PROJECT REPORT ON

Tomato under Greenhouse

SUBMITTED BY

Promoter Name:
Xxxxxxxxxxxxxxx

Project Location:
Xxxxxxxxxxxxxxxxx

Prepared By:
Download Project Report.com
1187/67, Ground Floor, Gruhalaxmi,
J.M. Road, near Balgandharva Chowk,
Pune, Maharashtra 411005.

C O N T E N T S

CHAPTER - I

ABOUT THE PROMOTER

1. Name of Firm : xxxxxxxxxxxx
2. Name of Promoter : xxxxxxxxxxxx
3. Address(Residence) : xxxxxxxxxxxx
4. Contact Number : xxxxxxxxxxxx
5. Project Location (Addr.) : xxxxxxxxxxxx

CHAPTER – II

PROJECT DESCRIPTION

CULTIVATION

The tomato is botanicaly known as *Lycopersicum esculentum* belongs to the family Solanacae. The fruits are harvested as red for consumption. It has prominent place in humen food. A breif accounts on its cultivation is given below.

Varieties

Improved varieties

Arka Saurabh, Arka Vikas, Arka Ahuti, Arka Ashish, Arka Abha , Arka Alok, HS101, HS102, HS110, Hisar Arun, Hisar Lalima, Hisar Lalit, Hisar Anmol, KS.2, Narendra Tomato 1, Narendra Tomato 2, Pusa Red Plum, Pusa Early Dwarf, Pusa Ruby, Co-1, CO 2, CO 3, S-12, Punjab Chhuhara, PKM 1, Pusa Ruby, Paiyur-1, Shakthi, SL 120, Pusa Gaurav, S 12, Pant Bahar, Pant T3, Solan Gola and Arka Meghali.

F1 hybrids:

Arka Abhijit, Arka Shresta, Arka Vishal, Arka Vardan, Pusa Hybrid 1, Pusa Hybrid 2, COTH 1 Hybrid Tomato, Rashmi, Vaishali, Rupali, Naveen, Avinash 2, MTH 4, Sadabahar, Gulmohar and Sonali.

Climatic Requirement

The tomato is a warm-season crop. The crop does well under an average monthly temperature of 21^0C to 23^0C. Temperature and light intensity affect the fruit-set, pigmentation and nutritive value of the fruit. Long dry spell and heavy rainfall both shows detrimental effect on growth and fruiting.

Soils

The tomato grows on practically all soils from light sandy to heavy clay. Light soils are good for an early crop, while clay loam and silt-loam soils are well suited for heavy yields. Tomatoes do best in a soil that has a soil reaction from pH 6.0 to 7.0. If the soil is acidic liming is required.

Seed rate

- For raising the seedlings in nursery bed 300 - 400 g/ha seeds are required.
- Hybrid seeds are very costly so it should be sown in plastic cups or ice cube tray, which require only 70-90 g.

Time of planting

- Tomato is a day neutral plant so wildly it found grown in any season.

- In the northern plains three crops are taken but in frost affected area rabi crop is not fruitful. The kharif crop is transplanted in July, rabi crop in October - November and zaid crop in February months.
- In the southern plains where there is no danger of frost, The first transplanting is done in December-January, Second June-July Third in September-October depending on the irrigation facilities available.

Raising seedlings

- Seedlings are grown before one months of transplanting raised beds of 60-100 cm width and of convenient length.
- Soil solorization of nursery bed by covering them with white transparent polythene sheet for one month should be done in hot summer months. It will kill the disease causing organisms like fungus, bacteria, nematode as well as insects and seeds of weeds.
- For one m2 of nursery area apply 5kg well rotten FYM and 20 g of each N, P and K fertiliser, and also apply 2.5g carbofuran or 200 g of neem cake and 10-25 g tricoderma.
- While preparing the nursery beds, neem cake /castor cake/ neam leaf/ castor leaf/ pongamia leaf/ calotropis leaf has to be incorporated @ 400 g/m^2 for protection against nematoads.
- After sowing the seeds, mulch with green leaves and irrigate with a rose-can daily in the morning. Remove the mulch immediately after germination of the seeds. Restrict irrigation one week before transplanting and irrigate heavily on the previous day of transplanting.
- Cover the nursery bed with fine nylon net to escape the damage by virus transmitting insects.

