop.pk">www.psic.gop.pk</a>
Sindh Small Industries Corporation	<a href="http://www.ssic.gos.pk">www.ssic.gos.pk</a>
Pakistan Horticulture Development and Export Company (PHDEC)	<a href="http://www.phdec.org.pk">www.phdec.org.pk</a>
Punjab Agriculture Department	<a href="http://www.agripunjab.gov.pk">www.agripunjab.gov.pk</a>
Ministry of National Food Security and Research (MNFS&R)	<a href="http://www.mnfsr.gov.pk/">http://www.mnfsr.gov.pk/</a>
Punjab Agriculture and Meat Company	<a href="http://www.pamco.bz">www.pamco.bz</a>
Farmers Associates Pakistan	<a href="http://www.farmersassociates.com">www.farmersassociates.com</a>
Punjab Agriculture Department	<a href="http://www.agripunjab.gov.pk">www.agripunjab.gov.pk</a>
Pakistan Agriculture And Dairy Farm Association	<a href="http://www.padfapak.org">www.padfapak.org</a>
Sindh Chamber of Agriculture	<a href="http://www.sindhchamberofagriculture.com">www.sindhchamberofagriculture.com</a>



## 11 ANNEXURES

### 11.1 Income Statement

SMEDA										
Calculations										
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	12,601,980	13,862,178	15,248,396	16,773,235	18,450,559	20,295,615	22,325,176	24,557,694	27,013,463	29,714,810
<i>Cost of sales</i>										
Plastic Sheet (white)	832,500	915,750	1,007,325	1,108,058	1,218,863	1,340,750	1,474,825	1,622,307	1,784,538	1,962,991
Plastic Mulch	68,400	75,240	82,764	91,040	100,144	110,159	121,175	133,292	146,621	161,284
Structure installation cost	675,000	742,500	816,750	898,425	988,268	1,087,094	1,195,804	1,315,384	1,446,922	1,591,615
Plants expense	610,000	671,000	738,100	811,910	893,101	982,411	1,080,652	1,188,717	1,307,589	1,438,348
Fertilizer expense	930,600	1,023,660	1,126,026	1,238,629	1,362,491	1,498,741	1,648,615	1,813,476	1,994,824	2,194,306
Pesticide expense	450,000	495,000	544,500	598,950	658,845	724,730	797,202	876,923	964,615	1,061,076
Green Manuring and Land Preparation	270,000	297,000	326,700	359,370	395,307	434,838	478,321	526,154	578,769	636,646
Weeding	31,500	34,650	38,115	41,927	46,119	50,731	55,804	61,385	67,523	74,275
Irrigation expense	112,500	114,750	117,045	119,386	121,774	124,209	126,693	129,227	131,812	134,448
Direct labor	2,142,000	2,356,200	2,591,820	2,851,002	3,136,102	3,449,712	3,794,684	4,174,152	4,591,567	5,050,724
Transportation Cost from Farm to Market	360,000	396,000	435,600	479,160	527,076	579,784	637,762	701,538	771,692	848,861
Packing expense	378,667	397,600	417,480	438,354	460,272	483,285	507,450	532,822	559,463	587,436
<b>Total cost of sales</b>	<b>6,861,167</b>	<b>7,519,350</b>	<b>8,242,225</b>	<b>9,036,210</b>	<b>9,908,362</b>	<b>10,866,443</b>	<b>11,918,986</b>	<b>13,075,377</b>	<b>14,345,936</b>	<b>15,742,011</b>
Gross Profit	5,740,813	6,342,828	7,006,171	7,737,025	8,542,197	9,429,172	10,406,190	11,482,317	12,667,528	13,972,799
<i>General administration &amp; selling expenses</i>										
Administration expense	320,000	352,000	387,200	425,920	468,512	515,363	566,900	623,589	685,948	754,543
Administration benefits expense	16,000	17,600	19,360	21,296	23,426	25,768	28,345	31,179	34,297	37,727
Land lease rental expense	450,000	495,000	544,500	598,950	658,845	724,730	797,202	876,923	964,615	1,061,076
Electricity expense	52,500	57,750	63,525	69,878	76,865	84,552	93,007	102,308	112,538	123,792
Travelling expense	35,000	36,750	38,588	40,517	42,543	44,670	46,903	49,249	51,711	54,296
Communications expense (phone, mail, etc.)	21,000	22,050	23,153	24,310	25,526	26,802	28,142	29,549	31,027	32,578
Misc. expenses	16,000	17,600	19,360	21,296	23,426	25,768	28,345	31,179	34,297	37,727
Vegetable Market expense	1,260,198	1,386,218	1,524,840	1,677,324	1,845,056	2,029,561	2,232,518	2,455,769	2,701,346	2,971,481
Depreciation expense	1,074,350	1,074,350	1,074,350	1,241,511	1,241,511	1,249,488	1,442,998	1,442,998	1,442,998	1,667,010
Amortization of pre-operating costs	8,000	8,000	8,000	8,000	8,000	-	-	-	-	-
<b>Subtotal</b>	<b>3,253,048</b>	<b>3,467,318</b>	<b>3,702,875</b>	<b>4,129,001</b>	<b>4,413,709</b>	<b>4,726,702</b>	<b>5,264,360</b>	<b>5,642,744</b>	<b>6,058,779</b>	<b>6,740,232</b>
Operating Income	2,487,765	2,875,510	3,303,296	3,608,024	4,128,488	4,702,470	5,141,830	5,839,573	6,608,749	7,232,567
<b>Earnings Before Interest &amp; Taxes</b>	<b>2,487,765</b>	<b>2,875,510</b>	<b>3,303,296</b>	<b>3,608,024</b>	<b>4,128,488</b>	<b>4,702,470</b>	<b>5,141,830</b>	<b>5,839,573</b>	<b>6,608,749</b>	<b>7,232,567</b>
Earnings Before Tax	2,487,765	2,875,510	3,303,296	3,608,024	4,128,488	4,702,470	5,141,830	5,839,573	6,608,749	7,232,567
Tax	267,553	345,102	445,824	522,006	658,546	830,741	962,549	1,171,872	1,433,062	1,651,398
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>2,220,212</b>	<b>2,530,408</b>	<b>2,857,472</b>	<b>3,086,018</b>	<b>3,469,941</b>	<b>3,871,729</b>	<b>4,179,281</b>	<b>4,667,701</b>	<b>5,175,687</b>	<b>5,581,168</b>

