MSME PROJECT PROFILES

Vol-1
Agriculture and Allied Sector

North Eastern Development Finance Corporation Ltd.

NEDFi
an ISO 9001:2008 company

MSME PROJECT PROFILES

100 Micro, Small and Medium Enterprises (MSME) Project Profiles have been prepared as per the mandate of the MoU agreement signed with Ministry of Development of North Eastern Region (MDoNER) for the financial year 2012-13 under TEDF fund administered by NEDFi. The main objective of this initiative is to assist the first generation entrepreneurs as well as other entrepreneurs of the north-eastern region regarding business venture opportunities, market details, technical & financial aspects and addresses of machinery suppliers etc. with updated information.

The Project profiles are available in 4 (Four) volumes containing 25 sector-wise profiles each.

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Manufacturing and Miscellaneous Sector

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Disclaimer: The Project Cost estimates indicated in the Project Profiles were calculated based on the information available and the market price prevailing at the time of preparation of the Project Profiles. However, actual Project Cost may vary depending on the project location, applicable charges prevailing in the area, cost of infrastructure/input and capital expenditure etc.

पबन सिंह घाटोवार
Paban Singh Ghatowar

सत्यमेव जयते

राज्य मंत्री (स्वतंत्र प्रभार)
उत्तर पूर्वी क्षेत्र विकास मंत्रालय
एवं
संसदीय कार्य राज्यमंत्री
भारत सरकार
Minister of State (Independent Charge)
Ministry of Development of North Eastern Region
&
Minister of State for Parliamentary Affairs
Government of India

MESSAGE

I am happy that the North Eastern Development Finance Corporation Ltd. (NEDFi) has brought out a compendium of 100 Projects Profiles in the Micro, Small and Medium Enterprises (MSME) Sectors based on the Pre-investment Feasibility Studies. These Project Profiles would help first generation as well as the existing Entrepreneurs of the Region in selection of suitable business ideas based on market demand and help them prepare project reports.

MSME sector plays a crucial role in Indian economy in terms of employment generation, development of entrepreneurial base and production of goods and services. The sector is particularly relevant in North Eastern context because it involves lower capital cost than the large industries and also help in industrialization of rural and backward areas. As we know North East Region faces variety of challenges viz., poor infrastructure, inadequate supply of power, lack of skilled manpower, difficult terrain, inadequate industrial land etc; MSME sector has got promising potential to provide suitable solutions.

The Government of India is committed for the development of North Eastern Region and thus is making necessary interventions from time to time, 10% gross budgetary allocation is being inverted in North Eastern Region from the allocation of non-exempted Ministries.

I commend NEDFi for the initiative in helping budding Entrepreneurs which will eventually lead to accelerate the pace of industrial and economic development in the North Eastern Region.

(Paban Singh Ghatowar)

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सत्यमेव जयते

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Ministry of Development of North Eastern Region
Vigyan Bhavan Annexe
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3rd October, 2013

MESSAGE

I am glald that the North Eastern Development Finance Corporation Ltd. (NEDFi) as a part of its ongoing effort to guide first generation entrepreneurs has brought out a compendium of 100 Project Profiles in the MSME Sector. The project profile will facilitate new entrepreneurs for identification of the projects and help them to prepare detailed project reports. The existing entrepreneurs looking for diversification may as well can use the compendium as a tool to analyze available options.

I urge upon potential young entrepreneurs to make full use of the compendium and take forward the entrepreneurial movement in the region.

(U.K. Sangma)

FOREWORD

The Micro, Small and Medium Enterprises (MSME) segment is a key source of economic growth and capital formation. The development of MSME sector leads to a greater utilisation of natural resources, production of goods and services, creation of employment opportunities and improvement in the general standard of living.

Being the Development Financial Institution of the North Eastern Region for the past 16 years, we have witnessed slow growth of industrial development, particularly in the Micro and Small Enterprises (MSE) sector despite abundant natural resources and supportive government policies and incentives.

It has always been the endeavour of NEDFi to create an enabling environment by providing hand holding support services to the entrepreneurs apart from extending financial assistance, in the MSME sector. Recently, the Corporation has taken a major initiative in setting up Business Facilitation Centres in the NE states to assist, guide and mentor potential entrepreneurs of North East.

To further assist the entrepreneurs of the region, NEDFi has developed 100 MSME Project Profiles. We hope that these Project Profiles would help first generation as well as the existing entrepreneurs of the region in selecting suitable business ideas based on market demand, availability of resources and of course their individual skills & expertise.

B. Paul Muktieh
Chairman cum Managing Director

CONTENTS

COMMERCIAL CULTIVATION & OIL DISTILLATION OF CITRONELLA

1.0 INTRODUCTION

Citronella oil is an essential oil containing citronellal, geraniol and hydroxy citronellol and other high value perfumery bases obtained on steam distillation of citronella grass. Citronella grass is a perennial 1-2m tall bush with green to yellowish green leaves. The oil is used for perfuming soaps, detergents, cosmetics, agarbattis and for making mosquito repellent creams. The oil is also used to isolate citronellol and geraniol. These are in turn converted into citronellal, hydroxy citronellal, synthetic menthol and esters of geraniol and citronellol. These compounds are used for making high grade blended perfumes.

This project profile is for cultivation of citronella and setting up of a distillation unit with total area under plant at 4 hectares.

2.0 MARKET POTENTIAL

The major customers for citronella oil are the manufacturers of cosmetics and perfumes, with major buyers such as Hindustan Unilever Limited. There has been substantial increase in the demand for essential oils due to the spurt in the growth of cosmetics and perfumes, which in turn is related with the growing purchasing power of the Indian middle class. Besides the domestic demand, there is good potential for exports. The quality of essential oils produced in Assam is reported to be better than those produced in Sri Lanka and Indonesia which are the major exporters. Citronella oil is also produced in other north-eastern states of Meghalaya, Arunachal Pradesh, Nagaland and Manipur. Considering the incentives offered by the Government for exports, export demand for citronella oil is bound to increase.

3.0 PACKAGE OF PRACTICES

(i) Soil & Climate: Citronella grows well in Assam where there is abundant sunshine and high humidity (70 % and above). Temperature range between 20°C to 38°C and well distributed rainfall of 2000-3000 mm are desirable. However, if irrigation is available citronella can be cultivated in regions of low rainfall also.

Citronella grows best in sandy loam soils. Heavy clay soils which tend to water log and light sandy soils are not suitable for this crop. It does not tolerate water stagnation. A good amount of organic matter is desirable. The ideal pH range is 5.0-7.0. Soil testing is important for best fertility management and higher productivity.

(ii) Land preparation: The land is prepared to fine tilt by discoing and tilling. Organic, P and K fertilizers are mixed into the soil at this stage. In plains, ridges are made at 45 cm apart. Apply at least 25-30 tons FYM or well decomposed cow dung mixing with the soil.

(iii) Preparation of slips: Citronella is propagated by splitting the clumps of vigorously growing plants of 6 months to one year old into slips. The clump is gently dug out and separated into a number of slips containing 2-3 tillers/slip. The fibrous roots and leaves are trimmed off at 25-30 cm height before planting. An one-year-old clump on an average, gives about 50 slips.

(iv) Planting: The slips are planted at 45 x 45 cm in plain land at 5-8 cm depth on one side of the ridges, half way up the slope in plains or 60 x 45 cm in slopey land. One slip is inserted in each pit, later filled with loose soil and firmly pressed keeping the slip vertical. The soil moisture is maintained till the crop establishes. Casualty should be replaced within the next month. 40,000 slips are required for one hectare area.

(v) Interculture: As the crop is planted during monsoon, it faces serious weed competition in the initial stages and the first 60 days are found to be a critical period. Generally two weedings, one at 20- 25 and another at 40-45 days after planting should be done. Interculture after each harvest is necessary. In order to get satisfactory results, an integrated method that consists of hand weeding, application of weedicides and mulch should be used.

(vi) Fertilizer application: For poor and medium fertility soil N, P205, K20 @ 200:80:75 kg/ha/year should be applied. In the first year, the organic, P and K fertilizers are mixed into the soil at final land preparation. Nitrogen should be applied at 4 equal splits (@ 50 kg N) in the first year with the first application at about one month after planting with weeding and the rest after each harvest. In subsequent years, the basal dose may be applied along with the first dose of N. N as urea is top dressed soon after the regenerated crop is established and thereafter once in every two months. In the subsequent years, N dose may be increased by 50 kg for the additional split application.

(vii) Irrigation: Citronella requires sufficient moisture for good growth and yield of herb. When there is no rain, irrigation is required once in 10-15 days.

(viii) Harvesting: It is advisable to harvest (a partial harvest) after 3 months to induce tillering, In the first year only 3 cuts besides the partial harvest can be taken, viz., 5 months after planting and 3 months after the previous harvest. From second year onwards, 5-6 harvests can be taken per year at 2 months intervals. Harvesting is done by sickle and cut at 15 cm above the ground. Cutting close to the ground results in mortality of the plant. Harvesting is done preferably before 12 O'clock.

(ix) Crop cycle: The crop can be maintained economically for about 3 years. Then it is to be pulled out and planted with rotational crop. After termination of the crop, green manuring can be done.

(x) Withering of the fresh herb: After cutting, the herb is allowed to wilt for 12-24 hours to remove the excess moisture. This wilting allows better packing in the vessel and saving of steam and fuel. Wilting more than 24 hours results loss of essential oil. Cutting the grass into shorter length also gives 10-15% higher recovery. The harvested grass contains dead leaves, sheaths that should be removed before packing into the vessel.

(xi) Distillation of oil: The grass is steam distilled for better recovery. The distillation equipment consists of a boiler, a distillation vessel, a condenser and two receivers/separators. The economic capacity of the unit is 1.0 ton/batch. Distillation is completed in 4-5 hours under normal pressure starting from the initial condensation of the oil. Prolong distillation deteriorates oil quality.

(xii) Yield: The herb yield is in the range of 10-15 t/ha/harvest. The average oil recovery is 0.7%.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount
Land and Site Development	-
Building & Civil Works	4.49
Machinery & Equipment	3.84
Misc. Fixed Assets	0.85
Setting up of Nursery	0.18
Preparation of Seedlings	0.29
Land Preparation	0.20
Planting	0.60
Preliminary & Pre-operative Expenses	0.56
Working Capital	1.56
TOTAL	12.57

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up on existing farmland.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Distillation Shed (Open shed, CGI sheet roof, kuttcha floor)	400	300	120000
Labour quarter cum Store room (Brick wall, CGI roof, concrete floor)	720	400	288000
		Sub total	408000
Add: Electrification, etc @ 10%			40800
		TOTAL	448800
		Say (Rs. in lacs)	4.49

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Distillation unit (Hydro-steam and lifting type, capacity 1.0 MT/ batch, made of 304 grade stainless steel with all accessories and tax)	1	320000	320000
Add transportation, installation, etc @ 20%			64000
		TOTAL	384000
		Say (Rs. in lacs)	3.84

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, storage, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

4.5 Setting up of a Nursery: Details of expenses for setting up of a nursery is given below.

Target area for cultivation (in ha)	4
Area required for raising of mother stock in sqm (1/20 of target area)	2000
No. of slips required (50,000/ha)	10000

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Purchase of slips	Nos	10000	1	10000
Engagement of labor for nursery land preparation	Mandays/ha	25	200	1000
Engagement of labor for planting of seedlings	Mandays/ha	75	200	3000
Cost of FYM	kg/ha	25000	0.20	1000
			Sub total	15000
Add: Maintenance of seedlings for 6 months, etc. @ 20%				3000
			TOTAL	18000
			Say (Rs. in lacs)	0.18

4.6 Preparation of Seedlings: Details of expenses for preparation of seedlings is given below.

No. of slips required per ha	50000
Target area for cultivation (in ha)	4
Total No. of seedlings required	200000

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Engagement of labour for preparation of seedlings	Mandays/ 1500 Nos	1	200	26667
Add: cost of manures, etc @10%				2667
			TOTAL	29333
			Say (Rs. in lacs)	0.29

4.7 Land Preparation for Nursery: Details of expenses for preparation of nursery land is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for land preparation	25	200	4	20000
			Say (Rs. in lacs)	0.20

4.8. Planting of Slips in Nursery: Details of expenses for planting of slips in nursery is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for planting of slips	75	200	4	60000
			Say (Rs. in lacs	0.60

4.9 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Interest during implementation	0.26
Miscellaneous expenses	0.10
TOTAL	0.56

4.10 Working Capital: Details of working capital are given below.

(Rs. In lacs)

Particulars	Period	Amount (Rs)		
	(Months)	Yr 1	Yr 2	Yr 3
Manures & Fertilizers	1	0.04	0.02	0.02
Weed control & Intercultural Operations	1	0.05	0.05	0.05
Harvesting	1	0.08	0.13	0.13
Post Harvest Operations	1	0.08	0.13	0.13
Distillation Cost	1	0.09	0.15	0.15
Power	1	0.01	0.01	0.01
Salary	1	0.09	0.09	0.09
Finished Goods	1	0.45	0.61	0.61
Receivables	1	0.67	1.12	1.12
Total		1.56	2.32	2.32
Working capital margin in Yr 1 (100%)		1.56		

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	5.03
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	7.54
TOTAL	100%	12.57

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3
A. INCOME			
Oil production per annum (in kg)	1008	1680	1680
Oil price (Rs. per kg)	800	800	800
Income from sale of oil	8.06	13.44	13.44

B. OPERATING EXPENSES			
Manures & Fertilizers	0.44	0.24	0.24
Weed control & Intercultural Operations	0.60	0.60	0.60
Harvesting	0.96	1.60	1.60
Post Harvest Operations	0.96	1.60	1.60
Distillation	1.10	1.83	1.83
Power	0.12	0.12	0.12
Salary	1.08	1.08	1.08
Repairs & Maintenance	0.09	0.10	0.11
Miscellaneous Expenses	0.08	0.13	0.13
Total Operating Expenses	5.43	7.30	7.31
Less: Working expenses capitalised	1.56	0.00	0.00
Operating profit	4.20	6.14	6.13
C. FINANCIAL EXPENSES			
Depreciation	0.47	0.47	0.47
Interest on Term Loan	0.60	0.41	0.15
Expenses on nursery written off	0.06	0.06	0.06
Expenses on preparation of seedlings written off	0.10	0.10	0.10
Expenses on land preparation written off	0.07	0.07	0.07
Expenses on planting of slips written off	0.20	0.20	0.20
Net Profit	2.70	4.83	5.08
Net cash accruals	3.60	5.72	5.98
Principal Repayment	0.84	3.35	3.35

6.1 Estimation of Production: Production of oil per annum is estimated as below.

Particulars	Unit	Quantity	
Yield of fresh herbs/hectare/harvest	kg	12000	
Cultivated land under citronella	ha	4	
Total yield of fresh herbs/harvest	kg	48000	
	Yr 1	Yr 2	Yr 3
Number of harvests/year (3 year crop cycle with gestation period of 5 months; subsequent harvests at 2 months interval)	3	5	5
Yield of fresh herbs/year (in kg)	144000	240000	240000
Percentage of oil recovery	0.7%	0.7%	0.7%
Total oil production per annum (in kg)	1008	1680	1680

6.2 Manures & Fertilizers: Expenses on manures & fertilizers per annum is estimated as below.

Particulars	kg/ ha	Source	Nutrient %	kg/ ha (source)	Cost/ kg of source (Rs)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Expenses on Nitrogen/ application	200	Urea	46%	435	5.50	2391	4	9565
Expenses on Phosphorus/ application	80	SSP	16%	500	4.00	2000	4	8000
Expenses on Potassium/ application	75	MOP	60%	125	12.00	1500	4	6000

	Yr 1	Yr 2	Yr 3
Application of Manures during land preparation in Year 1 (25000 kg/ ha @ Rs 0.20/ kg)	20000		
Application of Nitrogen/annum	1	1	1
Cost (Rs)	9565	9565	9565
Application of Phosphorus/annum	1	1	1
Cost (Rs)	8000	8000	8000
Application Potassium/annum	1	1	1
Cost (Rs)	6000	6000	6000
Expenses on manures & fertilizers per annum (Rs)	43565	23565	23565

6.3 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement on labour for weed control & intercultural operations	75	200	4	60000

6.4 Harvesting: Expenses on harvesting per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for harvest of herbs	40	200	4	32000
	Yr 1	Yr 2	Yr 3	
Number of harvests/year (3 year crop cycle with gestation period of 5 months; subsequent harvests at 2 months interval)	3	5	5	
Expenses on harvest per annum (Rs)	96000	160000	160000	

6.5 Post Harvest Operations: Expenses on post harvest operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for post harvest operations	25	200	4	32000
		Yr 1	Yr 2	Yr 3
Number of post harvest operations/year		3	5	5
Expenses on post harvest operations per annum (Rs)		96000	160000	160000

6.6 Distillation: Expenses on distillation per annum is estimated as below.

No. of hours per distillation	4.5		
Fuel (Dry herbage) consumption (kg/hour)	25		
Cost of dry herbage per kg (Rs)	5		
Expenses on fuel/distillation (Rs)	563		
	Yr 1	Yr 2	Yr 3
Yield of fresh herbs/year (in kg)	144000	240000	240000
Capacity of distillation plant/ batch (in kg)	1000	1000	1000
No. of distillations per annum (Average)	144	240	240
Expense on fuel (Rs)	81000	135000	135000
Add: engagement of labour (2 mandays/2 distillations & manday cost of Rs 200)	28800	48000	48000
Expenses on distillation per annum (Rs)	109800	183000	183000

6.7 Power: Expenses on power per annum is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/ day	kwh/ day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	6	0.10	0.56	8	4.48
				Power requirement/ day (Kwh)	6.72
Days/annum			360		
Rate per unit (Rs)			5.00		
Expenses on power per annum			12092		

6.8 Salary: Expenses on salary per annum is estimated as given below.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.9 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	4.49	1%	0.04
Machinery & Equipment	3.84	1%	0.04
Misc. Fixed Assets	0.85	1%	0.01
Total			0.09

6.10 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.11 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	4.49	3.34%	0.15
Machinery & Equipment	3.84	7.07%	0.27
Misc. Fixed Assets	0.85	6.23%	0.05
TOTAL			0.47

6.12 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of loan repayment has been considered for a period of 3 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