Seed treatment

- To avoid damping off disease treats the seed with Tricoderma @ 5-10 g/Kg seed or carbendazim 2g/Kg seed.
- The treated seeds are dried in shade for 30 minutes and then sown sparsely along the lines in ½ cm depth and then covered by the topsoil.

Land preparation

Land is prepared to a fine tilth by thorough ploughing or digging 2 - 3 times. At the last ploughing organic manure and 10 kg carbofuran granules or 200 kg neem cake has to be applied

Manuring

Apply well rotten farm yard manure / compost @ 20-25 t/ha at the time of land preparation and mix well with the soil. A fertilizer dose of 75:40:25 kg N:P_2O_5:K_2O / ha may be given. Half the dose of nitrogen, full phosphorus and half of potash may be applied as basal before transplanting. One fourth of nitrogen and half of potash may be applied 20-30 days after planting. The remaining quantity may be applied two months after planting.

Transplanting

- The transplanting is done in small flat beds or in shallow furrow depending upon the availability of irrigation.
- In heavy soil it is usually transplanted on ridges and during the rains also it is advantageous to plant the seedlings on ridges.
- For indeterminate varieties/hybrids, the seedlings have to be staked using bamboo sticks of two meter length or planted in broad ridge of 90 cm width and 15 cm height. The seedlings are planted in the furrows at a spacing of 30 cm and the plant is allowed to spread on the broad ridge.

Spacing

The spacing recommended for the autumn-winter crop is 75 x 60 cm and for the spring-summer crop 75 x 45 cm.

Irrigation

Tomatoes need very careful irrigation that is just sufficient water at the right time. It is necessary to maintain an even moisture supply. During summer season, irrigation at every 5to 7 days interval is necessary, whereas in winter 10 to 15 days interval is sufficient. A period of drought followed by sudden heavy watering during the fruiting period may cause cracking of fruits.

Weed Control

- There is need of light hoeing during first four weeks in the field which encourage the growth but also remove the weeds from the field. The surface soil is loosened by hand hoeing as soon as it is dry enough after every irrigation or shower. All weeds should also be removed in this process.
- Mulching with straw, black polythene and many other materials has been found beneficial in moisture conservation, in controlling weeds and some diseases.

Plant protection
Insects

Gram pod borer *Heliothis armigera*

It is a polyphagous, attacks most of the cultivated crops, major pest of tomato, and widely distributed throughout the country. Young larvae feed on tender foliage, while advanced stages attack the fruits. Larva bore circular holes in fruits.

Serpentine leaf miner *Liriomyza trifolii*

It is a polyphagous in nature very widely distributed throughout the India. Maggot mines into the leaf and feeds on the mesophyll of the leaves making serpentine mines/galleries.

Tobacco caterpillar *Spotoptera litura*

It is also polyphagous in nature, major pest of tomato, distributed widely. Freshly hatched larvae feed gregariously, scraping the leaves from ventral side, later stages, feed voraciously at night on the foliage. Larvae may also feed on fruits hollowing these out.

Root-Knot Nematode *Meloidogyne* spp.

This nematode has wide host range, widespread all over India, affects most of the vegetable crops, often tomato, brinjal, okra. Root-knot nematodes are small, microscopic, males are slender and females swollen. The most characteristic symptom on the root is production of root galls. Above ground symptoms are reduced growth, chlorosis of foliage, susceptibility to wilting, and reduced fruit production.

Insects Management

- Two rows of marigold for every 16 rows of tomato can be grown as a trap crop. Marigold flowers attract egg laying of H. armigera.
- Spray 5% neem seed kernel extract to kill early stages larvae.
- Placement of 15-20 bird perches (T shaped) per ha helps in inviting insectivorous birds.
- Spray NPV @ 625 LE/ha during evening hours.
- Jaggery @ 1 kg, sandovit or Teepol(100 ml) are to be mixed with NPV on need basis spary 2 ml Endosulfan, Chlorpyriphos or Quinolphos per litre of water
- Application of chopped leaves of Pongamia or Crotalaria reduces disease severity caused by nematode.
- Farmers of the Andhra Pradesh uses garlic+ chilly extract and slurry of cow dung + urine for protection against pest and diseases.