## 11.2 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
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	2,416,667	5,311,050	8,779,551	8,932,018	13,184,526	17,817,418	18,774,182	24,554,363	30,952,024	33,095,026	52,148,718
Accounts receivable		241,682	253,766	279,142	307,057	337,762	371,539	408,693	449,562	494,518	543,970
Raw material inventory	3,980,500	4,369,550	4,797,325	5,267,694	5,784,912	6,353,662	6,979,091	7,666,865	8,423,213	9,254,990	112,500
Pre-paid annual land lease	450,000	495,000	544,500	598,950	658,845	724,730	797,202	876,923	964,615	1,061,076	-
<b>Total Current Assets</b>	<b>6,847,167</b>	<b>10,417,282</b>	<b>14,375,142</b>	<b>15,077,804</b>	<b>19,935,340</b>	<b>25,233,571</b>	<b>26,922,015</b>	<b>33,506,843</b>	<b>40,789,414</b>	<b>43,905,610</b>	<b>52,805,187</b>
<i>Fixed assets</i>											
Machinery & equipment	62,500	56,250	50,000	43,750	37,500	111,018	96,791	82,564	68,337	54,111	39,884
Furniture & fixtures	76,000	68,400	60,800	53,200	45,600	38,000	30,400	22,800	15,200	7,600	-
Tunnel equipment	3,181,500	2,121,000	1,060,500	3,682,984	2,455,323	1,227,661	4,263,514	2,842,343	1,421,171	4,935,551	3,290,367
<b>Total Fixed Assets</b>	<b>3,320,000</b>	<b>2,245,650</b>	<b>1,171,300</b>	<b>3,779,934</b>	<b>2,538,423</b>	<b>1,376,679</b>	<b>4,390,705</b>	<b>2,947,707</b>	<b>1,504,709</b>	<b>4,997,261</b>	<b>3,330,251</b>
<i>Intangible assets</i>											
Pre-operation costs	40,000	32,000	24,000	16,000	8,000	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>40,000</b>	<b>32,000</b>	<b>24,000</b>	<b>16,000</b>	<b>8,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>10,207,167</b>	<b>12,694,932</b>	<b>15,570,442</b>	<b>18,873,738</b>	<b>22,481,763</b>	<b>26,610,250</b>	<b>31,312,720</b>	<b>36,454,550</b>	<b>42,294,122</b>	<b>48,902,872</b>	<b>56,135,438</b>
<i>Other liabilities</i>											
Deferred tax		267,553	612,655	1,058,479	1,580,485	2,239,031	3,069,772	4,032,321	5,204,193	6,637,255	8,288,654
<b>Total Long Term Liabilities</b>	<b>-</b>	<b>267,553</b>	<b>612,655</b>	<b>1,058,479</b>	<b>1,580,485</b>	<b>2,239,031</b>	<b>3,069,772</b>	<b>4,032,321</b>	<b>5,204,193</b>	<b>6,637,255</b>	<b>8,288,654</b>
<i>Shareholders' equity</i>											
Paid-up capital	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167	10,207,167
Retained earnings		2,220,212	4,750,620	7,608,093	10,694,111	14,164,052	18,035,781	22,215,062	26,882,763	32,058,450	37,639,618
<b>Total Equity</b>	<b>10,207,167</b>	<b>12,427,379</b>	<b>14,957,787</b>	<b>17,815,259</b>	<b>20,901,277</b>	<b>24,371,219</b>	<b>28,242,947</b>	<b>32,422,228</b>	<b>37,089,929</b>	<b>42,265,616</b>	<b>47,846,785</b>
<b>TOTAL CAPITAL AND LIABILITIES</b>	<b>10,207,167</b>	<b>12,694,932</b>	<b>15,570,442</b>	<b>18,873,738</b>	<b>22,481,763</b>	<b>26,610,250</b>	<b>31,312,720</b>	<b>36,454,550</b>	<b>42,294,122</b>	<b>48,902,872</b>	<b>56,135,438</b>