Month	Year	1	2	3
Month 1	Opening balance	7.54	6.70	3.35
	Repayment	0.00	0.28	0.28
	Interest (8%)	0.05	0.04	0.02
	Closing balance	7.54	6.42	3.07
Month 2	Opening balance	7.54	6.42	3.07
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.04	0.02
	Closing balance	7.54	6.15	2.79
Month 3	Opening balance	7.54	6.15	2.79
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.04	0.02
	Closing balance	7.54	5.87	2.51

Month 4	Opening balance	7.54	5.87	2.51
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.04	0.02
	Closing balance	7.54	5.59	2.23
Month 5	Opening balance	7.54	5.59	2.23
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.04	0.01
	Closing balance	7.54	5.31	1.96
Month 6	Opening balance	7.54	5.31	1.96
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.04	0.01
	Closing balance	7.54	5.03	1.68
Month 7	Opening balance	7.54	5.03	1.68
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.03	0.01
	Closing balance	7.54	4.75	1.40
Month 8	Opening balance	7.54	4.75	1.40
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.03	0.01
	Closing balance	7.54	4.47	1.12
Month 9	Opening balance	7.54	4.47	1.12
	Repayment	0.00	0.28	0.28
	Interest	0.05	0.03	0.01
	Closing balance	7.54	4.19	0.84
Month 10	Opening balance	7.54	4.19	0.84
	Repayment	0.28	0.28	0.28
	Interest	0.05	0.03	0.01
	Closing balance	7.26	3.91	0.56
Month 11	Opening balance	7.26	3.91	0.56
	Repayment	0.28	0.28	0.28
	Interest	0.05	0.03	0.00
	Closing balance	6.98	3.63	0.28
Month 12	Opening balance	6.98	3.63	0.28
	Repayment	0.28	0.28	0.28
	Interest	0.05	0.02	0.00
	Closing balance	6.70	3.35	0.00
	Principal Repayment	0.84	3.35	3.35
	Interest	0.60	0.41	0.15

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	TOTAL
Profit After Tax (Net Profit)	2.70	4.83	5.08	
Depreciation	0.47	0.47	0.47	
Interest	0.60	0.41	0.15	
Total	3.77	5.71	5.70	15.19
Interest	0.60	0.41	0.15	
Principle repayment	0.84	3.35	3.35	
Total	1.44	3.77	3.50	8.70
DSCR	2.63	1.52	1.63	

Average DSCR = 1.75

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	8.06	13.44	13.44
B. Variable cost			
Manures & Fertilizers	0.44	0.24	0.24
Weed control & Intercultural Operations	0.60	0.60	0.60
Harvesting	0.96	1.60	1.60
Post Harvest Operations	0.96	1.60	1.60
Distillation Cost	1.10	1.83	1.83
Power	0.12	0.12	0.12
Miscellaneous Expenses	0.08	0.13	0.13
Total variable cost	4.26	6.12	6.12
C. Contribution (A-B)	3.81	7.32	7.32
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.08	1.08
Repair & maintenance	0.09	0.10	0.11
Interest on Term Loan	0.60	0.41	0.15
Depreciation	0.47	0.47	0.47
Total fixed cost	2.24	2.07	1.81
E. BREAK EVEN POINT	58.91%	28.26%	24.74%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3
CASH OUTFLOW				
Capital Expenditure	9.36	0.00	0.00	0.00
Working Capital	0.00	1.56	0.76	0.00
Total (A)	9.36	1.56	0.76	0.00
CASH INFLOW				
Profit After Tax		2.70	4.83	5.08
Add: Depreciation		0.47	0.47	0.47
Add: Interest		0.60	0.41	0.15
Add: Salvage Value				
Total (B)	0.00	3.77	5.71	5.70
NET FLOW (B-A)	-9.36	2.21	4.96	5.70

IRR = 15%

TECHNICAL CONSULTANT

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COMMERCIAL CULTIVATION & OIL DISTILLATION OF LEMONGRASS

1.0 INTRODUCTION

Lemongrass is a perennial aromatic grass. The prefix 'lemon' owes to its typical lemon like odour, which is mainly due to the presence of citral, a cyclic monoterpene.

Lemongrass is the source of Lemongrass oil, a good source of natural Citral, which is used as a basic raw material for synthesis of B-ionone used for synthesis of a number of useful aromatic compounds and Vitamin-A. Lemongrass is thus used as a main substitute for 'Cod liver oil'. Citral itself is used in perfumery for various grades of soaps, detergents, cosmetics and flavour agent for soft drinks.

In India, Lemongrass is cultivated along the Western Ghats (Maharashtra, Kerala), Karnataka and Tamil Nadu states besides the foot-hills of the North Eastern states. It was introduced in India about a century back and is now commercially cultivated in these areas.

This project profile is for cultivation of Lemongrass and setting up of a distillation unit with total plant area of 4 hectares.

2.0 MARKET POTENTIAL

Lemongrass is one of most important aromatic plants which can become a crop of future India due to its application for derivatives like Vitamins, which require Citral which is major component of this oil. Traditionally Citral was produced from Lemongrass till the 1960's and India was exporting more than 1500 mt/annum to meet the demand of the world market. Large scale capacities in India were operational by pharma cos. like Glaxo, Roche and Intermediates for export by Industrial perfumes.

Due to advancement in petrochemical science, Citral was derived from C-5 fractions of Petrochemical through Isoprene building block. Volume of Lemongrass and other Citral rich essential oils went down gradually as production cost increased and cheap substitutes were available in the form of synthetically derived material based on petroleum feed stock.

However, with the rise in consumption of petroleum and rising prices of petroleum and petroleum based products, there is scope for production of natural Citral, particularly so, due to environmental concerns and sustainability and people's preference for natural products.

3.0 PACKAGE OF PRACTICES

(i) Soil & Climate: Lemongrass flourishes in a wide variety of soils ranging from rich barns to poor laterite; also suitable to 'jhum fallow', hill slopes and flood free degraded land, best suited to well drain sandy loam. Water logged conditions should be avoided as they are unsuitable for its cultivation. It requires a warm humid climate with plenty of sunshine and rainfall ranging from 1800 to 3000 mm. High temperature and sunshine are conducive to the development of oil in the plant.

(ii) Preparation of root slips: It is propagated vegetative by slips obtained from well-grown clumps. Tops of culms are cut off within 20-25 cm above ground. The Culm (root portion) is divided into slips containing 2-3 tillers. The

lower sheath is removed to expose young roots and the old roots are clipped off keeping the slip 25-30 cm long.

(iii) Spacing: 45 x 45 cm in plains or 60 x 45 cm in sloping land with a requirement of slips 45,000 - 50,000/ha.

(iv) Planting: Planting is done during May-June. However, with irrigation, planting can be done during any month of the year except December-January. One or two slips are planted into each hole, about 58 cm deep. It is better to plant on ridges in high rainfall areas. Plants get established well within 25-30 days after planting.

(v) Manure & fertilizer application: FYM 10 t/ha to be applied and mixed well at the time of final land preparation.

Fertilizer: N, P205 & K20-l50: 60: 60 kg/ha/year should be applied along with adequate quantity of organic matter. Before planting, the field is thoroughly prepared and the full dose of phosphorus and potash is incorporated. The nitrogen is applied in six equal split doses at two monthly intervals.

(vi) Irrigation: Irrigation is given immediately after planting when planting is done in dry days. Irrigations are given at 10 days interval to establish the crop. During dry season, after each harvest and subsequent application of recommended fertiliser dose, one irrigation is given for optimum herb production.

(vii) Weeding & Interculture: Lemongrass has the weed suppression capacity. One hand weeding at 25-30 days followed by one hoeing at 40-60 days after planting is enough to control weeds. After each harvest a nominal weeding and earthing up of plants is beneficial for the next flush.

(viii) Harvesting: The first harvest is taken at 5 months of the crop and subsequent harvests are at 2-3 months intervals. Harvesting is done by cutting the grass 10 cm above the ground level. During the first year, 3 cuttings and subsequently 5 cuttings per year can be taken, subject to weather conditions and irrigation management. Both immature and over mature crops give low yield and oil of poor quality. The optimum period of harvesting when grown on hilltop or upper slopes is 75 days while at foothill and plains it is 60 days.

(ix) Crop cycle: The crop can be maintained economically for about 4 years.

(x) Distillation of oil: The oil is extracted from the wilted herb by steam distillation in stainless steel units. The factors influencing the oil production during distillation are: (i) Storage of the plant material, (ii) Treatment (wilting and cutting into pieces) of the material and (iii) The method of distillation. The major source of loss is by oxidation and resinification of the essential oil. So if the material is to be stored before processing, it should be kept in a dry atmosphere with limited air circulation. The essential oils are present in the oil glands, oil sacks and glandular hairs of the plant. Therefore, before distillation, the day wilted plant material is cut into small pieces enable them to expose directly as many oil glands as is possible. Once the plant material has been reduced in size, it must be distilled immediately to avoid oil loss.

The wilted leaves are steam distilled which takes about 4-5 hours.

(xi) Yield: The yield of herb is in the range of 20 t/ha/harvest. The average oil recovery is 0.6%.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Land and Site Development	-
Building & Civil Works	4.49
Machinery & Equipment	3.84
Misc. Fixed Assets	0.85
Setting up of a Nursery	0.17
Preparation of Seedlings	0.29
Land Preparation	0.20
Planting	0.60
Preliminary & Pre-operative Expenses	0.72
Working Capital	1.70
TOTAL	12.87

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in existing farmland.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Distillation Shed (Open shed, CGI sheet roofings, kuttcha Floor)	400	300	120000
Labour quarter cum Store room (Brick wall, CGI sheet roof, concrete floor)	720	400	288000
		Sub total	408000
Add: Electrification, etc @ 10%			40800
		TOTAL	448800
		Say (Rs. in lacs)	4.49

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Distillation unit (Hydro-steam and lifting type, capacity 1.0 MT/batch, made of 304 grade stainless steel with all accessories and tax)	1	320000	320000
Add transportation, installation, etc @ 20%			64000
		TOTAL	384000
		Say (Rs. in lacs)	3.84

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, storage, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

4.5 Setting up of a Nursery: Details of expenses for setting up of a nursery is given below.

Target area for cultivation (in ha)				4
Area required for raising of mother stock in sqm (1/20 of target area)				2000
No. of slips required (50,000/ha)				10000
Particulars		Quantity	Rate (Rs)	Amount (Rs)
Purchase of slips	Nos.	10000	1	10000
Engagement of labour for nursery land preparation	Mandays/ha	25	200	1000
Engagement of labour foplanting of seedlings	Mandays/ha	75	200	3000
Cost of FYM	kg/ha	10000	0.20	400
			Sub total	14400
Add: Crop management for 6 months, etc. @ 20%				2880
			TOTAL	17280
			Say (Rs. in lacs)	0.17

4.6 Preparation of Seedlings: Details of expenses for preparation of seedlings is given below.

No of slips required per ha	50000
Target area for cultivation (in ha)	4
Total No. of seedlings required	200000

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Engagement of labour for preparation of seedlings	Mandays/1500 Nos	1	200	26667
Add: cost of manures, etc @10%				2667
			TOTAL	29333
			Say (Rs. in lacs)	0.29

4.7 Land Preparation for Nursery: Details of expenses for preparation of nursery land is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for land preparation	25	200	4	20000
			Say (Rs. in lacs)	0.20

4.8. Planting of Slips in Nursery: Details of expenses for planting of slips in nursery is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for planting of slips	75	200	4	60000
			Say (Rs. in lacs	0.60

4.9 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Interest during implementation	0.42
Miscellaneous Expenses	0.10
TOTAL	0.72

4.10 Working Capital: Details of working capital are given below.

(Rs. In lacs)

	Period (month)	Amount (Rs)		
		Yr 1	Yr 2	Yr 3
Manures & Fertilizers	1	0.02	0.01	0.01
Weed Control & Intercultural Operations	1	0.05	0.05	0.05
Harvesting	1	0.08	0.11	0.11
Post Harvest Operations	1	0.08	0.11	0.11
Distillation	1	0.15	0.20	0.20
Power	1	0.01	0.01	0.01
Salary	1	0.09	0.09	0.09
Finished Goods	1	0.50	0.60	0.60
Receivables	1	0.72	0.96	0.96
Total		1.70	2.14	2.14

Working capital margin in Yr 1 (100%)	1.70

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. In lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	40%	5.15
B. Subsidy from Central/ State Govt.	-	
DEBT		
Term Loan from Banks/ FIs	60%	7.72
TOTAL	100%	12.87

6.0 ROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4
A. INCOME				
Oil production per annum (in kg)	1440	1920	1920	1920
Oil price (Rs. per kg)	600	600	600	600
Income from sale of oil	8.64	11.52	11.52	11.52
B. OPERATING EXPENSES				
Manures & Fertilizers	0.26	0.18	0.18	0.18
Weed Control & Intercultural Operations	0.60	0.60	0.60	0.60
Harvesting	0.96	1.28	1.28	1.28
Post Harvest Operations	0.96	1.28	1.28	1.28
Distillation	1.83	2.44	2.44	2.44
Power	0.12	0.12	0.12	0.12
Salary	1.08	1.08	1.08	1.08
Repairs & Maintenance	0.09	0.10	0.11	0.12
Miscellaneous Expenses	0.09	0.12	0.12	0.12
Total Operating Expenses	5.99	7.20	7.21	7.22
Less: operating expenses capitalised	1.70	0.00	0.00	0.00
Operating profit	4.35	4.32	4.31	4.30
C. FINANCIAL EXPENSES				
Depreciation	0.47	0.47	0.47	0.47
Interest on Term Loan	0.61	0.48	0.29	0.10
Expenses on nursery written off	0.04	0.04	0.04	0.04
Expenses on preparation of seedlings written off	0.07	0.07	0.07	0.07
Expenses on land preparation written off	0.05	0.05	0.05	0.05
Expenses on planting of slips written off	0.15	0.15	0.15	0.15
Net Profit	2.95	3.05	3.23	3.41
Net Cash Accruals	3.74	3.84	4.02	4.20
Principal Repayment	0.59	2.38	2.38	2.38

6.1 Estimation of Production: Production of oil per annum is estimated as below.

Particulars	Unit	Quantity
Yield of fresh herbs/hectare/harvest	kg	20000
Cultivated land under lemongrass	ha	4
Total yield of fresh herbs/harvest	kg	80000

	Yr 1	Yr 2	Yr 3	Yr 4
Number of harvests/year (4 year crop cycle; gestation period of 5 months; subsequent harvests at 3 months interval)	3	4	4	4
Yield of fresh herbs/year (in kg)	240000	320000	320000	320000
Percentage of oil recovery	0.6%	0.6%	0.6%	0.6%
Total oil production per annum (in kg)	1440	1920	1920	1920

6.2 Manures & Fertilizers: Expenses on manures & fertilizers per annum is estimated as below.

Particulars	kg/ ha	Source	Nutrient %	kg/ ha (Source)	Cost/ kg (Source)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Expenses on Nitrogen/ application	150	Urea	46%	326	5.50	1793	4	7174
Expenses on Phosphorus/ application	60	SSP	16%	375	4.00	1500	4	6000
Expenses on Potassium/ application	60	MOP	60%	100	12.00	1200	4	4800

	Yr 1	Yr 2	Yr 3	Yr 4
Application of manures during land preparation in Year 1 (10000 kg/ ha @ Rs 0.20/ kg	8000			
Application of Nitrogen/ annum	1	1	1	1
Cost (Rs)	7174	7174	7174	7174
Application of Phosphorus/ annum	1	1	1	1
Cost (Rs)	6000	6000	6000	6000
Application of Potassium/ annum	1	1	1	1
Cost (Rs)	4800	4800	4800	4800
Expenses on manures & fertilizers (Rs)	25974	17974	17974	17974

6.3 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement on labour for weed control & intercultural operations	75	200	4	60000

6.4 Harvesting: Expenses on harvesting per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for harvest of herbs	40	200	4	32000

	Yr 1	Yr 2	Yr 3	Yr 4
Number of harvests/year (4 year crop cycle; gestation period of 5 months; subsequent harvests at 3 months interval)	3	4	4	4
Expenses on harvest per annum (Rs)	96000	128000	128000	128000

6.5 Post Harvest Operations: Expenses on post harvest operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for post harvest operations	40	200	4	32000
	Yr 1	Yr 2	Yr 3	Yr 4
Number of post harvest operations/ year	3	4	4	4
Expenses on post harvest operations per annum (Rs)	96000	128000	128000	128000

6.6 Distillation: Expenses on distillation per annum is estimated as below.

No. of hours per distillation	4.5			
Fuel (dry herbage) consumption (kg/hour)	25			
Cost of dry herbage per kg (Rs)	5			
Expenses on fuel/distillation (Rs)	563			
	Yr 1	Yr 2	Yr 3	Yr 4
Yield of fresh herbs/year (in kg)	240000	320000	320000	320000
Capacity of distillation plant/batch (in kg)	1000	1000	1000	1000
No. of distillations per annum (Average)	240	320	320	320
Expenses on fuel (Rs)	135000	180000	180000	180000
Add: engagement of labour (2 mandays/2 distillations & manday cost of Rs 200)	48000	64000	64000	64000
Expenses on distillation per annum (Rs)	183000	244000	244000	244000

6.7 Power: Expenses on power per annum is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/ day	kwh/ day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	6	0.10	0.56	8	4.48
				Power requirement/ day (Kwh)	6.72

Days/annum	360
Rate per unit (Rs)	5.00
Expenses on power per annum	12092

6.8 Salary: Expenses on salary per annum is estimated as given below.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.9 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	4.49	1%	0.04
Machinery & Equipment	3.84	1%	0.04
Misc. Fixed Assets	0.85	1%	0.01
Total			0.09

6.10 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.11 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	4.49	3.34%	0.15
Machinery & Equipment	3.84		0.27
Misc. Fixed Assets	0.85	6.23%	0.05
TOTAL			0.47