Disease

Tomato is attacked vast range of fungus, bacteria and viruses. The most common diseases are anthracnose, bacterial spot, bacterial blight, bacterial canker, buck eye rot, damping off, early blight , fusarium blight, late blight, leaf curl, mosaic, powdery mildew, rots, and septorial leaf blight. Few major disease are discussed below.

Bacterial Wilt *Pseudomonas solanacearum*

Deadly disease of tomato. Wilting, stunting, yellowing of the foliage and finally collapse of the entire plant are the characteristic symptoms of the disease. The lower leaves may droop first before wilting occurs.

Damping Off Pythium *aphanidermatum, Rhizoctonia solani*

Common in many parts of India, Occurring in nurseries of Tomato, Tobacco, Chillies, Cabbage, Cauliflower, Brinjal and Cucurbits. Young seedlings are killed before they emerge through the soil surface or collar region of grownup plants get rotten and toppling of small plants are seen in nursery bed.

Early Blight *Alternaria solani*

Common disease of tomato occurring all over India. The characteristic leaf spots and blight first becomes visible as small, isolated, scattered pale brown spots on the leaf which later on also develop on stem and fruits. Fully developed spots are irregular, brown to dark brown in colour, and with concentric rings inside the spot. In severe attacks the entire plant may be defoliated.

Wilt *Fusarium oxysporum* f.sp. *Lycopersici*

It is a worst disease of tomato occurring all over India. First symptoms appear as chlorosis of the leaf. Soon the petiole and leaves droop and wilt. When plant roots and basal stems are split open dark brown or black discoloration of the vascular tissues may be seen.

Tomato Mosiac *Tobacco mosaic virus, Cucumber mosaic virus*

The common symptom of mosaic is mottling of the leaves. The normal green colour of the leaf is interspersed with light green to pale yellow islands of irregular patches. The edges of the leaf turn downward and are stiffer than those of a healthy leaf.

Powdery Mildew *Leveillula taurica*

A light powdery covering of the lesions may occur on the lower surface. Heavily infected leaves die but seldom drop from the plant.

Septoria Leaf Blight *Septoria lycopersici*

It is a Major disease of tomato throughout India. In young plants numerous spots appear on older leaves or on plants with poor growth. Small, circular spots are first observed as water soaked areas on the under surface of the lower leaves. As the spots enlarge, they develop dark brown marking and sunken, white or grey centres.

Rots

Black mold rot *Alternaria alternata, Stemphylium botryosum*

Sunken or slightly flattened lesions with water soaked in appearance occurs on fruits. Soon these lesion become brown to black in colour. Tomato fruits coming in contact with the soil are attacked by soil-borne fungi causing rotting of the fruits.

Disease Management

- Soil solorization or partial sterilisation of the soil by burning trash on the surface
- Seed treatment with tricoderma 5-10g or carbendazim 2g or thirum3 g/Kg seed.
- Field sanitation
- Crop rotation with non-solanaceous
- Providing better drainage, forming raised beds
- Uproot the heavily infected or virus infected plants
- Sanitation and crop rotation reduces the disease incidence
- Spraying the plants with a mixture of Streptocycline 200 ppm and Copper oxychloride 3g per litre of water gives fairly good control of the disease.

CHAPTER – III

MARKET POTENTIAL

Marketing of Tomato is the crucial factor for the success of the project. There is tremendous potential for cultivating Tomato through poly houses. In India, Tomato is grown for its mature fruits and is widely used as salad. It has attained a status of high value crop in India in the recent years and occupies a pride place among vegetables in Indian cuisine, because of its delicate taste and rich content of ascorbic acid and other vitamins and minerals.

