AGRICULTURE CROP NURSERY

Introduction

Nursery may be referred to as a place where plants are grown for transplanting, for use as stock for budding and grafting, or for sale. Plants are commonly grown from seed or from cuttings i.e. vegetative propagation and are often grown in pots or other temporary containers.

- Nurseries are used for artificial plantation. It may be established in areas with less plant regeneration.
- Nurseries are raised to get plants of the right size at the right time.
- Nurseries are also raised to have healthy and long lasting plants.
- Plants are maintained in the nurseries in the initial growing period so as to be able to grow plants free from various fungi and bacterial attacks that generally occurs in the initial period.

Agricultural crop nurseries are temporary in nature, and the land area used for these is later used for cultivation. This is done to reduce the workload and time required to handle large areas under cultivation and make fertilizers available better. These nurseries are mainly established for seasonal crops.

Market Potential

One of the main objectives of establishing a nursery is to protect plants in their initial stage thus promoting the growth rate. Farmers buy saplings from nurseries to plant in their main fields because the sapling grown in the nurseries are less likely to decay from the attack of pathogenic infections as they are grown with due care in the nurseries and treated with fertilizers and pesticides. The main purpose of establishing such nurseries is to contribute towards the agricultural sector and the economy as a whole. These nurseries are encouraged by the government and non-government agencies and hence the demand of such nurseries increases.

Assumptions

I. Model DPR has been prepared based on following assumptions:

- Land: Own land has been taken for establishing the agricultural crop nursery.
- Selection of site: Site of establishing nursery has been selected taking into consideration that area is connected with road so as to facilitate transportation.
- Water supply: A good irrigation facility being a pre requisite for establishing a commercial nursery, the nursery has a reliable and adequate water supply connection throughout the year.
- Availability of soil: Clayey and loamy soil with higher organic matter is considered ideal with a pH from 5.5 to 7.
- Mechanism: Seedlings are first grown in the mother beds and then transferred to the poly sheets. However, in case of paddy cultivation, the depth of planting affects both the crop establishment and potential of the crop to be lodged. Seeds need to be within 10 mm-15mm of the surface.
- Power: Even though the power requirement is less, regular power supply plays a very important role since it is necessary for operating irrigation system and other ancillary works in the nursery; hence a DG Set of 15 KVA is taken.
- Manpower requirement: Agricultural crop nursery production is highly labour intensive where both skilled and semi-skilled labour is critical inputs. Therefore, timely availability of labour is ensured.
- Land Development: The land development cost includes:

    a. Land cleaning
    b. Land leveling
    c. Solidification
    d. Water path making
    e. Road preparation
    f. Bamboo fencing

- Civil Works and Building: It includes:
    a. Germination house
    b. Nursery office

- Preliminary and Preoperative period is 6 months.
- Agricultural crop nursery equipment: Seedbeds, ploughs, harrows, cultivators, seeding and planting machines, irrigation systems etc.
- Other agricultural crop: We have taken into consideration 5 variety of plants for agricultural crop nursery; however, there are other plants also, like jute, tea, potatoes, pulses, mango, sugarcane, oilseed, cotton etc.
- Principal Repayment and Interest on Term Loan: The principal amount has been repaid half-yearly and the interest on term loan has been charged quarterly.
- Working Capital is in the form of KCC and interest on the same has been charged half-yearly.

I. Nursery Plants chosen for the DPR and its particulars:

Name of the Plant	Yearly Production (in units)
Paddy Plant	736667
Maize Plant	180000
Green gram plant	385000
Cauliflower Plant	360000
Cabbage plant	324000
Brinjal Plant	480000
Chilli Plant	630000

Paddy plant

Planting high-quality paddy seeds in carefully prepared seedbeds will help produce a uniform, fast-growing crop that will have higher yields and will be able to better compete with weeds and pests. The best time to plant will depend on the location, type and water availability. Although rice can be transplanted or sown directly, the yield potential is the same. The crops transplanted from the production area mature faster, but the harvest time will be extended by 5-10% after the nursery is established in the production area.

