

PROJECT REPORT

Of

ROSE CULTIVATION

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Rose Cultivation**.

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]



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1. Introduction

Depending on the species and varieties, roses have various uses. They may be used as cut flowers, and garden plants. They may also be used in making rose oil, rose water and gulkhand. Model project is on production of roses for use as cut flowers, which have an important place in preparation of bouquets, floral arrangements, worship, social occasions and presentation of gifts. Measured in terms of volume of trade in the international market cut roses rank first in popularity.

In India, according to a recent survey about 4330 ha. area, producing 874 million stems valued at ₹44.00 crores, is under rose cultivation in the states of Tamil Nadu, Karnataka, Maharashtra and West Bengal

The cultivation is mostly done under open filed conditions. The varieties grown are not popular in the international trade. The plant density is low (8000-15000/ha). Scientific post-harvest management is hardly followed. The cold chain essential for export is almost absent. The cultivation is in the hands of small growers, who are unable to make sizeable investment. In Europe and USA, commercial cultivation of roses for production of cut flowers is mostly done under climate controlled green house, where ultra high plant density is practised. Scientific post-harvest management of the produce is scrupulously followed and there exists a strong cold chain from the farm to the florists' shop.

However, with the advancement in production and marketing of cut roses in the countries of northern hemisphere, there has been a concomitant increase in the investment cost, due to the need for climate controlled green house, and production cost, on account of the need for heating and cooling system and high labour wages. As a result, an opportunity for development of cut roses (and other cut flowers) arose in the countries of southern hemisphere, such as, Columbia, Mexico, Kenya, Zimbabwe. The prospects has further brightened by development of rose varieties which could be cultivated under high temperature. Thus, while the production of cut roses in the main market has remained static, new centres of rose production under low cost plastic green houses have developed in the countries of southern hemisphere for export to the countries of northern hemisphere, where demand for cut roses is increasing at the rate of 9% per annum.

Due to the above developments and also on account of recent economic liberalisation there has been an upsurge of interest in production of cut roses in plastic green houses in India also.

2. Agro-Climatic Requirements

Plenty of light, humid and moderate temperature ranging from 15 0C to 28 0C may be considered as ideal conditions for roses in the tropical and subtropical climate of India. At temperature below 15 0C roses can be grown, but the interval between flushes become longer. At higher temperature, say above 30 0C, roses can be grown provided high humidity is maintained and evaporation is slowed down.

Well drained soil rich in organic matter and oxygen is good for roses. Organic matter as high as 30 per cent in the top 30 cm of the growing beds is preferred by many growers. The pH of the soil should be around 6 to 6.5.

Potential Growth Centres

The selection of location for production of roses or any other flowers for export purposes depends mainly on three factors :

- a. Cost of Production
- b. Quality
- c. Cost of transportation

Only the production of high quality flowers at low cost can stand upto international competition. Based on these considerations, the location should be decided. The floriculture expert committee set up by the Ministry of Commerce, Government of India, has identified the following growth centres for production of cut roses for export purposes.

- d. Hyderabad and places around
- e. Bangalore and places around
- f. Nasik, Pune and places around

However, based on the basic factors indicated in the preceding paragraphs, other centres can also be selected.

3. Pre-Harvest Technology

Types of Roses and Varieties

The major types of roses which are commercially important are as under:-

- **HYBRID TEA Roses** : These have large flowers (4 cm.) long stems (125 cm). Yield varies from 100-200 stems/sqm. Hybrid Teas fetch higher price than other types. A few well-known varieties of this group are SONIA, VIVALDI, TINEKE, MELODY, DARLING and ONLY LOVE.
- **FLORIBUNDA Roses** : These have small flowers (2.5 cm) and shorter stems (less than 60 cm), but yield much higher than other types. Examples of this type are FRISCO, MERCEDES, JAGUAR, KISS and FLORENCE.
- **SPRAY Roses** : A single stem of this type may carry 5-6 flowers, but stem yield per sqm is low. Important varieties belonging to the type are EVELIEN, JOY and NIKITA.

Shed Net House

Shed Net house refer to structure covered with a transparent material which permits natural light for plant growth. It is essential for production of good quality cut roses without blemishes.

Layout and Planting

There could be 5 beds each of 1.20m width per 8m bay. The width of path could be 0.40m. There could be two rows of plants per bed. There may be ridged so that roots are well aerated and kept clear of any standing water. The lower number of rows per bed and higher number of paths allow better air circulation.

The plant density in Holland varies from 55,000 to 80,000 per gross hectare. The distance between the plants in the rows and between the rows varies so that either way the planting density ends up as 60,000 to 70,000 plants per hectare.