6.12 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of loan repayment has been considered for a period of 4 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month		1 Year	2	3	4
Month 1	Opening balance	7.72	7.13	4.75	2.38
	Repayment	0.00	0.20	0.20	0.20
	Interest (8%)	0.05	0.05	0.03	0.02
	Closing balance	7.72	6.93	4.55	2.18
Month 2	Opening balance	7.72	6.93	4.55	2.18
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.05	0.03	0.01
	Closing balance	7.72	6.73	4.35	1.98
Month 3	Opening balance	7.72	6.73	4.35	1.98
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.03	0.01
	Closing balance	7.72	6.53	4.16	1.78
Month 4	Opening balance	7.72	6.53	4.16	1.78
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.03	0.01
	Closing balance	7.72	6.33	3.96	1.58
Month 5	Opening balance	7.72	6.33	3.96	1.58
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.03	0.01
	Closing balance	7.72	6.14	3.76	1.39
Month 6	Opening balance	7.72	6.14	3.76	1.39
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.03	0.01
	Closing balance	7.72	5.94	3.56	1.19
Month 7	Opening balance	7.72	5.94	3.56	1.19
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.02	0.01
	Closing balance	7.72	5.74	3.36	0.99
Month 8	Opening balance	7.72	5.74	3.36	0.99
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.02	0.01
	Closing balance	7.72	5.54	3.17	0.79
Month 9	Opening balance	7.72	5.54	3.17	0.79
	Repayment	0.00	0.20	0.20	0.20
	Interest	0.05	0.04	0.02	0.01
	Closing balance	7.72	5.34	2.97	0.59
Month 10	Opening balance	7.72	5.34	2.97	0.59
	Repayment	0.20	0.20	0.20	0.20
	Interest	0.05	0.04	0.02	0.00

	Closing balance	7.52	5.15	2.77	0.40
Month 11	Opening balance	7.52	5.15	2.77	0.40
	Repayment	0.20	0.20	0.20	0.20
	Interest	0.05	0.03	0.02	0.00
	Closing balance	7.32	4.95	2.57	0.20
Month 12	Opening balance	7.32	4.95	2.57	0.20
	Repayment	0.20	0.20	0.20	0.20
	Interest	0.05	0.03	0.02	0.00
	Closing balance	7.13	4.75	2.38	0.00
	Principal Repayment	0.59	2.38	2.38	2.38
	Interest	0.61	0.48	0.29	0.10

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. lacs)

Year	1	2	3	4	TOTAL
Profit After Tax (Net Profit)	2.95	3.05	3.23	3.41	
Depreciation	0.47	0.47	0.47	0.47	
Interest	0.61	0.48	0.29	0.10	
Total	4.04	4.01	4.00	3.99	16.03
Interest	0.61	0.48	0.29	0.10	
Principle repayment	0.59	2.38	2.38	2.38	
Total	1.21	2.86	2.67	2.48	9.21
DSCR	3.34	1.40	1.50	1.61	

Average DSCR = 1.74

8.0 BREAK EVEN POINT (BEP)

(Rs. In lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	8.64	11.52	11.52
B. Variable cost			
Manures & Fertilizers	0.26	0.18	0.18
Weed Control & Intercultural Operations	0.60	0.60	0.60
Harvesting	0.96	1.28	1.28
Post Harvest Operations	0.96	1.28	1.28
Distillation	1.83	2.44	2.44
Power	0.12	0.12	0.12
Miscellaneous Expenses	0.09	0.12	0.12
Total variable cost	4.82	6.02	6.02
C. Contribution (A-B)	3.82	5.50	5.50
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.08	1.08
Repair & Maintenance	0.09	0.10	0.11
Interest on Term Loan	0.61	0.48	0.29
Depreciation	0.47	0.47	0.47
Total fixed cost	2.26	2.14	1.96
E. BREAK EVEN POINT	59%	39%	36%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4
CASH OUTFLOW					
Capital Expenditure	9.18	0.00	0.00	0.00	0.00
Working Capital	0.00	1.70	0.44	0.00	0.00
Total (A)	9.18	1.70	0.44	0.00	0.00
CASH INFLOW					
Profit After Tax		2.95	3.05	3.23	3.41
Add: Depreciation		0.47	0.47	0.47	0.47
Add: Interest		0.61	0.48	0.29	0.10
Add: Salvage Value					
Total (B)	0.00	4.04	4.01	4.00	3.99
NET FLOW (B-A)	-9.18	2.33	3.57	4.00	3.98

IRR = 17%

TECHNICAL CONSULTANT

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COMMERCIAL CULTIVATION & OIL DISTILLATION OF PATCHOULI

1.0 INTRODUCTION

Patchouli is native to the Philippines and grows wild and also cultivated in Malaysia, Indonesia, Singapore, China and India. Leaves constitute the economic part, which contain the oil glands. The plant, an erect, well-branched, pubescent, small aromatic bushy herb attains a height of about 0.5-1.2 m. that yields fragrant leaves containing very sweet smelling oil.

Patchouli, an aromatic herb is grown in the Indo Malaysian and Sino-Japanese regions. The shade dry leaf upon steam distillation yields the Patchouli oil, which is used in perfumery, cosmetics, processed food and is imported into India every year in large quantities. The essential oil is one of the best fixatives for heavy perfumes, which imparts strength, strong character, alluring notes and lasting qualities. Natural fragrances like sandalwood, rose, jasmine, vetiver, agarwood and patchouli are complex mixtures of organic molecules, which cannot be reproduced in the laboratory. Thus, patchouli enjoys an additional importance as aromatic oil. In fact, it is a perfume by itself and is highly valued in perfumes, soaps, cosmetics and flavour industries. Patchouli alcohol (C15H26) will have long-lasting fragrant aroma when blended with other aroma chemicals.

This project profile is for cultivation of Patchouli and setting up of a distillation unit with total area under plant at 4 hectares.

2.0 MARKET POTENTIAL

Patchouli oil is an essential ingredient and used as a 'base' material in perfumery industry. There is no synthetic substitute for patchouli oil, which increases its value and demand in the perfumery market. Consumption of Patchouli oil in the world is about 2000 tonnes per annum. In India due to increase in chewing tobacco and pan masala industries, consumption has gone up to about 300 tons per annum while the production is below 50 MT. Hence, the country mostly depends on import mainly from Indonesia and on reconstituted oil.

3.0 PACKAGE OF PRACTICES

(i) Soil & Climate: The land selected for patchouli should be well-drained, loamy fertile soil, rich in organic matter. The land should not be subjected to water stagnation even for a short period. Heavy clay and sandy soils with poor water holding capacity are not suitable for its commercial cultivation. Acidic soil with pH value from 5.5-6.2 is reported to be the ideal. It is advisable to avoid nematode infested areas.

Patchouli prefers warm and humid climate. The crop can be grown successfully on fairly heavy and evenly distributed rainfall ranging from 1500-3000 mm per annum. A temperature of 24-28°C and an average RH of 75 % are taken to be ideal. It grows successfully upto an altitude of 500 m above the mean sea level.

(ii) Propagation: Patchouli is propagated through stem cuttings. Terminal stem cuttings are taken from healthy mother plants growing either in open area or under light shade (less than 30 %). Cuttings obtained from crops growing in shaded area, the internodes become longer with soft stem of which the survival percentage is low. Cuttings with shorter internodes are preferable.

(iii) Nursery raising: Cuttings are rooted in nurseries equipped with provision of shade and water supply before planting in the main field. Rooting is done either in poly bags or directly in beds under the shade. The best time for rooting is during April-September but with precautions, cuttings may be rooted any time of the year. Cuttings are best rooted in poly bags which give highest survival percentage when transplanted in the main field. When rooted directly in raised beds, cuttings are planted at a spacing of 10x10 cm. Cuttings become ready for transplanting in about 30-45 days during April-Sept and 45-60 days during October to March.

Cuttings are prepared during morning or afternoon period. Apical and branch twig of 10-15 cm long with 4-5 nodes is cut away from healthy mother plants. At least two pairs fully developed lower leaves of the cuttings are stripped off before planting in rooting medium. For early rooting cut ends are dipped in IBA hormone solution of 1000-ppm strength (1 g per litre water gives 1000-ppm. This is prepared by dissolving the hormone powder in little alcohol and then made up to volume by cold water) for 5-7 seconds and spread 10 minutes in shade for drying. Hormone powder in ready to use form like Rootex or Seradex etc available in the market in 3 grades of which the 'No.2' or 'B' grade may be used directly Hormone treatment seems to be helpful when seedlings are prepared during winter as hormone enhances root initiation.

(iv) Hardening of Seedlings: Hardening of the seedlings is necessary before planting. This is achieved by gradual reduction in water supply and removing shade from about 7-10 days ahead of planting. Before planting the poly bags are to be watered adequately. This helps rainfed crop in early establishment. Only the selected healthy seedlings of 30-45 days old should be planted.

(v) Spacing: 45 x 45 cm in raised beds in plains and 60 x 45 cm in sloppy lands.

(vi) Manure: 15-20 ton FYM or compost or well decomposed cowdung per hectare should be applied at final land preparation. If organic manure is not available in bulk, green manuring crop should be raised and incorporated in soil. During monsoon period green-manuring crops like Sesbania rostrata or Sesbania aculeata or pulses like Cowpea may be grown in between rows and at 50-60 days of growth may be uprooted and cut into pieces and applied as mulch.

(vii) Fertilizers: A fertilizer dose of 100 kg N, 50 kg P205 and 60 kg K20 per hectare is recommended. Basal application of 330 kg Single super, phosphate (SSP) and 50 kg Muriate of potash (MOP) is done at least 2 days ahead of planting. Total quantity of 220 kg urea /hectare/year in 4 equal splits should be applied. An extra dose of 30 kg K20 as top dressing along with 4th urea application may be done. It is better to avoid application of urea as basal initially. Because it will encourage weed growth and part of it will go waste as the newly planted seedlings remain unable to absorb the available N. The annual dose of NPK for subsequent years should be applied during March when there is irrigation and in May/ June without irrigation.

(viii) Cultural Practices: Compaction of surface soil particularly around root zone is avoided. This is achieved by racking with dry land weeder twice or thrice followed by one hand weeding. Forking and raking besides weeding is found to be beneficial in developing a strong root system. Incorporation of urea with soil is done by racking and hand weeding.

(ix) Irrigation: Immediately after planting light watering daily upto 3-4 days and thereafter irrigation at 10-15 days interval should be applied. Saturation of poly bags before planting in field eliminates watering for 2-3 days. Surface drainage is more important than irrigation in high rainfall plains.

(x) Harvesting: Patchouli should be harvested following selection method. In this method, a partial harvest is taken at 60-65 days after planting. At 90-100 days after planting the first regular harvesting is done by cutting selected matured branches only. Branches so selected should be about 70-90 days old and showing signs of maturity as 1-2 lower leaves turning yellowish. These branches bear 6-7 pairs of leaves. In first harvest, the main branch should be cut back above 3-4 nodes from base depending chances of regrowth. Growing buds in the lower side get suppressed and degenerated in absence of light and apical dominance if harvesting is delayed. If top portion is cut back just above the buds, the growing buds develop

quickly into new branches. Harvesting of mature branches is otherwise encouraging the new shoots from lower sides of each branch. In selected harvesting (pruning) the plant is not getting enough stress and normal metabolic functions continue throughout the growing period. Harvesting and other intercultural operations should be done from the side drains only without disturbing or compacting the root zones. This is necessary for quick regeneration by maintaining soil aeration. The selection of the branch for harvesting can be so planned that a few branches attain this stage at an interval of 35-45 days.

(xi) Drying of Leaves: After harvesting, the fresh herbs should be spread over on bamboo mats or on tarpaulin for drying under shade for 7-10 days. The thickness of the herb should not be more than 2 inches. Turning atleast once in a day is necessary to avoid fermentation and for uniform drying. A drying structure of 30 x 15 ft with 4 tiers racks is sufficient to cope up one-hectare area. The drying house may be constructed by bamboo with thatched roof or tarpaulin roof or may be a semi permanent structure with tiers. The fresh and dry ratio of herb is 5.5:1 at around 12 % moisture.

(xii) Crop cycle: For commercial cultivation, it is advisable to grow the crop as annual.

(xiii) Distillation of oil: Shade dried and cured leaves are subjected to steam distillation for obtaining the oil of patchouli. The distillation unit consists of a boiler, distillation still, condenser and receiver. The distillation still is made up of preferably food grade stainless steel (304 or 316). The vessel has a perforated metal sheet or net above the bottom to support the herb, which is loaded into the still for distillation. Steam is injected through perforated coils that uniformly pass through the material. This steam while passing through takes out the oils by rupturing the oil glands that moves to condenser along with water vapour.

The condenser, which cools the hot vapours received from the still, consists of mainly tubes made up of stainless steel and mounted inside a jacket. The condenser is provided with inlet and outlet for the circulation of cooling water. The hot vapours consisting of steam and essential oil vapours are cooled in the condenser tubes and the condensate then flows out into the receiver. The oil being lighter than water and insoluble flows on the top in the receiver and only the water gets drained out. The oil is drawn off separately at the end of distillation.

The process of distillation consists of loading the dried leaves into the still, closing the lid securely, letting in steam generated in the boiler from the bottom of the still, condensing the vapours in the condenser and collecting the oil in the receiver. It has been noted that interchange of light and low pressures, i.e., 1.4 to 3.5-kg/sq cm produces better yield as more cell walls rupture in this process. The duration of distillation varies from 12- 16 hours. Prolonged distillation gives higher yield and better quality of oil.

(xiv) Yield: On an average a recovery of 3.0 to 3.5 % is obtained which varies largely on drying procedure, leave & stem ratio and curing.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	-
Building & Civil Works	5.04
Plant & Machineries	3.84
Misc. Fixed Assets	0.85
Setting up of Nursery	0.15
Preliminary & Pre-operative Expenses	0.70
Working Capital	2.01
TOTAL	12.59

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in existing farmland.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Distillation Shed (Open shed, CGI sheet roofings, kuttcha Floor)	400	300	120000
Labour quarter cum Store room (Brick wall, CGI sheet roof, concrete floor)	720	400	288000
Drying Shed (Open shed with CGI sheet roof)	1000	50	50000
		Sub total	458000
Add: Electrification, etc @ 10%			45800
		TOTAL	503800
		Say (Rs. in lacs)	5.04

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Distillation unit (Hydro-steam and lifting type, capacity 1.0 MT/ batch, made of 304 grade stainless steel with all accessories and tax)	1	320000	320000
Add transportation, installation, etc @ 20%			64000
		TOTAL	384000
		Say (Rs. in lacs)	3.84

4.4 Misc. Fixed assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, storage, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

4.5 Setting up of a Nursery: Details of expenses for setting up of a nursery is given below.

Target area for cultivation (ha)				4
Area required for raising mother stock in sqm (1/20 of target area)				2000
No. of seedlings required (40,000/ha)				8000
Particulars	Unit	Qty	Rate (Rs)	Amount (Rs)
Purchase of seedlings	Nos	8000	1	8000
Engagement of labour for nursery land preparation	Manday/ha	25	200	1000
Engagement of labour for planting of seedlings	Manday/ha	75	200	3000
Cost of FYM	kg/ha	18000	0.20	720
			Sub-total	12720
Add: Crop management for 6 months, etc. @ 20%				2544
			TOTAL	15264
			Say (Rs. in lacs)	0.15

4.6 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Interest during implementation	0.40
Miscellaneous expenses	0.10
TOTAL	0.70

4.7 Working capital: Details of working capital are given below.

(Rs. in lacs)

Year 1	Period (month)	Amount (Rs)		
		Yr 1	Yr 2	Yr 3
Preparation of Seedlings	1	0.06	0.06	0.06
Land Preparation	1	0.02	0.02	0.02
Planting	1	0.05	0.05	0.05
Manures & Fertilizers	1	0.02	0.02	0.02
Weed Control & Intercultural Operations	1	0.05	0.05	0.05
Harvesting	1	0.11	0.11	0.11
Post Harvest Operations	1	0.11	0.11	0.11
Distillation	1	0.08	0.08	0.08
Power	1	0.01	0.01	0.01
Salary	1	0.09	0.09	0.09
Finished Goods	1	0.55	0.55	0.55
Receivables	1	0.86	0.86	0.86
Total		2.01	2.01	2.01
Working capital margin in Yr 1 (100%)	2.01			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	5.04
B. Subsidy from Central/ State Govt.	-	
DEBT		
Term Loan from Banks/ FIs	60%	7.55
TOTAL	100%	12.59

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Oil production per annum (in kg)	648	648	648	648	648
Oil price (Rs. per kg)	1600	1600	1600	1600	1600
Income from sale of oil (Rs lakh)	10.37	10.37	10.37	10.37	10.37
B. OPERATING EXPENSES					
Preparation of Seedlings	0.77	0.77	0.77	0.77	0.77
Land Preparation	0.20	0.20	0.20	0.20	0.20
Planting	0.60	0.60	0.60	0.60	0.60
Manures & Fertilizers	0.29	0.29	0.29	0.29	0.29
Weed Control & Intercultural Operations	0.60	0.60	0.60	0.60	0.60
Harvesting	1.28	1.28	1.28	1.28	1.28
Post Harvest Operations	1.28	1.28	1.28	1.28	1.28
Distillation	0.96	0.96	0.96	0.96	0.96
Power	0.12	0.12	0.12	0.12	0.12
Salary	1.08	1.08	1.08	1.08	1.08
Repairs & Maintenance	0.10	0.11	0.12	0.13	0.14
Miscellaneous Expenses	0.10	0.10	0.10	0.10	0.10

Total operating expenses	6.61	6.62	6.63	6.64	6.66
Less: working expenses capitalised	2.01	0.00	0.00	0.00	0.00
Operating profit	5.77	3.75	3.74	3.72	3.71
C. FINANCIAL EXPENSES					
Depreciation	0.49	0.49	0.49	0.49	0.49
Interest on Term Loan	0.60	0.50	0.36	0.22	0.08
Expenses on nursery written off	0.02	0.02	0.02	0.02	0.02
Net Profit	4.65	2.73	2.86	2.99	3.12
Net cash accruals	5.17	3.24	3.37	3.50	3.63
Principal Repayment	0.44	1.78	1.78	1.78	1.78

6.1 Estimation of Production: Production of oil per annum is estimated as below.

Particulars	Unit	Quantity
Yield of green leaves/hectare/harvest	kg	7500
Cultivated land under patchouli	ha	4
Total yield of green leaves/harvest	kg	30000
Recovery rate of dry leaves from green leaves	%	18%
Yield of dry leaves/harvest	kg	5400