Maize plant

For farms without livestock, maize is an important economic crop. Corn grows best in deep, well-drained, fertile soils, and total seasonal rainfall exceeds 500 mm. Corn has some tolerance for soil acidity, but if the soil is very acidic, lime will improve the soil and increase corn yield. Maize is even susceptible to drought and waterlogging.

Green gram plant

Green gram, also known as moong dal in India is a good source of protein and also possesses fibre and iron. Best climatic condition for growing the crop is warm and humid with a temperature varying between 25-35 degree Celsius and rainfall of 85-100 cm well distributed throughout the growing period.

Cauliflower plant

Cultivation of cauliflower is done mainly on sandy to heavy soils rich in organic matter. Crops initially prefer light soil while late crops thrive better on heavier soils due to retention of moisture. Soil pH ranges of 5.5-6.5 are considered as optimum for growing cauliflower. It can be grown in soil with good fertility. In light soil, the plants are most sensitive to drought and therefore, adequate moisture supply is considered important. Regular maintenance of optimum moisture supply is essential during both growth and curd development stage.

Cabbage plant

Cabbage cultivation is carried out mainly on sandy soils rich in organic matter. The pH ranges of 6.0-6.5 are considered the most suitable for growing cabbage. In India, cabbage grows in a large area with a cool and humid climate. The temperature ranges of 15-20° Celsius are considered the best temperature range for crop growth. The intensity of flowering depends on the age of the plants and how long they are exposed to low temperatures. Cabbage seeds are sown in a seedbed to cultivate seedlings for transplanting into the field. A raised bed of 3 x 0.6 m and 10-15 cm high is prepared. A distance of about 70 cm between the two beds for cross-cultural operations such as watering and weeding is kept. The surface of the bed must be smooth and flat.

Brinjal plant

Although brinjal can be grown in different types of soil, it has achieved considerable success in deep and well-drained fertile fine loam. The pH value of the soil should not be higher than 5.5-6.0 to facilitate its optimal growth and development. It is a warm season crop and is very susceptible to frost. Seedlings are grown in raised beds with a space of 75 x 60 cm.

Chilli plant

Chili plant can be grown in all types of soft soils, but sandy loam, clay loam, and loam are considered to be the most appropriate. The soil should be well drained and well aerated. Acidic soil is not suitable for planting peppers. Chili peppers can be grown in tropical and subtropical climates. It can be successfully grown as rain fed crops in areas with an annual rainfall of 850-1200 mm.

Cost of Project

Particulars	Amount (Rs. In Lakhs)
Land (own)	0.00
Land Development Cost	2.20
Civil works and Buildings	3.50
Plant and Machinery (Annexure)	1.70
Miscellaneous Fixed Assets	1.03
D G Set (20 KVA)	1.30
Escalation & Contingencies (2%)	0.19
Preliminary & Preoperative Expenses (Annexure)	2.96
Sub-total (A)	**12.88**
Working Capital Margin @25% of Total WC Requirement	0.25
Total Project Cost	**13.13**
Total Working Capital Required (Lump sum) **(B)**	1.00
MEANS OF FINANCE	
Total Funds Required(A+B)	**13.88**
Loan Component-	-
TERM LOAN (60% of A)	7.73
WORKING CAPITAL (75% of B)	0.75
Total	**8.48**
Equity	5.40
Total	**13.88**

Detailed Cost Element

Sl. No.	Particulars	Amount (Rs. in Lakhs)
1	Irrigation Pump	0.21
2	Power Tiller	1.00
3	Drip Irrigation Pipe	0.01
4	Budding and Grafting Knife	0.01
5	Garden Bill Hook	0.03
6	Garden Fork	0.01
7	Garden Pick Axe	0.04
8	Garden Digging Spade	0.01
9	Axe	0.01
10	Wheel Barrow	0.32
11	Polythene Sheets	0.05
	Total	**1.70**

Contingencies and Escalations

It has been assumed at approximately 2% at cost.