Tomato consumption in India is increasing now-a-days due to increasing demand by urban consumers. There is a good demand for export too. The export market needs fruits with longer shelf life, medium size, tetra lobed fruits with an attractive dark colour, mild pungency and good taste. But, the supply is inadequate due to low productivity of the crop. But there is increased demand for Tomato by the consumers and lot of farmers are also showing interest in the cultivation of this crop under protected conditions, as this type is having definite qualitative and quantitative advantage over the traditional cultivation.

CHAPTER – IV

SWOT ANALYSIS

Strengths:

- Domestic market for Tomato is growing.
- The Governments have identified vegetables in polyhouse as a sunrise sector and are providing strong support through various policies and schemes.

WEAKNESS:

- High capital investment
- Demand fluctuate according to different seasons
- Unavailability of skilled manpower
- Incidence of pest and diseases many a times becomes unmanageable.
- Poor marketing linkage and poor market infrastructure.
- Non-availability of adequate quality planting material.
- Poor post-harvest management infrastructure. Due to the perishable nature of the products it's important to have enough transportation and good logistics facilities.
- Negligence to research relating to technical factors

OPPORTUNITY:

- There is tremendous demand for Tomato due to the growing popularity of western life style
- Access to metropolises like Kolkata, Chennai, Mumbai and Delhi etc. and other big cities enhances the possibilities for tapping market of these states.
- Growing consumer base with higher income is expected to add demand in new market
- Availability of new and unique varieties

THREATS:

- Uncertainty in weather conditions and frequent occurrence of natural calamities like cyclone and drought.
- Uncertainty about market stability
- Exploitation by middlemen in the market chain.
- High incidence of pest and diseases.

V. ECONOMICS OF THE PROJECT

A. PROJECT PROFILE (Financial)

Sr. No.	PARAMETERS	VALUE
1	Unit Size in sq.m.	20,000
2	Product	Tomato
3	Cost of the project	2,05,35,500
4	Bank loan	1,54,01,625
5	Margin money	51,33,875
6	Financial Indicators	
	BCR at 15% DF	2.14 :1
	NPW at 15% DF Rs.	2,39,70,538
	I R R %	61
7	Average DSCR	3.2
8	Interest Rate (% per annum)	12
9	Repayment	5 years

B. BASIS & PRESUMPTIONS

Sr. No.	Particular	Unit	Quantity
I.	**Techno-economic parameters**		
	Payback period		5 years
	Rate of interst	%	12
II.	**Expenditure norms**		
	Fertilizer per annum	Rs./ Sq.m.	5
	Pesticides per annum	Rs./ Sq.m.	5
	No of semiskilled workers	Nos.	4
	Cost of one semiskilled worker per annum	Rs.	72,000
II.	**Income norms**		
	Sale price of Tomato	Rs./Kg	30
	Yield per 4000 sqm per crop cycle	Tonn	25
	Crop cycles per pear		3

Subsidy receives @ 50% from N.H.B. treated as F.D. in bank @ 6%

This amount of subsidy is used for repayment of loan

C. TOTAL COST OF PROJECT

Sr. No.	Particular	Unit	Unit Rate in Rs.	Quantity	Amount in Rs.
I.	**Cost of Polyhouse**	Sq.m.	800	20,000	1,60,00,000
II.	**Initial Planting cost**				
	Bed material & preparation	Rs./sq.m.	50	20,000	10,00,000
	Fertilizers & mannures	Rs./sq.m.	5	20,000	1,00,000
	Manpower & supervision	Rs./sq.m.	50	20,000	10,00,000
	Irrigation system (with drip)	Rs./sq.m.	100	20,000	20,00,000
					41,00,000
III.	**Cost of grading/pack house**	Sq. ft.	650	670	4,35,500
			TOTAL		**2,05,35,500**

D. MEANS OF FINANCE

Sr. No.	Particular	Unit	Quantity	Amount in Rs.
1	Term loan	%	75	1,54,01,625
2	Own contribution	%	25	51,33,875
			TOTAL	**2,05,35,500**
3	Subsidy entitlement @ 50% from NHB			**1,02,67,750**