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Number of harvests/year (1 year crop cycle with gestation period of 3 months; subsequent harvests at 35-45 days interval)	4	4	4	4	4
Yield of dry leaves/year (in kg)	21600	21600	21600	21600	21600
Percentage of oil recovery	3.00%	3.00%	3.00%	3.00%	3.00%
Total oil production per annum (in kg)	648	648	648	648	648

6.2 Preparation of Seedlings: Expenses on preparation of seedlings per annum is estimated as below.

No. of seedlings required per ha	40000
Target area for cultivation	4
Total No. of seedlings required	160000
No. of polybags/ kg (4 x 3 inch size)	2000
Quantity of polybags required (in kg)	80

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Cost of polybags	Kg	80	80	6400
Engagement of labour for polybag filling	Mandays/ 1000 Nos	1	200	32000
Engagement of labour for planting in polybags	Mandays/ 1000 Nos	1	200	32000
			Sub - Total	70400
Add: Cost for manures, etc @ 10%				7040
Annual expenses on preparation of seedlings per annum (Rs)				77440

6.3 Land Preparation: Expenses on land preparation per annum is estimated as below.

Particulars	Mandays/ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labor for land preparation	25	200	4	20000

6.4 Planting: Expenses on planting per annum is estimated as below.

Particulars	Mandays/ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for planting of seedlings	75	200	4	60000

6.5 Manures & Fertilizers: Expenses on manures & fertilizers per annum is estimated as below.

Particulars	Kg/ ha	Source	Nutrient %	Kg/ ha (source)	Cost/ kg (Source)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Expenses on Manures	18000	FYM/ cowdung	100%	18000	0.20	3600	4	14400
Expenses on Nitrogen	100	Urea	46%	217	5.50	1196	4	4783
Expenses on Phosphorus	50	SSP	16%	313	4.00	1250	4	5000
Expenses on Potassium	60	MOP	60%	100	12.00	1200	4	4800
Annual expenses on manures & fertilizers per annum (Rs)								28983

6.6 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement on labour for weed control & intercultural operations	75	200	4	60000

6.7 Harvesting: Expenses on harvesting per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)	
Engagement of labour for harvest of leaves	40	200	4	32000	
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Number of harvests/year (1 year crop cycle with gestation period of 3 months; subsequent harvests at 35-45 days interval)	4	4	4	4	4
Expenses on harvest per annum (Rs)	128000	128000	128000	128000	128000

6.8 Post Harvest Operations: Expenses on post harvest operations per annum is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)	
Engagement of labour for post harvest operations	40	200	4	32000	
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Number of post harvest operations/ year	4	4	4	4	4
Expenses on post harvest operations per annum	128000	128000	128000	128000	128000

6.9 Distillation: Expenses on distillation per annum is estimated as below.

No. of hours per distillation	14
Fuel (Dry herbage) consumption (kg/hr)	15
Cost of dry herbage per kg (Rs)	5
Expenses on fuel/distillation (Rs)	1050

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Yield of dry leaves/year (in kg)	21600	21600	21600	21600	21600
Capacity of distillation plant/batch (in kg) of fresh leaves	1000	1000	1000	1000	1000
Capacity of distillation plant/batch (in kg) of dry leaves (18% of fresh leaves)	180	180	180	180	180
No. of distillations per annum (Average)	120	120	120	120	120
Expenses on fuel (Rs)	126000	126000	126000	126000	126000
Add: engagement of labour (4 mandays/distillation & manday cost of Rs 200)	96000	96000	96000	96000	96000
Expenses on distillation per annum (Rs)	96000	96000	96000	96000	96000

6.10 Power: Expenses on power per annum is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/ day	kwh/ day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	6	0.10	0.56	8	4.48
			Power requirement/day (Kwh)		6.72

Days/annum	360
Rate per unit (Rs)	5.00
Expenses on power per annum	12092

6.11 Salary: Expenses on salary per annum is estimated as given below.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.12 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	5.04	1%	0.05
Machinery & Equipment	3.84	1%	0.04
Misc. Fixed Assets	0.85	1%	0.01
Total			0.10

6.13 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.14 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	5.04	3.34%	0.17
Machinery & Equipment	3.84	7.07%	0.27
Misc. Fixed Assets	0.85	6.23%	0.05
TOTAL			0.49

6.15 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs. in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	7.55	7.11	5.33	3.55	1.78
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest (8%)	0.05	0.05	0.04	0.02	0.01
	Closing balance	7.55	6.96	5.18	3.41	1.63
Month 2	Opening balance	7.55	6.96	5.18	3.41	1.63
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.05	0.03	0.02	0.01
	Closing balance	7.55	6.81	5.04	3.26	1.48
Month 3	Opening balance	7.55	6.81	5.04	3.26	1.48
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.05	0.03	0.02	0.01
	Closing balance	7.55	6.66	4.89	3.11	1.33
Month 4	Opening balance	7.55	6.66	4.89	3.11	1.33
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.01
	Closing balance	7.55	6.52	4.74	2.96	1.18
Month 5	Opening balance	7.55	6.52	4.74	2.96	1.18
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.01
	Closing balance	7.55	6.37	4.59	2.81	1.04
Month 6	Opening balance	7.55	6.37	4.59	2.81	1.04
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.01
	Closing balance	7.55	6.22	4.44	2.67	0.89
Month 7	Opening balance	7.55	6.22	4.44	2.67	0.89
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.01
	Closing balance	7.55	6.07	4.29	2.52	0.74
Month 8	Opening balance	7.55	6.07	4.29	2.52	0.74
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.00
	Closing balance	7.55	5.92	4.15	2.37	0.59
Month 9	Opening balance	7.55	5.92	4.15	2.37	0.59
	Repayment	0.00	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.02	0.00
	Closing balance	7.55	5.78	4.00	2.22	0.44
Month 10	Opening balance	7.55	5.78	4.00	2.22	0.44
	Repayment	0.15	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.01	0.00
	Closing balance	7.40	5.63	3.85	2.07	0.30
Month 11	Opening balance	7.40	5.63	3.85	2.07	0.30
	Repayment	0.15	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.03	0.01	0.00
	Closing balance	7.26	5.48	3.70	1.93	0.15

Month 12	Opening balance	7.26	5.48	3.70	1.93	0.15
	Repayment	0.15	0.15	0.15	0.15	0.15
	Interest	0.05	0.04	0.02	0.01	0.00
	Closing balance	7.11	5.33	3.55	1.78	0.00
	Principal Repayment	0.44	1.78	1.78	1.78	1.78
	Interest	0.60	0.50	0.36	0.22	0.08

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. In lacs)

Year ended March 31,	1	2	3	4	5	TOTAL
Profit After Tax (Net Profit)	4.65	2.73	2.86	2.99	3.12	
Depreciation	0.49	0.49	0.49	0.49	0.49	
Interest	0.60	0.50	0.36	0.22	0.08	
Total	5.75	3.73	3.71	3.70	3.69	20.58
Interest repayment	0.60	0.50	0.36	0.22	0.08	
Loan repayment	0.44	1.78	1.78	1.78	1.78	
Total	1.05	2.28	2.14	2.00	1.85	9.31
DSCR	5.50	1.63	1.74	1.85	1.99	

Average DSCR = 2.21

BREAK EVEN POINT (BEP)

(Rs. In lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	10.37	10.37	10.37
B. Variable cost			
Preparation of Seedlings	0.77	0.77	0.77
Land Preparation	0.20	0.20	0.20
Planting	0.60	0.60	0.60
Manures & Fertilizers	0.29	0.29	0.29
Weed Control & Intercultural Operations	0.60	0.60	0.60
Harvesting	1.28	1.28	1.28
Post Harvest Operations	1.28	1.28	1.28
Distillation	0.96	0.96	0.96
Power	0.12	0.12	0.12
Miscellaneous Expenses	0.10	0.10	0.10
Total variable cost	6.21	6.21	6.21
C. Contribution (A-B)	4.16	4.16	4.16
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.08	1.08
Repairs & Maintenance	0.10	0.11	0.12
Interest on Term Loan	0.60	0.50	0.36
Depreciation	0.49	0.49	0.49
Total fixed cost	2.27	2.18	2.05
E. BREAK EVEN POINT	55%	52%	49%

8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	9.73	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	2.01	0.00	0.00	0.00	0.00
Total (A)	9.73	2.01	0.00	0.00	0.00	0.00
CASH INFLOW						
Profit After Tax		4.65	2.73	2.86	2.99	3.12
Add: Depreciation		0.49	0.49	0.49	0.49	0.49
Add: Interest		0.60	0.50	0.36	0.22	0.08
Add: Salvage Value						
Total (B)	0.00	5.75	3.73	3.71	3.70	3.69
NET FLOW (B-A)	-9.73	3.73	3.72	3.71	3.70	3.69

IRR = 26%

TECHNICAL CONSULTANT

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COMMERCIAL CULTIVATION & OIL DISTILLATION OF SUGANDHMANTRI

1.0 INTRODUCTION

Sugandhmantri is a rhizomatous aromatic perennial herb found in Assam, lower altitudes of Arunachal, Nagaland and Tripura etc. The dry rhizomes are known as 'Sugandhmantri'. Some properties of the herb are - stem short, slow growing, leaves radical with sheathing bases, long petioled, sagittate-cordate. The large rhizomes bearing withered leaf scales and numerous white rootlets are esteemed as an aromatic stimulant.

Its aromatic rhizomes contain an essential oil used for blending of many oriental perfumes. Steam distillation of rhizome yields yellow coloured essential oil about 1.0% on air-dry basis. The essential oil has a very good demand in perfumery and cosmetic industries. The spent material after extraction of essential oil is largely used in Dhup manufacturing.

More than 400 MT of dry rhizomes are collected and transported to outside the state mainly to Kannauj, Kanpur, Delhi, Kolkata, Mumbai etc from Barak Valley of Assam and other parts of the region every year.

It is being exploited as a minor forest product since long back without conservation and/or cultivation measures. If this is continued unabated very soon this unique and valuable species will be extinct from its place of origin.

This project profile is for commercial cultivation of Sugandmantri and setting up of a distillation unit with total area under plant at 4 hectares.

2.0 PACKAGE OF PRACTICES

(i) Soil: Sandy and sandy loam to clay loam with organic litter is found suitable. Temporary water logging for 24-48 hours is beneficial for quick rhizome elongation. The plant prefers acidic soil of pH range 4.9 - 5.5.

(ii) Climate: Being a sub - tropical species it loves warm and humid climate with annual rainfall ranging from 2000-3000 mm.

(iii) Stock Nursery: A stock nursery is important for commercial cultivation. Generally 1/5th of the target area is brought under this nursery one year ahead of plantation. This is well nursed with adequate manuring and fertilization, mulching and other intercultural operations. By doing so, the cost of planting material can be reduced by about 40%.

(iv) Propagation: The individual seed material is the piece of rhizome with active buds of 2.5-3 cm size. Fresh rhizome pieces with active buds may be sprouted in sand beds before planting in the main field.

(v) Land Preparation: Land is prepared by deep ploughing or hoeing with addition of sufficient quantity of organic matter.

(vi) Planting: The appropriate method of planting is the ridge and furrow method. 15 cm deep furrows are opened at 30 cm apart. Rhizome pieces after sprouting are planted in the furrows at 45 cm apart and covered with soil

up to 5-7 cm. The rest is filled up by rice husk or other available mulch material. Rice husk is more beneficial as it takes a longer time to decompose and thus helps in rhizome elongation. When fresh cuttings are planted sprouting starts within 30 days of planting. 20-22 q of fresh rhizome/ha is required to get a plant population of 75000.

(vii) Fertilizers: 40:50:60 kg N, P205 and K20/ha per year may be applied. Entire quantity of P and K are applied along with organic matter as basal. N is applied in 3 equal splits starting from 40 days after planting.

(viii) Interculture: It is a weed-suppressing crop and one or two light hoeing in the first and second month of planting is enough to keep down the weed population. Removal of old and dry leaf and sheath is beneficial for rhizome elongation.

(ix) Harvesting: Sugandhmantri is harvested during winter, rain free period (November-April). During this period it is observed that the vegetative growth as well as moisture content of rhizome is minimum and the oil accumulation is maximum. The rhizomes attain a length of 20-30 cm or more in three years. Rhizome exceeding 15 cm long is chosen for harvesting.

Sugandhmantri becomes ready for rhizome harvest on 3rd year of planting. However, the crop can also be harvested in the second year. But three years rotation period has been observed to be more profitable from both yield and quality of the products.

Harvesting is done using hand Chiprang or garden hoe that may require digging out the rhizome from 5-10 cm deep. During harvest the side suckers may be left undisturbed for ratoon crops. Harvest may be taken every year by selection of well-grown rhizome starting from third year upto 10th year and then terminated or one time harvesting after 30-32 months may also be done. For ratoon crop, manuring & fertilization should be done every year with pre monsoon shower.

(x) Rhizome Processing: After harvest, the leaves, stalks with leaf sheath and roots are removed and cleaned and then spread on the floor. Clean rhizomes are then cut into 2.5-3 cm pieces and dried by using deemed fire and smoke. When about 50% drying takes place, they are taken out and dried under the sun till a rattling sound on handling is obtained. The fresh and dry ratio of about 5.5 : 1 is safe for storing or distillation.

(xi) Yield of Rhizome: Fresh yield is about 10-12 times of planting material and thus average fresh yield after 3 years is about 240 q/ha. On drying it yields about 50 q dry rhizomes, which on steam distillation may yield 45 - 48 kg of essential oil at 1.0% recovery.

(xii) Distillation: After drying, distillation should be done within one month to get maximum recovery (1 % or more). With ageing, oil recovery goes down to 0.8 % (if distilled after 3 months of storing). Since the oil glands are situated inside the rhizome, which contains lot of starch, it has to be disintegrated or crushed to expose the oil glands in such a way that during the process, heat is not generated. Heat generation will destroy considerable quantity of oil. Distillation process takes about 10-12 hours to exhaust one batch.

At the end of distillation, oil is taken out from the receiver and is treated with anhydrous sodium sulphate salt @ 15-20 g/litre of oil. After making water free and filtering, the oil is stored in aluminium container. The spent material obtained after oil extraction is utilized as organic manure or as a raw material for Dhup or other incense sticks manufacturing. After disintegration or crushing, the material should be put into the distillation tank immediately to avoid loss of oil.

3.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	-
Building & Civil Works	4.49
Machinery & Equipment	3.84
Misc. Fixed Assets	0.85
Setting up of Nursery	2.39
Preparation of Seedlings	0.72
Land Preparation	0.20
Planting	0.60
Preliminary & Pre-operative Expenses	0.70
Working Capital	4.18
TOTAL	17.97

3.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in existing farmland.

3.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Distillation Shed (Open shed, CGI sheet roofings, kuttcha Floor)	400	300	120000
Labour quarter cum Store room (Brick wall, CGI sheet roof, concrete floor)	720	400	288000
		Sub total	408000
Add: Electrification, etc @ 10%			40800
		TOTAL	448800
		Say (Rs. in lacs)	4.49

3.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Distillation unit (Hydro-steam and lifting type, capacity 1.0 MT/batch, made of 304 grade stainless steel with all accessories and tax)	1	320000	320000
Add transportation, installation, etc @ 20%			64000
		TOTAL	384000
		Say (Rs. in lacs)	3.84

3.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, storage, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

3.5 Setting up of a Nursery: Details of expenses for setting up of a nursery is given below.

Target area for cultivation (in ha)				4
Area required for raising of mother stock in sqm (1/5 of target area)				8000
Number of seedlings required (75,000/ha)				60000
Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Purchase of seedlings	Nos	60000	3	180000
Engagement of labour for nursery land preparation	Mandays/ ha	25	200	4000
Engagement of labour for planting of seedlings	Mandays/ ha	75	200	12000
Cost of FYM	kg/ ha	18000	0.20	2880
			Sub-total	198880
Add: Maintenance for seedlings for 6 months, etc. @ 20%				39776
			TOTAL	238656
			Say (Rs. in lacs)	2.39

3.6 Preparation of Seedlings: Details of expenses for preparation of seedlings is given below.

No. of seedlings required per ha	75000
Target area for cultivation (in ha)	4
Total No. of seedlings required	300000

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Engagement of labour for cutting the rhizomes into 2 inch pieces	Manday/ 1000 Nos	1	200	60000
Add: Cost of drying, etc @ 20%				12000
			TOTAL	72000
			Say (Rs. in lacs)	0.72

3.7 Land Preparation for Nursery: Details of expenses for land preparation of nursery is given below.

Particulars	Mandays/ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for land preparation	25	200	4	20000
			Say (Rs. in lacs)	0.20

3.8 Planting: Details of expenses for planting in nursery is given below.

Particulars	Mandays/ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for planting of seedlings	75	200	4	60000
			Say (Rs. in lacs)	0.60

3.9 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Interest during implementation	0.40
Miscellaneous expenses	0.10
TOTAL	0.70

3.10 Working capital: Details of working capital are given below.

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3
Total operating expenses	2.15	2.03	4.54
Operating expenses capitalised for Yr 1 & Yr 2		4.18	

4.0 MEANS OF FINANCE: The means of finance for the project is estimated below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	7.19
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	10.78
TOTAL	100%	17.97

5.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Oil production per annum (in kg)	0	0	192	192	192	192	192
Oil price (Rs. per kg)	4500	4500	4500	4500	4500	4500	4500
Income from sale of oil (Rs lakh)	0.00	0.00	8.64	8.64	8.64	8.64	8.64
B. OPERATING EXPENSES							
Manures & Fertilizers	0.26	0.12	0.12	0.12	0.12	0.12	0.12
Weed Control & Intercultural Operations	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Harvesting	0.00	0.00	0.32	0.32	0.32	0.32	0.32
Post Harvest Operations	0.00	0.00	0.32	0.32	0.32	0.32	0.32
Distillation	0.00	0.00	1.77	1.77	1.77	1.77	1.77
Power	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Salary	1.08	1.09	1.10	1.11	1.12	1.14	1.15
Repair & Maintenance	0.09	0.10	0.11	0.12	0.13	0.15	0.16
Miscellaneous Expenses	0.00	0.00	0.09	0.09	0.09	0.09	0.09
Total Operating Expenses	2.15	2.03	4.54	4.57	4.59	4.61	4.64
Less: Operating Expenses capitalised	2.15	2.03	0.00	0.00	0.00	0.00	0.00
Operating profit	0.00	0.00	4.10	4.07	4.05	4.03	4.00
C. FINANCIAL EXPENSES							
Depreciation	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Interest on Term Loan	0.86	0.86	0.84	0.68	0.49	0.30	0.10
Expenses on nursery written off	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Expenses on preparation of seedlings written off	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Expenses on land preparation written off	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Expenses on planting of seedlings written off	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Net Profit	-1.40	-1.40	2.72	2.86	3.03	3.20	3.36
Net cash accruals	-0.53	-0.53	3.58	3.73	3.89	4.06	4.23
Principle repayment	0.00	0.00	1.20	2.40	2.40	2.40	2.40

6.1 Estimation of Production: Production of oil is estimated as below.

Particulars	Unit	Quantity
Yield of fresh rhizomes/hectare/harvest	kg	24000
Area under crop	ha	4
Total yield of fresh rhizomes	kg	96000
Recovery rate of dry rhizomes	%	20%
Yield of dry rhizomes/harvest	kg	19200

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Number of harvests/year (Gestation period of 2 years; subsequent harvests at yearly intervals upto 10 years)	0	0	1	1	1	1	1
Yield of dry rhizomes/year (in kg)	0	0	19200	19200	19200	19200	19200
Percentage of oil recovery	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Total oil production per annum (in kg)	0	0	192	192	192	192	192

6.2 Manures & Fertilizers: Expenses on manures & fertilizers is estimated as below.

Particulars	Kg/ha	Source	Nutrient %	Kg/ ha (source)	Cost/ kg of Source (Rs)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Expenses on Nitrogen/ application	40	Urea	46%	87	5.50	478	4	1913
Expenses on Phosphorus/application	50	SSP	16%	313	4.00	1250	4	5000
Expenses on Potassium/ application	60	MOP	60%	100	12.00	1200	4	4800

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Application of Manures during land preparation in Year 1 (18000 kg/ha @ Rs 0.20/ kg)	14400						
Application of Nitrogen/ annum	1	1	1	1	1	1	1

Cost (Rs)	1913	1913	1913	1913	1913	1913	1913
Application of Phosphorus/annum	1	1	1	1	1	1	1
Cost (Rs)	5000	5000	5000	5000	5000	5000	5000
Application of Potassium/ annum	1	1	1	1	1	1	1
Cost (Rs)	4800	4800	4800	4800	4800	4800	4800
Expenses on purchase of manures & fertilizers per annum (Rs)	26113	11713	11713	11713	11713	11713	11713

6.3 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations is estimated below.