Preliminary Expenses

Particulars	Amount (Rs. in Lakhs)
Incorporation Expenses	0.05
Project Report Preparation and Consultation	0.50
Legal Charges - Drafting for agreements, contracts, stamp paper, notary and affidavit cost	0.05
Security Guard and others	2.25
Interest Cost for period before commercial operations	0.11
Total	**2.96**

Salary

Designation	Manpower	Amount (Rs. In lakhs)
Scientific Officer/ Agriculture Technician	1	2.40
Office Staff Cum Accountant	1	1.80
Skilled Labour	3	3.60
Workers (Contract Basis)	3	1.92
Security Staff	1	1.20

Profitability Statement

Amount (Rs. In Lakhs)					
Particulars	**Year- 1**	**Year- 2**	**Year- 3**	**Year- 4**	**Year- 5**
A. INCOME					
Production During the year	30,95,667	32,04,015	33,16,156	34,32,221	35,52,349
Annual turnover	47.28	48.93	50.65	52.42	54.25
Total income during the year	**47.28**	**48.93**	**50.65**	**52.42**	**54.25**
B. OPERATING EXPENSES					
Raw Material	25.92	26.70	27.50	28.33	29.18
Salary	10.92	11.30	11.70	12.11	12.53
Repair & Maintenance	1.42	1.47	1.52	1.57	1.63
Power & utilities	1.20	1.25	1.30	1.35	1.41
Depreciation and Amortization	1.24	1.24	1.24	1.06	1.06
Total Operating Expenses	**40.70**	**41.96**	**43.26**	**44.42**	**45.81**
Operating Profit (A-B)	**6.58**	**6.97**	**7.39**	**8.00**	**8.45**
C. FINANCIAL EXPENSES					
Interest on Term Loan	0.63	0.54	0.45	0.35	0.26
Interest on Working Capital Loan	0.06	0.06	0.06	0.06	0.06
D. Other Expenses					
Administrative and General Expenses	1.42	1.47	1.52	1.57	1.63
Total Expenses	**2.12**	**2.07**	**2.03**	**1.99**	**1.95**
Profit Before Tax	**4.46**	**4.90**	**5.36**	**6.01**	**6.50**
Provision for Tax	1.12	1.23	1.34	1.50	1.62
Profit after Tax (PAT)	**3.35**	**3.68**	**4.02**	**4.51**	**4.87**
Dividend Declared	-	-	-	-	-
Retained Profit	**3.35**	**3.68**	**4.02**	**4.51**	**4.87**

Breakeven Point

SL	Particulars	Year - 1	Year - 2	Year - 3	Year - 4	Year - 5
A.	**Net Sales**	**47.28**	**48.93**	**50.65**	**52.42**	**54.25**
B.	**Variable Cost**					
	Raw Material	25.92	26.70	27.50	28.33	29.18
	Power and Utility	1.20	1.25	1.30	1.35	1.41
	Total Variable Cost	**27.13**	**27.95**	**28.80**	**29.68**	**30.58**
C.	**Contribution (A-B)**	**20.15**	**20.98**	**21.84**	**22.74**	**23.67**
D.	**Fixed Cost**					
	Salary	10.92	11.30	11.70	12.11	12.53
	Interest on term loan	0.63	0.54	0.45	0.35	0.26
	Interest on working capital	0.06	0.06	0.06	0.06	0.06
	Repair & Maintenance	1.42	1.47	1.52	1.57	1.63
	Depreciation and Amortisation	1.24	1.24	1.24	1.06	1.06
	Total Fixed Cost	**14.27**	**14.61**	**14.97**	**15.16**	**15.54**
E.	**Breakeven Point**	**71%**	**70%**	**69%**	**67%**	**66%**
F.	**Cash BEP**	**65%**	**64%**	**63%**	**62%**	**61%**