In the present model row to row distance could be 30 cm and plant to plant distance 17cm. Each row of 24m length could contain 140 plants so that planting density of 70,000 plants per hectare might be achieved.

Planting may be done in the months of February to April and/or July to September in a phased manner.

Bed Support System:

Close density as recommended above inhibits branching. Such plants grow about 2 cm in height. They are, therefore, required to be supported by wire.

The other technical parameters could be as under :

Manuring

Organic manures are required to be added so that top 30 cms. of the soil has 30% organic matter content. A dose of 15 Kg. manure per square metre has been taken into account for estimating the cost

Fertilizer Application

Application of nutrients should be based on analysis of soil and plant. However, in the present model the cost has been estimated based on the following doses.

Nitrogen and Potassium = 200 PPM

No. of applications = Twice a week for 7 months along with irrigation

Phosphorus = Soil application @ 1.8 kg/m³

Other Nutrients = Lumpsum provision has been made

Irrigation and drainage

Rose plants require a lot of water, at least 6mm / day i.e. about 60 cum / ha / day. Design of the drip system to deliver above quantity of water could be as under :

Main Line - 70mm

Sub-Main Line - 40mm Lateral Line -

32mm (In between two rows)

A drainage line may be laid below the beds for disposal of excess water.

Pruning

Stems are cut back leaving 4-5 nodes on the basic stock frame, removing all weak shoots and redirecting the wayward ones. This may be practised in a phased manner so that flowering takes place from September to March. Generally, flowering takes place 45 days after pruning.

Pests and Diseases

The principal pests of roses are :

- Red spider mite
- Leaf rollers
- White fly
- Thrips
- Aphids
- Nematode

The principal diseases are :

- Powdery mildew
- Downy mildew
- Botrytis
- Pruning die back
- Black leaf spot

Control

The preventive spray programme with a volume of 1500 litres/spray at an average interval of once in a week is suggested.

The chemicals could be as under.

- Dithane M-45 0.6 gm/litre
- Metasystox 1.25 ml/litre
- Karathane 1.00 ml/litre

4. Harvest and Post - Harvest Management

Harvest :

The post-harvest management of roses starts with their harvest. Roses should attain the right stage for harvesting. If cut too early,

ROSE CULTIVATION (SHED NET HOUSE)

flowers miss reserve food and therefore, may not develop into full flowers. If cut too late, longevity diminishes. As such, roses should be cut just as the buds are opening, after the sepals have almost fully curled up and the colour is fully visible. In small flowered varieties and Floribundas, the flowers are cut just when they begin to open the cluster. The cutting may be done in the evening or early morning with long stem. The lower end of cut stems are immediately placed in clean plastic buckets containing a clean solution of 500 ppm citric acid or in chrysal - RVB. Thereafter, the buckets containing cut roses are brought to the grading and packing Shed/Hall.

Hydration

Ideally, roses immediately after harvest should be graded, packed, precooled and despatched by refrigerated vehicle. In case of delay in grading and packaging flowers are shifted to the cold store. Before shifting to the cold store, it is advisable to re-cut the stems, about 2 cm. above the previous level without removing lower leaves/thorns and again place them in clean containers in clean warm (40-48°C) water, adjusted with citric acid to pH 3.0-3.5. This treatment will prevent vascular blockage and hence neck drop.

Preservatives

The flowers are removed from the citric acid after 30-60 minutes (or when the leaves and petals are fully turgid) and put in the preservative solution. Thereafter, the flowers are shifted to the cold storage at 0 to 20°C. Roses may be kept for 4-5 days in a preservative solution in cold store, after that longevity may suffer. The composition of floral preservative is as under :

- Citric acid - 100-700 mg/litre.
- HQC/captan - 16 mg/litre.
- Sucrose - 20 mg/litre.
- STS - 0.2 - 4 mM.
- Cytokinin - 1.0 to 100.00m.

Grading

Flowers should be graded to different classes according to their qualities. Grading is done on a mechanical grader or by hand grading tables or work stations.

Packing

Packing comprises three steps : bunching, wrapping and packing.

The heads of roses are evened up and their stem tied with a rubber band into bunches in 10s, 20s, 25s, or 50s depending on the ultimate market. They are cut so that all the stems are of the same length. The bunches are placed in preservative solution and may be shifted to the cold store.

They are brought back to the packing hall and the buds are wrapped and the bunches are sleeved in transport polyethylene. The wrap is a 15-20 cm. wide plastic strip which acts as a cushion for the buds.