Particulars	Mandays/ ha		Rate (Rs)	Area under crop (ha)		Cost/ annum (Rs)	
Engagement of labour for weed control & intercultural operations	75		200	4		60000	
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Number of weed control & intercultural operations per year	1	1	1	1	1	1	1
Expenses on weed control & intercultural operations per annum	60000	60000	60000	60000	60000	60000	60000

6.4 Harvesting: Expenses on harvesting is estimated below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)		Cost/harvest (Rs)	
Engagement of labour for harvesting	40	200	4		32000	
Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Number of harvests/year (Gestation period of 2 years; subsequent harvests at yearly intervals upto 10 years)	0	0	1	1	1	1	1
Expenses on harvest per annum	0	0	32000	32000	32000	32000	32000

6.5 Post Harvest Operations: Expenses on post harvest operations is estimated as below.

Particulars	Mandays/ ha	Rate/manday (Rs)		Area under crop (ha)		Cost/operation (Rs)	
Engagement of labour for post harvest operations	40	200		4		32000	
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Number of post harvest operations/year	0	0	1	1	1	1	1
Expenses on post harvest operations per annum	0	0	32000	32000	32000	32000	32000

6.6 Distillation: Expenses on distillation is estimated as below.

No. of hours per distillation	12
Fuel (Dry herbage) consumption (kg/hr)	25
Cost of dry herbage per kg (Rs)	5
Expenses on fuel/distillation (Rs)	1500

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Yield of dry rhizomes/year (in kg)	0	0	19200	19200	19200	19200	19200
Quantity of dry rhizomes per distillation (kg)	250	250	250	250	250	250	250
No. of distillations per annum (Average)	0	0	77	77	77	77	77
Expenses on fuel (Rs)	0	0	115200	115200	115200	115200	115200
Add: engagement of labour (4 mandays/distillation & manday cost of Rs 200)	0	0	61440	61440	61440	61440	61440
Expenses on distillation per annum (Rs)	0	0	176640	176640	176640	176640	176640

6.7 Power: Expenses on power is estimated as below.

Partiulars	Quantity	Power (Kw)	Total (Kw)	Hrs/day	kwh/day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	6	0.10	0.56	8	4.48
Power requirement/ day (Kwh)					6.72
Days/annum			360		
Rate per unit (Rs)			5.00		
Expenses on power per annum			12092		

6.8 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that expenses on salary will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.9 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	4.49	1%	0.04
Machinery & Equipment	3.84	1%	0.04
Misc. Fixed Assets	0.85	1%	0.01
Total			0.09

6.10 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.11 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs. in lacs)

Description	Cost (Rs)	Rate	Amount/annum (Rs)
Building & Civil Works	4.49	3.34%	0.15
Machinery & Equipment	3.84	7.07%	0.27
Misc. Fixed Assets	0.85	6.23%	0.05
		Total	0.47

6.12 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 30 months with equal monthly instalments. The details of calculation are given below.

(Rs. in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	10.78	10.78	10.78	9.58	7.19	4.79	2.40
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest (8%)	0.07	0.07	0.07	0.06	0.05	0.03	0.02
	Closing balance	10.78	10.78	10.78	9.38	6.99	4.59	2.20
Month 2	Opening balance	10.78	10.78	10.78	9.38	6.99	4.59	2.20
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.05	0.03	0.01
	Closing balance	10.78	10.78	10.78	9.18	6.79	4.39	2.00
Month 3	Opening balance	10.78	10.78	10.78	9.18	6.79	4.39	2.00
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.05	0.03	0.01
	Closing balance	10.78	10.78	10.78	8.99	6.59	4.19	1.80
Month 4	Opening balance	10.78	10.78	10.78	8.99	6.59	4.19	1.80
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.04	0.03	0.01
	Closing balance	10.78	10.78	10.78	8.79	6.39	3.99	1.60
Month 5	Opening balance	10.78	10.78	10.78	8.79	6.39	3.99	1.60
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.04	0.03	0.01
	Closing balance	10.78	10.78	10.78	8.59	6.19	3.79	1.40
Month 6	Opening balance	10.78	10.78	10.78	8.59	6.19	3.79	1.40
	Repayment	0.00	0.00	0.00	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.04	0.03	0.01
	Closing balance	10.78	10.78	10.78	8.39	5.99	3.59	1.20
Month 7	Opening balance	10.78	10.78	10.78	8.39	5.99	3.59	1.20
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.06	0.04	0.02	0.01
	Closing balance	10.78	10.78	10.58	8.19	5.79	3.39	1.00
Month 8	Opening balance	10.78	10.78	10.58	8.19	5.79	3.39	1.00
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.05	0.04	0.02	0.01
	Closing balance	10.78	10.78	10.38	7.99	5.59	3.19	0.80
Month 9	Opening balance	10.78	10.78	10.38	7.99	5.59	3.19	0.80
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.05	0.04	0.02	0.01
	Closing balance	10.78	10.78	10.18	7.79	5.39	3.00	0.60
Month 10	Opening balance	10.78	10.78	10.18	7.79	5.39	3.00	0.60
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.05	0.04	0.02	0.00
	Closing balance	10.78	10.78	9.98	7.59	5.19	2.80	0.40
Month 11	Opening balance	10.78	10.78	9.98	7.59	5.19	2.80	0.40
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.05	0.03	0.02	0.00
	Closing balance	10.78	10.78	9.78	7.39	4.99	2.60	0.20
Month 12	Opening balance	10.78	10.78	9.78	7.39	4.99	2.60	0.20
	Repayment	0.00	0.00	0.20	0.20	0.20	0.20	0.20
	Interest	0.07	0.07	0.07	0.05	0.03	0.02	0.00
	Closing balance	10.78	10.78	9.58	7.19	4.79	2.40	0.00

	Principal Repayment	0.00	0.00	1.20	2.40	2.40	2.40	2.40
	Interest	0.86	0.86	0.84	0.68	0.49	0.30	0.10

6.13 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	3	4	5	6	7	TOTAL
Profit After Tax (Net Profit)	2.72	2.86	3.03	3.20	3.36	
Depreciation	0.47	0.47	0.47	0.47	0.47	
Interest	0.84	0.68	0.49	0.30	0.10	
Total	4.04	4.01	3.99	3.97	3.94	19.95
Interest repayment	0.84	0.68	0.49	0.30	0.10	
Loan repayment	0.00	0.00	1.20	2.40	2.40	
Total	0.84	0.68	1.69	2.69	2.50	8.40
DSCR	4.79	5.91	2.37	1.47	1.58	

Average DSCR = 2.38

7.0 BREAK EVEN POINT (BEP)

(Rs. In lacs)

Year	3	4	5
A. Net sales (Rs. lakh)	8.64	8.64	8.64
B. Variable cost			
Manures & Fertilizers	0.12	0.12	0.12
Weed Control & Intercultural Operations	0.60	0.60	0.60
Harvesting	0.32	0.32	0.32
Post Harvest Operations	0.32	0.32	0.32
Distillation	1.77	1.77	1.77
Power	0.12	0.12	0.12
Miscellaneous Expenses	0.09	0.09	0.09
Total variable cost	3.33	3.33	3.33
C. Contribution (A-B)	5.31	5.31	5.31
D. Fixed & Semi-fixed Costs			
Salary	1.10	1.11	1.12
Repair & Maintenance	0.11	0.12	0.13
Interest on Term Loan	0.84	0.68	0.49
Depreciation	0.47	0.47	0.47
Total fixed cost	2.53	2.39	2.22
E. BREA KEVEN POINT	48%	45%	42%

8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7	8	9	10
CASH OUTFLOW											
Capital Expenditure	11.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	0.18	-0.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (A)	11.57	0.18	-0.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CASH INFLOW											
Profit After Tax		-1.40	-1.40	2.72	2.86	3.03	3.20	3.36	3.44	3.41	3.38
Add: Depreciation		0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Add: Interest		0.86	0.86	0.84	0.68	0.49	0.30	0.10	0.00	0.00	0.00
Add: Salvage Value											
Total (B)	0.00	-0.06	-0.06	4.04	4.01	3.99	3.97	3.94	3.91	3.88	3.85
NET FLOW (B-A)	-11.57	-0.24	-0.05	3.83	4.01	3.99	3.96	3.94	3.91	3.88	3.85

IRR = 17%

TECHNICAL CONSULTANT

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COMMERCIAL CULTIVATION ON SARPAGANDHA

1.0 INTRODUCTION

The Rauvolfia root or Serpentine root (Sarpagandha) is an important crude drug used in modern medicine. Its leaves are simple, 7.5 -10cm long and 3.5 -5 cm broad. The root is prominent, tuberous, usually branched, 0.5 to 2.6 cm diameter and upto 40 to 60 cm deep into soil. The root bark, which constitutes 40-60% of the whole root, is rich in alkaloids known for its efficacy in reducing high blood pressure and as a sedative or tranquilizing agent. The fresh root emits a characteristic acrid aroma, is very bitter in taste and the roots possess high alkaloid concentration. Reserpine is the compound/active principle used for hypertension as a life saving drug in allopathic system of medicine.

1.1 Habitat: It is an erect under shrub (woody herb) and found in scrub jungles and forest clearings growing to a height of 60-90 cm. The shrub grows wild in NE region up to an altitude of 500 m.

This project profile is for commercial cultivation of Sarpangandha with a total plantation area of 1 ha.

2.0 PACKAGE OF PRACTICES

(i) Soil & Climate: The plant grows in a wide variety of soils ranging from sandy alluvial loam to red lateritic loam with large percentage of humus and acidic in reaction. The ideal pH for this crop is from 4.6-6.5. It prefers hot humid climate, humus rich sandy loam soil and a climate with a temperature range of 10 - 30°C seems to be well suited for this plant.

(ii) Propogation: Rauvolfia can be propagated by seed and also by vegetative means like root cutting, root stumps and stem cutting. Seed propagation is the best method for commercial plantation. A healthy mother stock should be raised before hand for collection of seeds.

Seed germination is highly variable. Germination of heavy seeds during April-June after soaking them in water for 24 hours is about 20-40 % while freshly collected heavy seeds germination is highest (upto 60 %). April-May is found to be suitable for sowing seeds in nursery. The nursery is prepared by raised beds mixing with one-third of well matured FYM and leaf mould and two-third-amount medium silt-loam soil under partial shade.

Seeds are sown in April, 2-3 cms apart in rows in shallow furrows. The furrows are then covered with a fine mixture of soil and FYM and the bed should be kept moist by light watering. Germination starts after 15-20 days and continues upto 40-50 days. The nursery should be kept moist throughout the germination period. Seedlings are ready by mid June- July for transplantation.

About 6 kg seed sown during April-May in a 500-rn2 bed will be sufficient for one-hectare area.

(iii) Planting: The nursery grown seedlings of 40-50 days old which have 4-6 leaves (10- 2 cm tall, naked rooted or

in poly bags), are transplanted at spacing of 30 x 30 cm. Seedlings are carefully dugout and the taproot is cut. They are then dipped in a 0.1 % solution of fungicide before planting, to protect them against soil borne fungus causing damping off disease. Sarpagandha takes a long duration (18 months onwards) as it is a slow growing crop particularly in the initial stage. About 80,000-1,00,000 number of seedlings are required/ha as a sole crop. Plants get established well within 25-30 days after planting.

(iv) Manure & Fertilizers: FYM @ 20-25 MT/ha should be applied during land preparation. After planting N,P & K at the rate 10:60:30 kg/ha is applied as basal dose. Later two equal doses of N each of 10 kg/ ha in moist soil may be applied at 50 days and 170 days after planting.

(v) Irrigation: Rouvolfia is cultivated as a rainfed crop. However, if available 4 irrigations in summer and 2 in winter at one month interval may be applied for higher yield.

(vi) Weeding & Interculture: Weeding, cleaning, hoeing twice during rains and after rains.

Flowering and fruiting starts from 6 months onward after transplanting which is irrelevant, unless there is need to collect sufficient seeds for sale or for mass multiplication. If the plant is allowed to flower and bear fruits, these markedly depress both shoot and root growth, because a significant amount of photosynthates is utilized for the production of flowers and fruits by the plants. Therefore, defloration is recommended for better root growth and yield. For seed collection an area may be earmarked.

(vii) Harvesting & Processing: The marketable roots are generally collected 2-3 years after plantation preferably after 30 months of planting. When transplanting is done during June-July, harvesting period coincides with shedding of leaves during early autumn. At this stage, the root contains maximum concentration of total alkaloids. During harvest, the roots may be found to go up to 40 cm deep in the soil. During root harvesting, the thin roots are also collected. Care should be taken to keep the root bark intact as the bark constitutes 40-56 % of the whole root and has a higher alkaloid content. In general, during winter months plants remain dormant and is considered ideal for harvesting.

Application of a light irrigation if possible will make digging easier. After digging, the roots are cleaned, washed and cut into l 5 cm pieces for drying and storage. The dry root possesses upto 10-12 % moisture and are stored in polythene lined gunny bags in a cool dry place to protect them from mould.

(viii) Yield: Though Rauvolfia can be propagated by various methods, maximum yield of root is obtained when the propagation is done by seeds that vary from 0.1 to 0.4 kg per plant. The average yield of Rauvolfia dry root is approximately 2000-2500 kg/ha under average management when harvested at 30 months.

3.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	-
Building & Civil Works	3.17
Misc. Assets	0.85
Setting up of Nursery	0.16
Land Preparation	0.05
Transplanting of Seedlings	0.15
Preliminary & Pre-operative Expenses	0.39
Working Capital	2.82
TOTAL	7.58

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in existing farmland.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Labour quarter cum Store room (Brick wall, CGI roof, Concrete floor)	720	400	288000
Add: Electrification, etc @ 10%			28800
		TOTAL	316800
		Say (Rs. in lacs)	3.17

4.3 Misc. Assets: Details of miscellaneous assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, storage, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

4.4 Setting up of a Nursery: Details of expenses for setting up of a nursery is given below.

Target area for cultivation (in ha)	1
Quantity of seeds required for sowing in 1 ha (kg)	6
Total quantity of seeds required (kg)	6
Area required for raising seedlings in sqm (500 sqm/ ha)	500

Particulars	Unit	Qty	Rate (Rs)	Amount (Rs)
Purchase of seeds	kg	6	2000	12000
Engagement of labour for nursery land preparation	Mandays/ ha	25	200	250
Engagement of labour for planting of seeds	Mandays/ ha	75	200	750
Cost of FYM	kg/ ha	25000	0.20	250
			Sub-total	13250
Add: Maintenance for seedlings for 3 months, etc. @ 20%				2650
			TOTAL	15900
			Say (Rs. in lacs)	0.16

4.5 Land Preparation for Nursery: Details of expenses for preparation of nursery land is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for land preparation	25	200	1	5000
			Say (Rs. in lacs)	0.05

4.6 Transplanting of Seedlings: Details of expenses for transplanting of seedlings is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for transplanting of seedlings	75	200	1	15000
			Say (Rs. in lacs)	0.15

4.7 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Interest during implementation	0.09
Miscellaneous expenses	0.10
TOTAL	0.39

4.8 Working capital: Details of working capital are given below.

(Rs. in lacs)

	Amount (Rs)		
	Yr 1	Yr 2	Yr 3
Total operating expenses	1.44	1.38	1.74
Operating expenses capitalised for Yr 1 & Yr 2	2.82		

4.9 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	3.03
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	4.55
TOTAL	100%	7.58

5.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3
A. INCOME			
Yield of dry roots per annum (in kg)	0	0	22000
Price of dry roots (Rs. per kg)	80	80	80
Income from sale of oil (Rs lakh)	0.00	0.00	17.60
B. OPERATING EXPENSES			
Manures & Fertilizers	0.07	0.00	0.00
Weed Control & Intercultural Operations	0.15	0.15	0.15
Harvesting	0.00	0.00	0.08
Post Harvest Operations	0.00	0.00	0.08
Power	0.09	0.09	0.09
Salary	1.08	1.09	1.10
Repair & Maintenance	0.04	0.05	0.06
Miscellaneous Expenses	0.00	0.00	0.18
Total Operating Expenses	1.44	1.38	1.74
Less: operating expenses capitalised	1.44	1.38	0.00
Operating profit	0.00	0.00	15.86

C. FINANCIAL EXPENSES			
Depreciation	0.16	0.16	0.16
Interest on Term Loan	0.36	0.36	0.33
Expenses on nursery written off	0.05	0.05	0.05
Expenses on land preparation written off	0.02	0.02	0.02
Expenses on transplanting of seedlings written off	0.05	0.05	0.05
Net Profit	-0.64	-0.64	15.25
Net cash accruals	-0.36	-0.36	15.53
Principle repayment	0.00	0.00	4.55

6.1 Estimation of Production: Yield of dry roots is estimated as below.

Particulars	Unit	Quantity	
Yield of dry roots/hectare	kg	22000	
Area under crop	ha	1	
Total yield of dry roots	kg	22000	
	Yr 1	Yr 2	Yr 3
Schedule of harvest (Gestation period of 30 months)	0	0	1
Yield of dry roots per annum (in kg)	0	0	22000

6.2 Manures & Fertilizers: Expenses on manures & fertilizers in the 1st year is estimated as below.

Particulars	Kg/ ha	Source	Nutrient %	Kg/ha (source)	Cost/ kg of Source (Rs)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Basal dose of Nitrogen (Year1)	10	Urea	46%	22	5.50	120	1	120
Basal dose of Phosphorus (Year 1)	60	SSP	16%	375	4.00	1500	1	1500
Basal dose of Potassium (Year1)	30	MOP	60%	50	12.00	600	1	600
2nd dose of Nitrogen at 50 days (Year 1)	10	Urea	0.46	22	5.5	120	1	120
3rd dose of Nitrogen at 170 days (Year 1)	10	Urea	0.46	22	5.5	120	1	120
Application of Manures during land preparation in Year 1 (25000 kg/ha @ Rs 0.20/kg)								5000
Expenses on manures & fertilizers during Year 1 (Rs)								7459

6.3 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations per annum is estimated below.