Debt-Service Coverage Ratio

SL	Particulars	Year - 1	Year - 2	Year - 3	Year - 4	Year - 5
i	Profit	3.35	3.68	4.02	4.51	4.87
ii	Depreciation	1.24	1.24	1.24	1.06	1.06
iii	Interest on term loan	0.63	0.54	0.45	0.35	0.26
A	**Total (i + ii + iii)**	**5.22**	**5.46**	**5.70**	**5.92**	**6.20**
i	Interest on term loan	0.63	0.54	0.45	0.35	0.26
ii	Principal repayment	1.10	1.10	1.10	1.10	1.10
B	**Total (i + ii)**	**1.74**	**1.64**	**1.55**	**1.46**	**1.36**
	DSCR (A / B)	**3.00**	**3.32**	**3.68**	**4.07**	**4.55**

Interest on Term Loan and Principal Repayment

Refer Annexure I for Loan Repayment Schedule.
We have assumed the repayment tenure of term loan for a period of 7 years, rate of interest being @ 8.5% with the moratorium period being 3 months.

Address of Vendors

Name of Vendor	Address and Contact Number
Pure Crop Sciences private limited	Hyderabad, India Ph. No.- 08048021747
Parshv Genetics India	Indore, India Ph. No.-08048724741

ANNEXURE - 1

Year	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Annually
I													
Principal													
Opening	7.73	7.73	7.73	7.73	7.73	7.73	7.18	7.18	7.18	7.18	7.18	7.18	
Repaid						0.55						0.55	**1.10**
Closing	7.73	7.73	7.73	7.73	7.73	7.18	7.18	7.18	7.18	7.18	7.18	6.62	
Interest			0.16			0.16			0.15			0.15	**0.63**
II													
Principal													
Opening	6.62	6.62	6.62	6.62	6.62	6.62	6.07	6.07	6.07	6.07	6.07	6.07	
Repaid						0.55						0.55	**1.10**
Closing	6.62	6.62	6.62	6.62	6.62	6.07	6.07	6.07	6.07	6.07	6.07	5.52	
Interest			0.14			0.14			0.13			0.13	**0.54**
III													
Principal													
Opening	5.52	5.52	5.52	5.52	5.52	5.52	4.97	4.97	4.97	4.97	4.97	4.97	
Repaid						0.55						0.55	**1.10**
Closing	5.52	5.52	5.52	5.52	5.52	4.97	4.97	4.97	4.97	4.97	4.97	4.42	
Interest			0.12			0.12			0.11			0.11	**0.45**
IV													
Principal													
Opening	4.42	4.42	4.42	4.42	4.42	4.42	3.86	3.86	3.86	3.86	3.86	3.86	
Repaid						0.55						0.55	**1.10**
Closing	4.42	4.42	4.42	4.42	4.42	3.86	3.86	3.86	3.86	3.86	3.86	3.31	
Interest			0.09			0.09			0.08			0.08	**0.35**
V													
Principal													
Opening	3.31	3.31	3.31	3.31	3.31	3.31	2.76	2.76	2.76	2.76	2.76	2.76	
Repaid						0.55						0.55	**1.10**
Closing	3.31	3.31	3.31	3.31	3.31	2.76	2.76	2.76	2.76	2.76	2.76	2.21	
Interest			0.07			0.07			0.06			0.06	**0.26**
VI													
Principal													
Opening	2.21	2.21	2.21	2.21	2.21	2.21	1.66	1.66	1.66	1.66	1.66	1.66	
Repaid						0.55						0.55	**1.10**
Closing	2.21	2.21	2.21	2.21	2.21	1.66	1.66	1.66	1.66	1.66	1.66	1.10	
Interest			0.05			0.05			0.04			0.04	**0.16**
VII													
Principal													
Opening	1.10	1.10	1.10	1.10	1.10	1.10	0.55	0.55	0.55	0.55	0.55	0.55	
Repaid						0.55						0.55	**1.10**
Closing	1.10	1.10	1.10	1.10	1.10	0.55	0.55	0.55	0.55	0.55	0.55	0.00	
Interest			0.02			0.02			0.01			0.01	**0.07**