Many different cardboard boxes are used for packing. For long term transport it is best to use telescopic style boxes made of corrugated fibreboard. The size could be 100 cm x 45 cm x 22 cm. There may be 400 to 1000 stems per box and weight may vary from 14 to 18 kg/box.

Depending on the market, the box is either filled with one variety, one grade, or mixed colour one grade.

PROJECT AT GLANCE

Name of the Beneficiary : XXXXX
Constitution : Proprietorship
Address : XXXXXX
Proposed Project : **Cultivation of Rose under Shed Net House**
Project Site : XXXXXXXX
Area of Land : 1 Acre
Total Cost of Project : 49.19 Lacs
Financial Assistance Requir Term Loa : 36.00 Lacs

COST OF PROJECT

(in Lacs)

PARTICULARS	Area	Cost/S Mtr	Amount
Land			Owned
Shed Net Cost	4,000	710.0	28.40
Plantation Cost	4,000	-	17.04
Tractor			3.25
Farming Equipments			0.50
TOTAL			49.19

MEANS OF FINANCE

PARTICULARS	AMOUNT
Own Capital	13.19
Term Loan from Bank	36.00
TOTAL	49.19

CALCULATION OF PLANTATION COST (ROSE)

Area of Land	6000 Sq. Mtr.
Land used for Shed Net House	4000 Sq. Mtr.
Density per Sq. mtr	10
No. of Rose Plant	40000
Cost per Plant	24.00
Total Cost of Plant	9.60
Mortality 5%	0.48
Total Cost of Plant	10.08

Other Input Cost

Chemical & Fertilizers Etc	4.56	
Labour	<u>2.40</u>	
		6.96
Total Plantation Cost		17.04

CALCULATION OF SALE OF PLANT

Year	No. of Plant	Flower per Sq Mtr	Total Produciton	Rate/per Flower	Amount
1	40000	100.00	400,000	6.00	24.00
2	40000	100.00	400,000	6.60	26.40
3	40000	100.00	400,000	7.26	29.04
4	40000	100.00	400,000	7.99	31.94
5	40000	100.00	400,000	8.78	35.14
6	40000	100.00	400,000	9.66	38.65
7	40000	100.00	400,000	10.63	42.52
8	40000	100.00	400,000	11.69	46.77

PROJECTED BALANCE SHEET

PARTICULARS	1	2	3	4	5	6	7
	<i>Const. Period</i>						
LIABILITIES							
Share Capital	13.19	13.19	13.19	13.19	13.19	13.19	13.19
Net Profit	-	(0.23)	1.72	5.65	10.73	17.08	24.84
General Reserve	-	24.50	24.50	24.50	24.50	24.50	24.50
Term Loan	36.00	34.80	32.40	30.00	27.60	25.20	-
Expenses Payable	-	0.48	0.60	0.72	0.86	1.04	1.24
TOTAL	49.19	72.74	72.41	74.06	76.89	81.01	63.77
ASSETS							
FIXED ASSETS	32.15	32.15	32.15	32.15	32.15	32.15	32.15
Less Depreciation	-	4.82	8.92	12.41	15.37	17.88	20.02
	32.15	27.33	23.23	19.74	16.78	14.27	12.13
Plant Cost	17.04	17.04	17.04	17.04	17.04	17.04	17.04
Subsidy in Bank		24.50	24.50	24.50	24.50	24.50	-
CURRENT ASSETS	-	-	-	-	-	-	-
Receivables & Advances	-	2.00	2.30	2.65	3.04	3.50	4.02
Cash & Bank Balance	-	1.88	5.34	10.13	15.52	21.71	30.59
TOTAL	49.19	72.74	72.41	74.06	76.89	81.01	63.77

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PROJECTED PROFITABILITY STATEMENT