		Rate (Rs)	Area under crop (ha)	Cost/ annum (Rs)
Engagement of labour for weed control & intercultural operations	75	200	1	15000
	Yr 1	Yr 2	Yr 3	
Number of weed control & intercultural operations per annum	1	1	1	
Expenses on weed control & intercultural operations per annum (Rs)	15000	15000	15000	

6.4 Harvesting: Expenses on harvesting is estimated below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Cost/harvest (Rs)
Engagement of labour for harvesting	40	200	1	8000
	Yr 1	Yr 2	Yr 3	
Schedule of harvest (Gestation period of 30 months)	0	0	1	
Expenses on harvest per annum (Rs)	0	0	8000	

6.5 Post Harvest Operations: Expenses on post harvest operations is estimated below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Cost/ operation (Rs)
Engagement of labour for post harvest operations	40	200	1	8000
	Yr 1	Yr 2	Yr 3	
Schedule of post harvest operations	0	0	1	
Expenses on post harvest operations per annum (Rs)	0	0	8000	

6.6 Power: Expenses on power is estimated below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/day	kwh/day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	4	0.1	0.36	8	2.88
				Power requirement per day (kwh)	5.12

Days/ annum	360
Rate/ unit (Rs)	5
Expenses on power per annum (Rs)	9212

6.7 Salary: Expenses on salary is given below.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.8 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	3.17	1%	0.03
Misc. Assets	0.85	1%	0.01
		Total	0.04

6.9 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.10 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs. in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	3.17	3.34%	0.11
Misc. Assets	0.85	6.23%	0.05
		Total	0.16

6.11 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 3 years including moratorium period of 33 months with equal monthly instalments. The details of calculation are given below.

(Rs. in lacs)

Month	Year Ending March 31	1	2	3
Month 1	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest (8%)	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 2	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 3	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 4	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 5	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 6	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 7	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 8	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 9	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 10	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	3.03
Month 11	Opening balance	4.55	4.55	3.03
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.02
	Closing balance	4.55	4.55	1.52
Month 12	Opening balance	4.55	4.55	1.52
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.01
	Closing balance	4.55	4.55	0.00

	Principal Repayment	0.00	0.00	4.55
	Interest	0.36	0.36	0.33
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 7	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 8	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 9	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	0.00
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	4.55
Month 10	Opening balance	4.55	4.55	4.55
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.03
	Closing balance	4.55	4.55	3.03
Month 11	Opening balance	4.55	4.55	3.03
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.02
	Closing balance	4.55	4.55	1.52
Month 12	Opening balance	4.55	4.55	1.52
	Repayment	0.00	0.00	1.52
	Interest	0.03	0.03	0.01
	Closing balance	4.55	4.55	0.00
	Principal Repayment	0.00	0.00	4.55
	Interest	0.36	0.36	0.33

6.12 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	TOTAL
Profit After Tax (Net Profit)	-0.64	-0.64	15.25	
Depreciation	0.16	0.16	0.16	
Interest	0.36	0.36	0.33	
Total	-0.12	-0.12	15.74	15.50
Interest	0.36	0.36	0.33	
Loan repayment	0.00	0.00	4.55	
Total	0.36	0.36	4.88	5.61
DSCR	-0.33	-0.33	3.22	

Average DSCR = 2.76

7.0 BREAK EVEN POINT (BEP)

(Rs. In lacs)

Year	1	2	3	Total
A. Net sales (Rs. lakh)	0.00	0.00	17.60	17.60
B. Variable cost				
Manures & Fertilizers	0.07	0.00	0.00	0.07
Weed Control & Intercultural Operations	0.15	0.15	0.15	0.45
Harvesting	0.00	0.00	0.08	0.08
Post Harvest Operations	0.00	0.00	0.08	0.08
Power	0.09	0.09	0.09	0.28
Miscellaneous Expenses	0.00	0.00	0.18	0.18
			Total variable cost	1.14
C. Contribution (A-B)				16.46
D. Fixed & Semi-fixed Costs				
Salary	1.08	1.09	1.10	3.27
Repair & Maintenance	0.04	0.05	0.06	0.15
Interest on Term Loan	0.36	0.36	0.33	1.06
Depreciation	0.16	0.16	0.16	0.48
			Total fixed cost	4.96
E. BREAK EVEN POINT				30%

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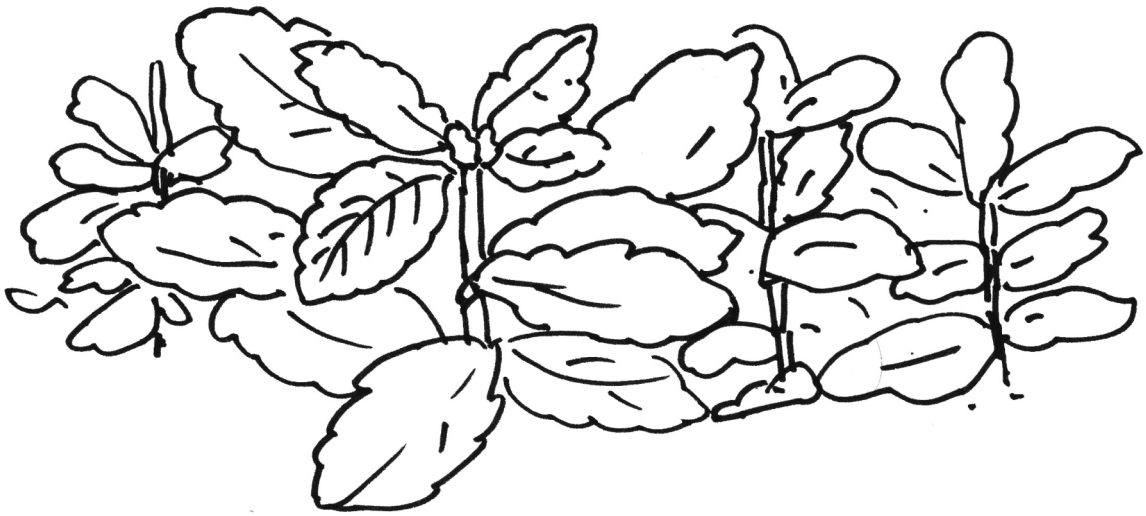
COMMERCIAL CULTIVATION OF STEVIA



1.0 INTRODUCTION

Stevia is a subtropical perennial plant that produces sweet steviol glycosides in the leaves which is also known as 'Cheeni Tulsi' or 'Mou Tulsi'. Plants grown at higher latitudes actually have a higher percentage of sweet glycosides. The plant can be utilized as a source for production of a natural sweetener (food), as a source of chlorophyll (non-food, Oral-hygiene product, medicine) as a source of phytosterols (Non-food, Medicine: raw stuff for the synthesis of oral contraceptives, cholesterol suppressing medicine, antitumour activity against prostrate tumours and activity against rheumatism), the sweetener can be converted into gibberellins by fermentation (Non-food-Agrochemicals), the vegetative residue can be used as animal feed and the stalks can be used as a source of cellulose (Non-food: Cellulose industry).

Its medicinal uses include regulating blood sugar, preventing hypertension, treatment of skin disorders and prevention of tooth decay. The compound obtained from stevia is considered to be the best alternate source for diabetes. The added value for this new crop can go up to a considerable extent.

This project profile is for commercial cultivation of Stevia with cultivation area of 3 hectares.

2.0 MARKET POTENTIAL

The market opportunity for Stevia is good. Statistics indicate that in some countries upto 30% of their sugar has been replaced by stevioside-like sweetness products.

3.0 PACKAGE OF PRACTICES

(i) Soil: Stevia prefers a well-drained fertile sandy loam or loam soil, high in organic matter with ample supply of water. It prefers acidic to neutral (pH 6-7) soil for better growth. It requires a consistent supply of moisture, but not waterlogged. Too much soil moisture can cause rot.

(ii) Climate: It is a semi-humid subtropical plant that shows higher leaf production under high light intensity and warm temperature. Day length is more critical than light intensity. Long spring and summer days favour leaf growth. Short days trigger blossoming. Stevia prefers partial shade during considerable summer sunshine.

(iii) Propagation: Stevia is usually propagated by stem cuttings, which root easily. The sweetness in leaves varies with different varieties. Therefore, for propagation cutting should be obtained from a source, which is high in stevioside and low in associated bitterness. Rooting can be enhanced by using commercial rooting hormones. Cutting should be 2-4 inches long, from leaf axils of

current year growth with atleast two leaf buds above ground. All the lower leaves are removed keeping 2or 3 small leaves. Treatment with paclobutrazol @ 100 ppm has been found to induce the root initiation in short time. Effective outcome of this treatment can be obtained when the cuttings are planted during the month of February-March. Propagation can be done in other period also with varying success.

(iv) Land Preparation: Land is either disced and /or harrowed twice to prepare a fairly smooth, firm-planting surface. Around 50 MT of FYM/ha has to be applied as a basal dressing during the last ploughing to incorporate the manure with the soil. With proper drainage and irrigation channels the field is divided into plots of convenient size.

Forming raised beds is the most economical way to grow Stevia. The raised bed should be of 15 cm in height and 60 cm in width. The distance between two rows should be 40 cm and that between each plant 23 cm. This would give a plant population of around 75,000 per hectare.

(v) Planting: March to mid May gives better results. Immediatly after planting, one irrigation is necessary. The concentration of stevioside in the leaves increases when the plants are grown under long day condition where vegetative period is longer and steviol glycoside yields will be higher.

(vi) Irrigation: It needs irrigation, as Stevia cannot stand drought. Sprinkler irrigation (micro sprinklers) is found to be advantageous since the herb is highly sensitive to water stress and requires frequent light irrigation. During summer, irrigation at 3-5 days interval gives best results.

(vii) Manures & Fertilizers: Under average condition application of FYM @ 50 t/ha and fertilizers N-60 kg, P205 30 kg and K20 45 kg/ha is recommended. N is applied in three splits once at basal and remaining two applications after first and second cutting. Stevia plants prefer low nitrogen, but high level of phosphorus and potassium. Slow release nitrogen sources are better due to requirement of low level of N and steady release of N from source. Sometimes stevia shows the symptoms of boron deficiency, which leads to leaf spot and that can be rectified by spraying Borax 6 %. Since the feeder roots tend to be quite near the surface, addition of compost for extra nutrients is beneficial.

(viii) Harvesting: Time of harvesting depends on land type, variety and growing season. The first harvest of the crop can be had in four months after planting and subsequent harvest once every 3 months. Generally it can be scheduled for mid to late September when plants are 50-70 cm in height. Short days induce flowering. Optimum yield (biomass) and stevioside quality and quantity is best obtained just before flowering. The easiest harvesting technique is to cut the branches off with pruning shears before stripping the leaves. The tips of the stems can be clipped off and added to harvest yield, as they contain as much stevioside as do the leaves. On an average three commercial harvests can be obtained per year.

It is better to cut the plants leaving about 10 cm stem portion from the ground. This will facilitate new flushes to emerge, which can be harvested as the next crop. For domestic use leaves may be used fresh for tea or may be combined with mint leaves.

(ix) Drying: Immediately after harvest the herb is dried. This can be accomplished on a screen or net. The freshly harvested plants can be hung upside down and dried in the shade. It can also be dried using simple drying racks inside transparent poly house or transparent glass roofing or by passing dry air just above room temperature.

Drying of the stem and soft green leaf material is completed immediately after harvesting utilizing a drying wagon or a kiln or done naturally in case of large-scale production. Depending on weather conditions and density of loading, it generally takes 24 to 48 hours to dry stevia at 400 to 500 C. The drying process does not require excessive heat; more important is good air circulation. On a moderately warm fall day, stevia can be quickly dried in the full sun in about 12 hours. (Longer drying time will lower the stevioside content of the final product). A home dehydrator can also be used, although sun drying is the preferred method.

After adequate drying, the leaves are stripped of the stems/ twigs and packed and stored in cool, dry place. For large-scale commercial production artificial drying and threshing of the dry herbs to separate leaves may be employed.

(x) Yield: About 15000kg/ha of green herb is obtained which on drying gives about 4166 kg/ha. After separating stems this yields about 3000 kg/ha in the first year. Yield goes on decreasing from 3 year of planting and hence terminated.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land & Site Development	-
Building & Civil Works	3.67
Misc. Assets	0.85
Cost of Seedlings	4.50
Land Preparation	0.15
Planting	0.45
Preliminary & Pre-operative Expenses	0.42
Working Capital	1.90
TOTAL	11.94

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in existing farmland.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Labour quarter cum Store room (Brick wall, CGI sheet roof, concrete floor)	720	400	288000
Drying Shed (Open shed with CGI sheet roof)	1000	50	50000
Add: Electrification, etc @ 10%			28800
		TOTAL	366800
		Say (Rs. in lacs)	3.67

4.3 Misc. Assets: Details of miscellaneous assets are given below.

Particulars	Quantity	Rate (Rs)	Amount (Rs)
Water supply system (STW boring, storage tank, 3 hp pump set, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	85000
		Say (Rs. in lacs)	0.85

4.4 Cost of Seedlings: Details of expenses for purchase of seedlings is given below.

Target area for cultivation (in ha)	3
No. of seedlings required per ha	75000
Total No. of seedlings required	225000
Price of a seedling (Rs)	2
Total cost (Rs)	450000
Say (Rs. in lacs)	4.50

4.5 Land Preparation: Details of expenses for land preparation is given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for land preparation	25	200	3	15000
			Say (Rs. in lacs)	0.15

4.6 Planting: Details of expenses for planting are given below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Amount (Rs)
Engagement of labour for planting of seedlings	75	200	3	45000
			Say (Rs. in lacs)	0.45

4.7 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.20
Interest during implementation	0.12
Miscellaneous expenses	0.10
TOTAL	0.42

4.8 Working Capital: Details of working capital are given below.

Working capital calculation for Yr 1	Period (Month)	Amount (Rs lacs)
Manures & Fertilizers	3	0.09
Weed control & Intercultural Operations	3	0.11
Harvesting	3	0.18
Post Harvest Operations	3	0.18
Power	3	0.02
Salary	3	0.27
Finished goods	1	0.30
Receivables	1	0.75
TOTAL		1.90
Working capital margin in Yr 1 (100%)	1.90	

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	4.78
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	7.17
TOTAL	100%	11.94

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3
A. INCOME			
Yield of dry leaves per annum (in kg)	9000	9000	9000
Price of dry leaves (Rs. per kg)	100	100	100
Income from sale of spikes (Rs lakh)	9.00	9.00	9.00
B. OPERATING EXPENSES			
Manures & Fertilizers	0.36	0.06	0.06
Weed control & Intercultural Operations	0.45	0.45	0.45
Harvesting	0.72	0.72	0.72
Post Harvest Operations	0.72	0.72	0.72
Power	0.09	0.09	0.09
Salary	1.08	1.08	1.08
Repair & Maintenance	0.04	0.05	0.06
Miscellaneous Expenses	0.09	0.09	0.09
Total Operating Expenses	3.55	3.26	3.27
Less: operating expenses capitalised	1.90	0.00	0.00
Operating profit	7.35	5.74	5.73

C. FINANCIAL EXPENSES

Depreciation	0.18	0.18	0.18
Interest on Term Loan	0.57	0.39	0.14
Expenses on purchase seedlings written off	1.50	1.50	1.50
Expenses on land preparation written off	0.05	0.05	0.05
Expenses on planting written off	0.15	0.15	0.15
Net Profit	4.91	3.47	3.71
Net cash accruals	6.78	5.35	5.59
Principle repayment	0.80	3.19	3.19

6.1 Estimation of Production: Production of dry leaves is estimated as below.

Particulars	Unit	Quantity	
Yield of fresh herbs/ha/harvest	kg	5000	
Area under crop	ha	3	
Total yield	kg	15000	
Recovery of dry leaves from fresh herbs	percent	20%	
Yield of dry leaves/harvest	kg	3000	
	Yr 1	Yr 2	Yr 3
No. of harvests/annum (3 year crop cycle & gestation period of 3 months)	3	3	3
Yield of dry leaves per annum (in kg)	9000	9000	9000