E. PROJECTION OF PERFORMANCE & PROFITABILITY

Sr. No.	Particular	Unit	Unit rate in Rs.	Quantity	I year	II year	III year	IV year	V year
I.	**Income**								
a.	Sale of Tomato								
	Yield per crop cycle	Tonn			125	125	125	125	125
	Total yield per annum (Crop cycles per anuum- 3)	Tonn			375	375	375	375	375
	Selling price	Rs./kg			30	30	30	30	30
	Total Income	Rs.			1,12,50,000	1,12,50,000	1,12,50,000	1,12,50,000	1,12,50,000
b.	Interest on Subsidy @ 6%				6,16,065	6,16,065	6,16,065	6,16,065	6,16,065
c.	Subsidy				0	0	0	0	1,02,67,750
				TOTAL (B)	**1,18,66,065**	**1,18,66,065**	**1,18,66,065**	**1,18,66,065**	**2,21,33,815**
II.	**Expenditure**								
a.	Cost of Raw Materials								
	Planting material for 3 crop cycle	per sq.m.	15	20,000	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
	Fertilisers	per sq.m.	5	20,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
	Pesticides & fungicides	per sq.m.	5	20,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
b.	Cost of Consumbles								
	Packaging material	per kg	0.50	375	188	188	188	188	188
c.	Cost of Utilities								
	Electricity, Water	per month	2,500	12	30,000	30,000	30,000	30,000	30,000
d.	Cost of Manpower								
	Semiskilled workers	per annum	72,000	4	2,88,000	2,88,000	2,88,000	2,88,000	2,88,000
e.	Overhead Expenses								
	Transportation	per month	1000	12	12,000	12,000	12,000	12,000	12,000
	Marketing expenses 1% of sales				1,12,500	1,12,500	1,12,500	1,12,500	1,12,500
				TOTAL (A)	**9,42,688**	**9,42,688**	**9,42,688**	**9,42,688**	**9,42,688**
III	**Net Income**			**TOTAL (A+B)**	**1,09,23,378**	**1,09,23,378**	**1,09,23,378**	**1,09,23,378**	**2,11,91,128**

F. Financial Analysis

Particulars	I year	II year	III year	IV year	V year
Capital Costs	2,05,35,500				
Recurring cost	9,42,688	9,42,688	9,42,688	9,42,688	9,42,688
Total Cost	**2,14,78,188**	**9,42,688**	**9,42,688**	**9,42,688**	**9,42,688**
Benefit	1,18,66,065	1,18,66,065	1,18,66,065	1,18,66,065	2,21,33,815
Depreciated value of buildings @ 10%					2,54,985
Depreciated value of Machinery & equipments @ 15%					77,13,000
Total Benefit	**1,18,66,065**	**1,18,66,065**	**1,18,66,065**	**1,18,66,065**	**3,01,01,800**
Net Benefit	**-96,12,123**	**1,09,23,378**	**1,09,23,378**	**1,09,23,378**	**2,91,59,113**
Discounting Factor@ 15%	0.87	0.76	0.66	0.57	0.50
NPV cost at 15% DF	1,86,86,023	7,16,443	6,22,174	5,37,332	4,71,344
NPV benefits at 15% DF	1,03,23,477	90,18,209	78,31,603	67,63,657	1,10,66,908

NPW at 15% DF **2,39,70,538**

BCR at 15% DF **2.14 :1**

IRR % **60.59**

G. Term Loan Repayment

Rate of interst - % per annum **:** 12

Opening balance of term loan **:** 1,54,01,625

Year	Loan Outstanding	Gross Surplus	Principal	Interest	Total Repayment	Net Surplus	DSCR
1	1,54,01,625	1,09,23,378	3080325	1848195	4928520	59,94,858	2.2
2	1,23,21,300	1,09,23,378	3080325	1478556	4558881	63,64,497	2.4
3	92,40,975	1,09,23,378	3080325	1108917	4189242	67,34,136	2.6
4	61,60,650	1,09,23,378	3080325	739278	3819603	71,03,775	2.9
5	30,80,325	2,11,91,128	3080325	369639	3449964	1,77,41,164	6.1
						Avg. DSCR	**3.2**