### 11.3 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
<i>Operating activities</i>											
Net profit		2,220,212	2,530,408	2,857,472	3,086,018	3,469,941	3,871,729	4,179,281	4,667,701	5,175,687	5,581,168
Add: depreciation expense		1,074,350	1,074,350	1,074,350	1,241,511	1,241,511	1,249,488	1,442,998	1,442,998	1,442,998	1,667,010
amortization of pre-operating costs		8,000	8,000	8,000	8,000	8,000	-	-	-	-	-
Deferred income tax		267,553	345,102	445,824	522,006	658,546	830,741	962,549	1,171,872	1,433,062	1,651,398
Accounts receivable		(241,682)	(12,084)	(25,377)	(27,914)	(30,706)	(33,776)	(37,154)	(40,869)	(44,956)	(49,452)
Raw material inventory	(3,980,500)	(389,050)	(427,775)	(470,369)	(517,219)	(568,749)	(625,429)	(687,774)	(756,348)	(831,776)	9,142,490
<b>Cash provided by operations</b>	<b>(3,980,500)</b>	<b>2,939,384</b>	<b>3,518,001</b>	<b>3,889,901</b>	<b>4,312,403</b>	<b>4,778,544</b>	<b>5,292,752</b>	<b>5,859,901</b>	<b>6,485,353</b>	<b>7,175,015</b>	<b>17,992,615</b>
<i>Financing activities</i>											
Add: land lease expense		450,000	495,000	544,500	598,950	658,845	724,730	797,202	876,923	964,615	1,061,076
Land lease payment	(450,000)	(495,000)	(544,500)	(598,950)	(658,845)	(724,730)	(797,202)	(876,923)	(964,615)	(1,061,076)	-
Issuance of shares	10,207,167	-	-	-	-	-	-	-	-	-	-
<b>Cash provided by / (used for) financing activities</b>	<b>9,757,167</b>	<b>(45,000)</b>	<b>(49,500)</b>	<b>(54,450)</b>	<b>(59,895)</b>	<b>(65,885)</b>	<b>(72,473)</b>	<b>(79,720)</b>	<b>(87,692)</b>	<b>(96,461)</b>	<b>1,061,076</b>
<i>Investing activities</i>											
Capital expenditure	(3,360,000)	-	-	(3,682,984)	-	(79,768)	(4,263,514)	-	-	(4,935,551)	-
<b>Cash (used for)/ provided by investing activities</b>	<b>(3,360,000)</b>	<b>-</b>	<b>-</b>	<b>(3,682,984)</b>	<b>-</b>	<b>(79,768)</b>	<b>(4,263,514)</b>	<b>-</b>	<b>-</b>	<b>(4,935,551)</b>	<b>-</b>
<b>NET CASH</b>	<b>2,416,667</b>	<b>2,894,384</b>	<b>3,468,501</b>	<b>152,467</b>	<b>4,252,508</b>	<b>4,632,892</b>	<b>956,765</b>	<b>5,780,180</b>	<b>6,397,661</b>	<b>2,143,003</b>	<b>19,053,691</b>

## 12 KEY ASSUMPTIONS

### 12.1 Operating Cost Assumptions

Description	Details
Administration Benefit Expenses	05% of Admin Expense
Communication Expenses	21,000 Annual Expense
Travelling Expense	35,000 Annual Expense
Promotional expense % of admin expense	1.0% of Revenue
Professional Fees (Legal, Audit, Consultant)	0.5% of Revenue
Office Expenses (stationary, entertainment, janitorial services, etc.)	5.0%
Depreciation on Tunnel Equipment	33%
Operating Costs Growth Rate	10%
Accounts Receivable Cycle	07 Days
Raw Material Inventory	06 Months
Amortization Of Pre-Operating Expenses	05 Years

### 12.2 Production Cost Assumptions

Description	Details
Cost of Goods Sold Growth Rate	10%
Operating Cost Growth Rate	05%
Vegetable Market Expense	10% of Revenue
Miscellaneous Expense	05% of Admin Expense
Farm to Market Trip Cost	Rs. 360,000 Per Trip Cost: 10,000 Per Trip Load: 10 (Tons) No. of Trip: 36
Pesticides Expense per Season	Rs. 450,000
Cost of Irrigation (9 acres)	Rs. 112,500

Cost of Green manuring, Land Preparation, & Sowing (9 acres)	Rs. 270,000
Cost of Mechanical Hoeing (9 acres)	Rs. 31,500
Total packing expense per season for 9 acres	Rs. 378,667

### 12.3 Revenue Assumptions

Description	Details
Sales Price Growth Rate	10%
Production Capacity Utilization (1-10 Yr.)	100%
Days Operational / Year	180