6.2 Manures & Fertilizers: Expenses on manures & fertilizers is estimated as below.

Particulars	Kg/ ha	Source	Nutrient %	Kg/ha (source)	Cost/ kg of Source (Rs)	Cost/ ha (Rs)	Area under crop (ha)	Amount (Rs)
Application of Nitrogen (Basal dose)	20	Urea	46%	43	5.50	239	3	717
Application of Phosphorus	30	SSP	16%	188	4.00	750	3	2250
Application of Potassium	45	MOP	60%	75	12.00	900	3	2700
Application of Nitrogen (2nd dose)	20	Urea	46%	43	5.50	239	3	717
Application of Nitrogen (3rd dose)	20	Urea	46%	43	5.50	239	3	717
						Yr 1	Yr 2	Yr 3
Annual schedule of application of fertilizers (Nos)						1	1	1
Expenses on fertilizers/annum (Rs)						6385	6385	6385
Application of Manures during land preparation in Year 1 (50000 kg/ ha @ Rs 0.20/ kg)						30000		
Expenses on manures & fertilizers/annum (Rs)						36386	6386	6386

6.3 Weed Control & Intercultural Operations: Expenses on weed control & intercultural operations is estimated as below.

Particulars	Mandays/ha	Rate (Rs)	Area under crop (ha)	Cost/annum (Rs)
Engagement of labour for weed control & intercultural operations	75	200	3	45000
		Yr 1	Yr 2	Yr 3
Number of weed control & intercultural operations per annum		1	1	1
Expenses on weed control & intercultural operations per annum (Rs)		45000	45000	45000

6.4 Harvesting: Expenses on harvesting is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Cost/harvest (Rs)
Engagement of labour for harvesting	40	200	3	24000
		Yr 1	Yr 2	Yr 3
No. of harvests/annum (3 year crop cycle & gestation period of 3 months)		3	3	3
Expenses on harvest per annum (Rs)		72000	72000	72000

6.5 Post Harvest Operations: Expenses on post harvest operations is estimated as below.

Particulars	Mandays/ ha	Rate (Rs)	Area under crop (ha)	Cost/operation (Rs)
Engagement of labour for post harvest operations	40	200	3	24000
		Yr 1	Yr 2	Yr 3
No. of post harvest operations/annum		3	3	3
Expenses on post harvest operations per annum (Rs)		72000	72000	72000

6.6 Power: Expenses on power is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/day	kwh/day
3 HP Pumpset	1	2.24	2.24	1	2.24
General Lighting	4	0.10	0.36	8	2.88
Power requirement/day (kwh)					5.12

Days/annum	360
Rate per unit (Rs)	5
Expenses on power per annum (Rs)	9212

6.7 Salary: Expenses on salary is estimated as given below.

Particulars of Employee	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Total			108000

6.8 Repairs & Maintenance: Expenses on repairs & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repairs & maintenance will increase @ 25% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	3.67	1%	0.04
Misc. Assets	0.85	1%	0.01
Total			0.05

6.9 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.10 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	3.67	3.34%	0.12
Misc. Assets	0.85	6.23%	0.05
Total			0.18

6.11 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 3 years including moratorium period of 33 months with equal monthly instalments. The details of calculation are given below.

(Rs. in lacs)

Month	Year	1	2	3
Month 1	Opening balance	7.17	6.37	3.19
	Repayment	0.00	0.27	0.27
	Interest (8%)	0.05	0.04	0.02
	Closing balance	7.17	6.11	2.92
Month 2	Opening balance	7.17	6.11	2.92
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.04	0.02
	Closing balance	7.17	5.84	2.65
Month 3	Opening balance	7.17	5.84	2.65
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.04	0.02
	Closing balance	7.17	5.57	2.39
Month 4	Opening balance	7.17	5.57	2.39
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.04	0.02
	Closing balance	7.17	5.31	2.12
Month 5	Opening balance	7.17	5.31	2.12
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.04	0.01
	Closing balance	7.17	5.04	1.86
Month 6	Opening balance	7.17	5.04	1.86
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.03	0.01
	Closing balance	7.17	4.78	1.59
Month 7	Opening balance	7.17	4.78	1.59
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.03	0.01
	Closing balance	7.17	4.51	1.33
Month 8	Opening balance	7.17	4.51	1.33
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.03	0.01
	Closing balance	7.17	4.25	1.06
Month 9	Opening balance	7.17	4.25	1.06
	Repayment	0.00	0.27	0.27
	Interest	0.05	0.03	0.01
	Closing balance	7.17	3.98	0.80
Month 10	Opening balance	7.17	3.98	0.80
	Repayment	0.27	0.27	0.27
	Interest	0.05	0.03	0.01
	Closing balance	6.90	3.72	0.53
Month 11	Opening balance	6.90	3.72	0.53
	Repayment	0.27	0.27	0.27
	Interest	0.05	0.02	0.00
	Closing balance	6.64	3.45	0.27
Month 12	Opening balance	6.64	3.45	0.27
	Repayment	0.27	0.27	0.27
	Interest	0.04	0.02	0.00
	Closing balance	6.37	3.19	0.00

	Principal Repayment	0.80	3.19	3.19
	Interest	0.57	0.39	0.14

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	TOTAL
Profit After Tax (Net Profit)	4.91	3.47	3.71	
Depreciation	0.18	0.18	0.18	
Interest	0.57	0.39	0.14	
Total	5.65	4.04	4.03	13.71
Interest	0.57	0.39	0.14	
Loan repayment	0.80	3.19	3.19	
Total	1.36	3.58	3.32	8.27
DSCR	4.14	1.13	1.21	

Average DSCR = 1.66

8.0 BREAK EVEN POINT (BEP)

(Rs. In lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	9.00	9.00	9.00
B. Variable cost			
Manures & Fertilizers	0.36	0.06	0.06
Weed control & Intercultural Operations	0.45	0.45	0.45
Harvesting	0.72	0.72	0.72
Post Harvest Operations	0.72	0.72	0.72
Power	0.09	0.09	0.09
Miscellaneous Expenses	0.09	0.09	0.09
Total variable cost	2.44	2.14	2.14
C. Contribution (A-B)	6.56	6.86	6.86
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.08	1.08
Repair & Maintenance	0.04	0.05	0.06
Interest on Term Loan	0.57	0.39	0.14
Depreciation	0.18	0.18	0.18
Total fixed cost	1.86	1.69	1.45
E. BREAK EVEN POINT	28%	25%	21%

TECHNICAL CONSULTANT

(a) NEDFi R & D Centre,
Khetri, Kamrup,
Assam-782403

FLORICULTURE

1.0 INTRODUCTION

In recent times, India has witnessed a surge of commercial investment in the field of floriculture. Floriculture is an industry which has tremendous potential in India and is emerging as an important commercial crop. A lot of importance has been given to this sector due to its multiple uses, floricultural crops are highly labour intensive and have the capacity to generate more direct and indirect employment both in rural areas as well as in urban areas. Flowers are a token of love and tenderness for which they are in demand on various occasions/functions. Flowers are also used for extracting essential oils, which are used in perfumes. Many flowers have medicinal values and hence are used in Ayurveda. In India, a large numbers of flowers are grown in different parts according to soil and climate and also according to the preferences of the people for specific type of flowers. India can emerge as a major producer, exporter of flowers and allied materials as it has several advantages such as favourable climate to grow different flowers throughout the year, cheap labour, rapid urbanization, huge scientific and managerial talent and strategically located for exports, good demand for this natural product, eco-friendly product, having prolonged shelf life particularly the modern cut-flowers which are widely accepted globally.

The north eastern region is also full of natural flora and fauna due to its distinctive weather and agro climatic condition. There exist tremendous potentiality to grow a variety of floricultural products in the region. The project is an eco-friendly venture, enhances the greenery of the waste/jhum lands, reduces pressure on forest resources. Because of their specialized nature and limited production, flower markets are concentrated in a few locations across the country. Large trading centres for floriculture are Pune and Mumbai. Export market of flowers is singularly concentrated in Bangalore. In north India, Delhi is a big trading centre of flowers.

This project profile is for raising and harvesting of Rose, Marigold, Jasmine, Tuberose and Chrysanthemum covering 5 Acres of land.

2.0 MARKET POTENTIAL

At present, flowers are being extensively used in various places. The testimony of this is mushrooming growth of florist centres in urban areas, its prosperity and demand. Cut-flowers segment has marriage halls, hotels and corporate offices as its institutional client base. Of these, marriage halls provide the largest share of business. Hotels and corporate offices have a regular level of demand on a daily basis.

The general consumption and use of flowers from various segments increased as a result of improvement in rising income levels or general level of well being in the country and increased affluence particularly among middle class and this is likely to increase further. This is evident from emerging strong domestic market in recent years, which also indicates better prospects. Domestic markets for cut flowers are witnessing marked pick up. In recent years, the elections have become a regular phenomenon. The uses of modern flowers (Roses) in these election campaigns

become more popular than the traditional flowers.
The demand for cut-flowers in Cities has increased as the culture of presenting bouquets on all occasions is spreading. Florist shops have sprung up in cities like Mumbai, Chennai, Kolkotta, Delhi, Hyderabad, Chandigarh, Bangalore and Pune are making brisk business throughout the year. The florist stalls in many parts of the country, which undertakes attractive flower arrangement in the corporate offices, hotels, marriage halls, welcoming of guests and passengers with flowers and bouquets in airports and meetings have become the practice in recent years. The presenting of bouquets to the patients for speedy recovery instead of earlier practice of fruits is the order of the day in city hospitals. The presence of florist shops near hospitals is a good indicator of this. Even in marriages the couples are blessed with bouquets rather than the presenting gifts.

3.0 PROCESS DETAILS:

The main process steps involved are:

a) Choosing a site: Most cut flowers prefer a location in full sun throughout the entire day.The field and soil should be well drained. Wind protection is highly desirable for all plant.

b) Preparing the Bed: Plants should be grown in beds raised 4-6 inches to maximize drainage. Poorly drained soil should be corrected by placing drain lines 10-12 inches deep under the bed.

c) Green House: Greenhouses are framed or inflated structures covered with transparent or translucent material large enough to grow crops under partial or fully controlled environmental conditions to get optimum growth and productivity. Green house envisaged for project will be basically shedding covers to safeguard the plants from excessive rains as well as in few cases from excessive sun. The Green house shed will be made by using local bamboo and sal wood for prop-up and trusses. The top cover will be made by using double ultraviolet stabilized poly films or shading net.

d) Choosing ideal crops: Crops must be selected keeping mind the following conditions.

a. Must be low cost of production – materials & labour
b. High value and unlimited demand
c. High production per sq. ft. of bed space
d. Long productive life

i. Appropriate time to plant: Planting must be taken depending on target market and on plant classification-whether it is an annuals, biennials or perennials.

ii. How to Plant: In general, transplants should be planted shallow with the roots placed just below the soil surface.

iii. Watering: To maintain floral quality and peak production, the plants must be watered frequently, sometimes daily with some soil types.

iv. Fertilizer: Before initiating any fertilizer programme, testing soil for getting nutrient content is most essential. The application of fertilizer should coincide with crop need.

v. Weed Control: Weeds must be controlled in field production of cut flowers. Competition with weeds reduces the quality and quantity of floral production.

e) Insect Control: The ideal approach is a preventative programme, control insects early, when they are first detected.

f) Disease Control: Foliar fungus diseases are the most serious disease problem on cut flowers.

g) Harvest: Flowers should be harvested at the peak perfection, the peak of perfection is when the flower is showing its best colour and form and last the longer.

h) Post harvest: After flowers are removed from the field and placed in the packing shed, the stems should be cut under water.

i) Pulsing: pulsing is a chemical treatment of flower to prolong the vase life.

j) Marketing & Selling: Flowers can be marketed to a flower wholesaler, a retail florist or directly to the public at a farmers market or farm market.

4.0 COST OF THE PROJECT:

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development (Own Land/On Lease Hold)	**3.64**
Building & Civil Works	**12.02**
Plant & Machinery	**2.70**
Cost of Seed/Planting Material	**0.09**
Transplanting of Seedlings	**0.35**
Pre-operative expenses	**1.97**
Working capital	**3.40**
TOTAL	**24.17**

4.1 Land & Site Development: Details of land & site development are given below.

Total Land under Cultivation - 5 Acres

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Land Development and Fencing	20235	18	364230
		Say (Rs. in lacs)	**3.64**

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sq Ft.	Rate (Rs)	Amount (Rs)
Green House Construction	4000	225	900000
Office cum Store House	100	1200	120000
Drainage and Sewerage	LS	LS	125000
		Sub total	**1145000**
Add: Electrification, water supply and sanitation @ 5%			57250
		TOTAL	**1202250**
		Say (Rs. in lacs)	**12.02**

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
2000 Litres Capacity Overhead Water Reservoir, 3 HP Diesel Pump Set, Pipings and Fittings	1	1,25,000	125000
Misc. Tools, Equipments and Assets	LS	–	100000
		Sub total	**225000**
Add: Installation, transportation, etc @ 20%			45000
		TOTAL	**270000**
		Say (Rs. in lacs)	**2.70**

4.4 Cost of Planting Material: Details of cost are given below.

Particulars	Amount (Rs)
Seed & Planting Material of Rose	2700
Seed & Planting Material of Marigold	1000
Seed & Planting Material of Jasmine	1000
Seed & Planting Material of Tuberose	2800
Seed & Planting Material of Chrysanthemum	1500
	9000
Say (Rs. In Lacs)	**0.09**

4.5 Transplanting of Seedlings: Cost of transplantation is given below.

Particulars	Mandays/ Acre	Rate (Rs)	Area under crop (Acres)	Amount (Rs)
Engagement of labour for transplanting of seedlings	35	200	5	35000
			Say (Rs. in lacs)	**0.35**

4.6 Preliminary & pre-operative expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Interest during implementation (4 months)	0.49
Interest during gestation period	1.48
TOTAL	**1.97**

4.7 Working capital: Details of working capital are given below.

(Rs. in lacs)

(Gestation period of 12 months)	Period (Month)	Margin (%)	Total (Rs)	Bank (Rs)	Margin (Rs)
Work in progress	12	40%	7.19	4.31	2.87
Finished goods	1	40%	0.60	0.36	0.24
Receivables	1	40%	0.71	0.43	0.29
		TOTAL	**8.50**	**5.10**	**3.40**

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	**40%**	**9.67**
B. Subsidy from Central/State Govt.	**-**	
DEBT		
Term Loan from Banks/Financial Institutions	**60%**	**14.50**
TOTAL	**100%**	**24.17**

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (Kg/annum)	**9500**	**18350**	**22800**	**32250**	**32250**	**32250**	**32250**
Average Price of Flowers (Rs/Kg)	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Total income/annum (In Lacs)	**8.55**	**16.52**	**20.52**	**29.03**	**29.03**	**29.03**	**29.03**
B. OPERATING EXPENSES							
Manures and Fertilisers	0.94	0.00	0.00	0.00	0.00	0.00	0.00
Operational Expenses	0.39	0.00	0.00	0.00	0.00	0.00	0.00
Overhead Expenses	0.86	0.88	0.89	0.91	0.93	0.95	0.97
Power & fuel	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Salary	4.68	4.70	4.73	4.75	4.77	4.80	4.82

Repair & Maintenance	0.17	0.18	0.18	0.18	0.19	0.19	0.20
Other Expenses	0.03	0.05	0.06	0.09	0.09	0.09	0.09
Total Operating Expenses	**7.19**	**5.92**	**5.98**	**6.05**	**6.10**	**6.14**	**6.19**
Operating profit	**1.36**	**10.59**	**14.54**	**22.97**	**22.93**	**22.88**	**22.83**
C. FINANCIAL EXPENSES							
Depreciation	0.54	0.54	0.54	0.54	0.54	0.54	0.54
Interest on Term Loan	1.16	1.05	0.82	0.59	0.36	0.13	0.00
Expenses on transplanting of seedlings written off	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Net Profit	**-0.37**	**8.96**	**13.14**	**21.80**	**21.99**	**22.18**	**22.25**
Net cash accruals	**0.17**	**9.50**	**13.68**	**22.35**	**22.53**	**22.72**	**22.80**
Principal Repayment	0.00	2.90	2.90	2.90	2.90	2.90	0.00

6.1 Production capacity: Total production of flowers at various years is estimated as below.

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
	In Kg Per Annum						
Rose	500	850	1050	1500	1500	1500	1500
Marigold	2500	5000	6250	8750	8750	8750	8750
Jasmine	750	2000	2500	3500	3500	3500	3500
Tuberose	750	2000	2500	3500	3500	3500	3500
Chrysanthemum	5000	8500	10500	15000	15000	15000	15000
	9500	**18350**	**22800**	**32250**	**32250**	**32250**	**32250**

6.2 Manures and fertilisers: Total expenses on Manures and fertilisers on first year is estimated as below.

Farm Yard Manure	19525
Fertilisers	36745
Plant Protection Chemicals	12000
Fertilizer Cost	16000
Ploy-sheet and Other Consumables	10000
Expenses on Manures during First Year (In Rs.)	**94270**

6.3 Power & Utility: Total expenses on power & utility at 100% capacity utilization is estimated as below.

A. Expenses on power

Particulars	Quantity	Power (Kw)	Total (Kw)
General Lighting	5	0.10	0.50
No. of hrs/day			8
No. of days/year			300
Annual power requirement (kwh)			1200
Rate per unit (Rs)			3.50
Amount (Rs.)			4200
B. Expenses on Diesel required for diesel pump set			
No. of days/annum		50	
No. of hrs/day		3	
Total hrs/annum		150	
Diesel consumption (liters/hr)		1	
Total consumption of diesel/annum		150	
Diesel Price per litre (Rs)		50	
Amount (Rs)		7500	
Expenses on power and utility per annum (Rs)		**11700**	

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager	1	10000	120000
Horticulture Technician	1	7000	84000
Skilled Workers	2	5000	120000
Unskilled Labours	4	3000	144000
Expenses on salary on 1st year (Rs)			**468000**

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	12.02	1.00%	0.12
Plant & Machinery	2.7	2.00%	0.05
Expenses on repair & maintenance on 1st year (Rs.)			**0.17**

6.6 Other Expenses: Other expenses have been assumed at 0.3% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	12.02	3.34%	0.40
Plant & Machinery	2.70	5.28%	0.14
TOTAL			**0.54**

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8.00%. Duration of Loan repayment has been considered for a period of 6 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lac)