PARTICULARS	1	2	3	4	5	6	7
INCOME							
Sales of Flpwrs	24.00	26.40	29.04	31.94	35.14	38.65	42.52
TOTAL	24.00	26.40	29.04	31.94	35.14	38.65	42.52
EXPENDITURE							
Pesticides Fertilizer etc	2.40	2.64	2.90	3.19	3.51	3.87	4.25
Power & Fuel Expenss	1.31	1.31	1.37	1.44	1.51	1.59	1.67
Water & Irrigation Exp.	0.24	0.26	0.29	0.32	0.35	0.39	0.43
Salary & Wages	7.13	7.13	7.48	7.86	8.25	8.66	9.10
Insurance of Crop	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Repair & Maintainance	0.60	0.72	0.86	1.04	1.24	1.49	1.79
Admin. & Selling Exp.	1.20	1.32	1.45	1.60	1.76	1.93	2.13
Intt. On Term Loan	4.68	4.52	4.21	3.90	3.59	3.28	-
Depreciation	4.82	4.10	3.48	2.96	2.52	2.14	1.93
Cost of Project (B)	22.43	22.05	22.11	22.36	22.79	23.40	21.34
GROSS PROFIT [A-B]	1.57	4.35	6.93	9.58	12.35	15.26	21.18
NET PROFIT BEFORE TAX	1.57	4.35	6.93	9.58	12.35	15.26	21.18
LESS : TAXES	-	-	-				
NET PROFIT AFTER TAX	1.57	4.35	6.93	9.58	12.35	15.26	21.18
Add Depreciation	4.82	4.10	3.48	2.96	2.52	2.14	1.93
CASH ACCURALS (A)	6.40	8.45	10.41	12.55	14.87	17.40	23.11
Add : Subsidy						24.50	
Add Interest	4.68	4.52	4.21	3.90	3.59	3.28	-
Total Fund	11.08	12.97	14.62	16.45	18.46	45.17	23.11
REPAYMENT							
Instalment of Loan	1.20	2.40	2.40	2.40	2.40	25.20	-
Interest On Loan	4.68	4.52	4.21	3.90	3.59	3.28	-
Total Payment Obligation (B)	5.88	6.92	6.61	6.30	5.99	28.48	-
D.S.C.R.	1.88	1.87	2.21	2.61	3.08	1.59	
				2.21			

CASH FUND FLOW STATEMENT

<u>PARTICULARS</u>	<u>Const.</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>SOURCES OF FUND</u>								
Share Capital	13.19	-	-	-	-	-	-	-
Fund From operators	-	1.57	4.35	6.93	9.58	12.35	15.26	21.18
Incr. in Term Loan from Bank	36.00	-	-	-	-	-	-	-
Depreciation	-	4.82	4.10	3.48	2.96	2.52	2.14	1.93
Incr. in Expenses Payable	-	0.48	0.12	0.12	0.14	0.17	0.21	0.25
Increase in Subsidy		24.50	-					
TOTAL	49.19	31.38	8.57	10.53	12.69	15.04	17.60	23.36
<u>APPLICATION OF FUND</u>								
Incr. in Fixed Assets/Plant	32.15	-	-	-	-	-	-	-
Incr. in Plant Cost	17.04							
Incr. in Subsidy	-	24.50	-	-	-	-	(24.50)	-
Incr. in Advances & Rece.	-	2.00	0.30	0.35	0.40	0.46	0.52	0.60
Rep. Loan of Bank Loan	-	1.20	2.40	2.40	2.40	2.40	25.20	-
Drawings	-	1.80	2.40	3.00	4.50	6.00	7.50	9.00
TOTAL	49.19	29.50	5.10	5.75	7.30	8.86	8.72	9.60
Opening Balance	-	-	1.88	5.34	10.13	15.52	21.71	30.59
Surplus	-	1.88	3.47	4.79	5.39	6.19	8.88	13.75
Closing Balance	-	1.88	5.34	10.13	15.52	21.71	30.59	44.34

DETAIL OF SALARY WAGES

Particular	Nos.	Salary Per Month	Total	Annual Salary
Manager	1	12000.00	12000.00	144,000.00
Marketing/Stores	1	6000.00	6000.00	72,000.00
Helpers/Labours	8	4500.00	36000.00	432,000.00
				648,000.00
		Add Fringe benefit @ 10%		64,800.00
Total Salary				712,800.00
In Lacs				7.13

DETAIL OF POWER CONSUMPTION

Total Power Load Required		10 HP
No of Days		365
No of Hours		5
Total Power Expense		13615 KWH
Power Supply from DG Set	100%	13615

COST OF POWER

Cost of power from DG Set (@8/- per Unit)		1.09
Add : Lubricants		0.22
		-
Total Annual Power Expense		1.31

TERM LOAN REPAYMENT SCHEDULE

Year	Particulars	Op. Balance	Interest	Total	Instalment	Total Repayment	Closing Balance
	Amount Borrowed	36.00	2.34	38.34	-	2.34	36.00
1	Balance Carried down	36.00	4.68	40.68	1.20	5.88	34.80
2	Balance Carried down	34.80	4.52	39.32	2.40	6.92	32.40
3	Balance Carried down	32.40	4.21	36.61	2.40	6.61	30.00
4	Balance Carried down	30.00	3.90	33.90	2.40	6.30	27.60
5	Balance Carried down	27.60	3.59	31.19	2.40	5.99	25.20
6	Balance Carried down	25.20	3.28	28.48	25.20	28.48	-

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