Month	Year	1	2	3	4	5	6
Month 1	Opening balance	14.50	14.50	11.60	8.70	5.80	2.90
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest (8.00%)	0.10	0.10	0.08	0.06	0.04	0.02
	Closing balance	**14.50**	**14.26**	**11.36**	**8.46**	**5.56**	**2.66**
Month 2	Opening balance	14.50	14.26	11.36	8.46	5.56	2.66
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.10	0.08	0.06	0.04	0.02
	Closing balance	**14.50**	**14.02**	**11.12**	**8.22**	**5.32**	**2.42**
Month 3	Opening balance	14.50	14.02	11.12	8.22	5.32	2.42
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.09	0.07	0.05	0.04	0.02
	Closing balance	**14.50**	**13.78**	**10.88**	**7.98**	**5.08**	**2.18**
Month 4	Opening balance	14.50	13.78	10.88	7.98	5.08	2.18
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24

	Interest	0.10	0.09	0.07	0.05	0.03	0.01
	Closing balance	**14.50**	**13.54**	**10.64**	**7.74**	**4.83**	**1.93**
Month 5	Opening balance	14.50	13.54	10.64	7.74	4.83	1.93
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.09	0.07	0.05	0.03	0.01
	Closing balance	**14.50**	**13.29**	**10.39**	**7.49**	**4.59**	**1.69**
Month 6	Opening balance	14.50	13.29	10.39	7.49	4.59	1.69
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.09	0.07	0.05	0.03	0.01
	Closing balance	**14.50**	**13.05**	**10.15**	**7.25**	**4.35**	**1.45**
Month 7	Opening balance	14.50	13.05	10.15	7.25	4.35	1.45
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.09	0.07	0.05	0.03	0.01
	Closing balance	**14.50**	**12.81**	**9.91**	**7.01**	**4.11**	**1.21**
Month 8	Opening balance	14.50	12.81	9.91	7.01	4.11	1.21
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.09	0.07	0.05	0.03	0.01
	Closing balance	**14.50**	**12.57**	**9.67**	**6.77**	**3.87**	**0.97**
Month 9	Opening balance	14.50	12.57	9.67	6.77	3.87	0.97
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.08	0.06	0.05	0.03	0.01
	Closing balance	**14.50**	**12.33**	**9.43**	**6.53**	**3.63**	**0.73**
Month 10	Opening balance	14.50	12.33	9.43	6.53	3.63	0.73
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.08	0.06	0.04	0.02	0.00
	Closing balance	**14.50**	**12.09**	**9.19**	**6.28**	**3.38**	**0.48**
Month 11	Opening balance	14.50	12.09	9.19	6.28	3.38	0.48
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.08	0.06	0.04	0.02	0.00
	Closing balance	**14.50**	**11.84**	**8.94**	**6.04**	**3.14**	**0.24**
Month 12	Opening balance	14.50	11.84	8.94	6.04	3.14	0.24
	Repayment	0.00	0.24	0.24	0.24	0.24	0.24
	Interest	0.10	0.08	0.06	0.04	0.02	0.00
	Closing balance	**14.50**	**11.60**	**8.70**	**5.80**	**2.90**	**0.00**
Principal Repayment		**0.00**	**2.90**	**2.90**	**2.90**	**2.90**	**2.90**
Interest		**1.16**	**1.05**	**0.82**	**0.59**	**0.36**	**0.13**

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3
Profit After Tax (Net Profit)	-0.37	8.96	13.14
Depreciation	0.54	0.54	0.54
Interest	1.16	1.05	0.82
Total	**1.33**	**10.56**	**14.50**
Interest	1.16	1.05	0.82
Loan repayment	0.00	2.90	2.90
Total	**1.16**	**3.95**	**3.72**
DSCR	**1.15**	**2.67**	**3.90**

Average DSCR = 2.57

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

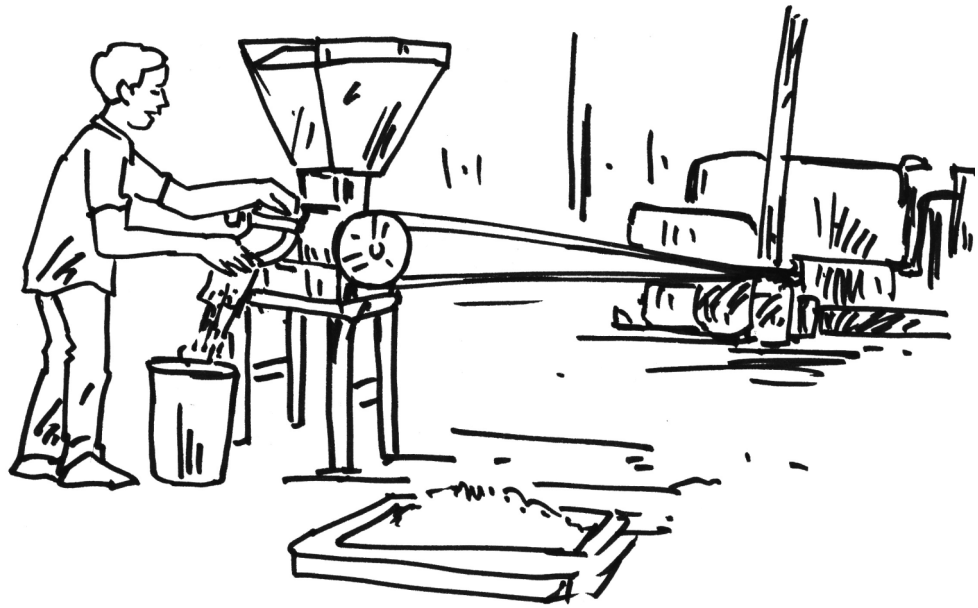
Year	1	2	3
A. Net sales	**8.55**	**16.52**	**20.52**
B. Variable cost			
Manures and Fertilisers	0.94	0.00	0.00
Operational Expenses	0.39	0.00	0.00
Overhead Expenses	0.86	0.88	0.89
Power & utility	0.12	0.12	0.12
Other expenses	0.03	0.05	0.06
Total variable cost	**2.33**	**1.04**	**1.07**
C. Contribution (A-B)	**6.22**	**15.47**	**19.45**
D. Fixed & Semi-fixed Costs			
Salary	4.68	4.70	4.73
Repair & maintenance	0.17	0.18	0.18
Interest on Term Loan	1.16	1.05	0.82
Depreciation	0.54	0.54	0.54
Total fixed cost	**6.56**	**6.48**	**6.27**
E. BREAK EVEN POINT	**105.47%**	**41.88%**	**32.26%**

BEP on 3rd Year= 32.26%

TECHNICAL CONSULTANT

(a) NEDFi R & D Centre,
Khetri, Kamrup,
Assam-782403

RICE MILL



1.0 INTRODUCTION

Rice is the staple food for 65% of the population in India. It is the largest consumed calorie source among the food grains. With a per capita availability of 73.8 kg it meets 31% of the total calorie requirement of the population. India is the second largest producer of rice in the world next to China. The all India area, production and yield of rice in the year 2010-11 was 36.95 million hectares, 80.41 million tonnes and 2177 kg/ha respectively. In India paddy occupies the first place in both area and production.

India is also one of the leading exporters of rice in the world market. Indian Basmati Rice has been favorite among international rice buyers.This provides us with ample opportunity for development of rice based value-added products for earning more foreign exchange. Apart from rice milling, processing of rice bran for oil extraction is also an important agro processing activity for value addition, income and employment generation.

This project profile is for setting up of a 800 MT capacity Mini Rice Mill with the objective of buying paddy directly from the farmers during the production season and sale them throughout the year to bulk buyers.

2.0 MARKET POTENTIAL

The mini rice mill gives the same yield as a modern rice mill. Rice being the staple food for the majority population, no problem is envisaged in marketing. Besides, the mill can be utilised as a service unit for custom milling. Rice bran, which is a by-product, is a source of valuable edible oil. The compactness of the unit, its low cost and above advantages enable installation of a number of units in all the paddy growing areas and should result in significant cost advantage to mini rice mill owners.

The demand for any food product is always there particularly if it is a regular diet item like Rice or wheat. It is an essential for survival. It is consumed by all the members of the population may be either in fine costly variety by rich or the coarse cheap variety by the poor. The demand for rice will always be there so long the humanity survives.

3.0 PROCESS DETAILS

Paddy in its raw form cannot be consumed by human beings. It needs to be suitably processed for obtaining rice. Rice milling is the process, which helps in removal of hulls and barns from paddy grains to produce polished rice. Rice forms the basic primary processed product obtained from paddy and this is further processed for obtaining various secondary and tertiary products.

The basic rice milling processes consist of:

a. Pre Cleaning: Removing all impurities and unfilled grains from paddy.

b. De-stoning: Separating small stones from paddy.

c. Parboiling (Optional): Helps in improving the

nutritional quality by gelatinization of starch inside the rice grain. It improves the milling recovery percent during deshelling and polishing/ whitening operation.

d. Husking: Removing husk from paddy.

e. Husk Aspiration: Separating the husk from brown rice/ unhusked paddy.
f. Paddy Separation: Separating the unhusked paddy from brown rice.

g. Whitening: Removing all or part of the bran layer and germ from brown rice.

h. Polishing: Improving the appearance of milled rice by removing the remaining bran particles and by polishing the exterior of the milled kernel.

i. Length Grading: Separating small and large brokens from head rice.

j.Blending: Mixing head rice with predetermined amount of brokens, as required by the customer.

k. Weighing and bagging: Preparing the milled rice for transport to the customer.

Particulars	Amount (Rs lacs)
Land and Site Development	-
Building & Civil Works	8.25
Machinery & Equipment	3.57
Misc. Fixed Assets	2.70
Preliminary & Pre-operative Expenses	0.75
Contingencies & Escalation @ 3%	0.44
Working Capital	7.35
TOTAL	23.05

4.1 Land & Site Development: No. cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed and Go-down (Brick wall, CGI sheet roof, Concrete Floor)	150	5000	750000
Add: Electrification, etc @ 10%			75000
		TOTAL	825000
		Say (Rs. in lacs)	8.25

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Mini rice mill consisting of Cleaner, Sheller, Separator & Polisher with accessories	1	300000	300000
Miscellaneous items like weighing scales, etc.	LS	LS	10000
		Sub total	310000
Add: Transportation, installation, taxes, etc. @ 15%			46500
		TOTAL	356500
		Say (Rs. in lacs)	3.57

4.4 Misc. Fixed Assets Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water supply system (STW boring, 3 HP motor pump set, storage, pipes & fittings)	1	75000	75000
20 kva transformer including installation	1	150000	150000
Furniture & fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		Sub total	245000
Add: Transportation, installation, taxes, etc. @ 10%			24500
		TOTAL	269500
		Say (Rs. in lacs)	2.70

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.20
Professional & other fees	0.20
Interest during implementation	0.25
Miscellaneous expenses	0.10
TOTAL	0.75

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, machinery & equipments and miscellaneous fixed assets.

4.7 Working Capital : Details of working capital are given below.

	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw materials & consumables	30	5.43	6.52	7.60
Power	30	0.05	0.06	0.06
Salary	30	0.42	0.43	0.43
Finished Goods	30	5.96	7.07	8.18
Receivables	30	6.51	7.81	9.11
Total		18.37	21.88	25.40
Working capital margin in Yr 1 (40%)	7.35			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	9.22
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/Fis	60%	13.83
TOTAL	100%	23.05

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (MT)							
(i) Rice	640	640	640	640	640	640	640
(ii) Husk/bran	120	120	120	120	120	120	120

Capacity utilisation	50%	60%	70%	70%	70%	70%	70%
Production at CU							
(i) Rice	320	384	448	448	448	448	448
(ii) Husk/bran	60	72	84	84	84	84	84
Price of rice (Rs/MT)	24000	24000	24000	24000	24000	24000	24000
Price of husk/bran (Rs/MT)	4000	4000	4000	4000	4000	4000	4000
Income from sale of rice	76.80	92.16	107.52	107.52	107.52	107.52	107.52
Income from sale of husk/bran	2.40	2.88	3.36	3.36	3.36	3.36	3.36
Total income/annum	79.20	95.04	110.88	110.88	110.88	110.88	110.88
B. OPERATING EXPENSES							
Raw materials & consumables	66.07	79.28	92.49	92.49	92.49	92.49	92.49
Power	0.56	0.67	0.78	0.78	0.78	0.78	0.78
Salary	5.16	5.21	5.26	5.32	5.37	5.42	5.48
Repair & Maintenance	0.21	0.23	0.25	0.28	0.30	0.33	0.37
Selling Expenses	0.40	0.48	0.55	0.55	0.55	0.55	0.55
Miscellaneous Expenses	0.15	0.18	0.22	0.22	0.22	0.22	0.22
Total Operating Expenses	72.54	86.05	99.56	99.64	99.72	99.80	99.89
Less: Working expenses capitalised	7.35	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	14.01	8.99	11.32	11.24	11.16	11.08	10.99
C. FINANCIAL EXPENSES							
Depreciation	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Interest on Term Loan	1.10	0.98	0.80	0.63	0.45	0.27	0.10
Interest on WC Loan	1.76	2.10	2.44	2.44	2.44	2.44	2.44
Net Profit	10.44	5.21	7.38	7.48	7.58	7.67	7.76
Net cash accruals	11.14	5.91	8.08	8.18	8.27	8.37	8.45
Principal Repayment	0.55	2.21	2.21	2.21	2.21	2.21	2.21

6.1 Estimation of Production Capacity: Production of Rice and Husk/ Bran per annum at installed capacity is estimated as below.

Plant Capacity (kg/hr of paddy)	500
No. of working hrs/ day	8
No. of days/annum (seasonal)	200
Quantity of raw materials processed/annum (MT)	800
Recovery of rice from paddy (%)	80%
Recovery of husk/bran from paddy (%)	15%
Total production/annum of rice at 100% capacity (MT)	640
Total production/annum of husk/bran at 100% capacity (MT)	120

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables is estimated as below.

Raw material (paddy) required at 100% capacity (MT)	800
Add: Provision for spoilage at 0.1%	0.80
Total quantity of raw material required (MT)	801
Price of paddy (Rs/MT)	15000
Expenses on paddy at 100% capacity (Rs)	12012000
Add: Consumables, packing materials, etc @ 10%	1201200
Expenses on raw materials & consumables at 100% capacity (Rs)	13213200

6.3 Power: Expenses on power at installed capacity is estimated as below.

Connected load (kw)	20
Avg load factor	70%
Hrs/day	8
Days/annum	200
Annual power consumption (kwh)	22400
Rate per unit (Rs)	5
Expenses on power per annum at 100% capacity (Rs)	112000

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	10000	120000
Skilled workers/machine operators	2	5000	120000
Sales Staff	2	4000	96000
Helpers	5	3000	180000
Expenses on salary in the 1st year (Rs)			516000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	8.25	1%	0.08
Machinery & Equipment	3.57	2%	0.07
Misc. Fixed Assets	2.70	2%	0.05
Expenses on repair & maintenance in the 1st year (Rs)			0.21

6.6 Selling Expenses: Selling expenses have been assumed at 0.5% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.2% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	8.25	3.34%	0.28
Machinery & Equipment	3.57	7.07%	0.25
Misc. Fixed Assets	2.70	6.23%	0.17
TOTAL			0.70

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	13.83	13.28	11.06	8.85	6.64	4.43	2.21
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest (8%)	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.83	13.09	10.88	8.67	6.45	4.24	2.03
Month 2	Opening balance	13.83	13.09	10.88	8.67	6.45	4.24	2.03
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.83	12.91	10.69	8.48	6.27	4.06	1.84
Month 3	Opening balance	13.83	12.91	10.69	8.48	6.27	4.06	1.84
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.83	12.72	10.51	8.30	6.08	3.87	1.66

Month 4	Opening balance	13.83	12.72	10.51	8.30	6.08	3.87	1.66
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.83	12.54	10.33	8.11	5.90	3.69	1.48
Month 5	Opening balance	13.83	12.54	10.33	8.11	5.90	3.69	1.48
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.83	12.35	10.14	7.93	5.72	3.50	1.29
Month 6	Opening balance	13.83	12.35	10.14	7.93	5.72	3.50	1.29
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.83	12.17	9.96	7.74	5.53	3.32	1.11
Month 7	Opening balance	13.83	12.17	9.96	7.74	5.53	3.32	1.11
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.83	11.98	9.77	7.56	5.35	3.13	0.92
Month 8	Opening balance	13.83	11.98	9.77	7.56	5.35	3.13	0.92
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.83	11.80	9.59	7.38	5.16	2.95	0.74
Month 9	Opening balance	13.83	11.80	9.59	7.38	5.16	2.95	0.74
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.83	11.62	9.40	7.19	4.98	2.77	0.55
Month 10	Opening balance	13.83	11.62	9.40	7.19	4.98	2.77	0.55
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.64	11.43	9.22	7.01	4.79	2.58	0.37
Month 11	Opening balance	13.64	11.43	9.22	7.01	4.79	2.58	0.37
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.46	11.25	9.03	6.82	4.61	2.40	0.18
Month 12	Opening balance	13.46	11.25	9.03	6.82	4.61	2.40	0.18
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.07	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.28	11.06	8.85	6.64	4.43	2.21	0.00
Principal Repayment		0.55	2.21	2.21	2.21	2.21	2.21	2.21
Interest		1.10	0.98	0.80	0.63	0.45	0.27	0.10

6.10 Interest on Working Capital Loan: Interest rate on working capital loan has been assumed at 16%. Details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	18.37	21.88	25.40
Bank Loan (60%)	11.02	13.13	15.24
Interest @ 16%	1.76	2.10	2.44

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	TOTAL
Profit After Tax (Net Profit)	10.44	5.21	7.38	7.48	7.58	7.67	7.76	
Depreciation	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Interest	1.10	0.98	0.80	0.63	0.45	0.27	0.10	
Total	12.24	6.89	8.88	8.80	8.72	8.64	8.55	62.73
Interest	1.10	0.98	0.80	0.63	0.45	0.27	0.10	
Loan repayment	0.55	2.21	2.21	2.21	2.21	2.21	2.21	
Total	1.66	3.19	3.02	2.84	2.66	2.49	2.31	18.16
DSCR	7.39	2.16	2.94	3.10	3.28	3.48	3.70	

Average DSCR = 3.45

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	79.20	95.04	110.88
B. Variable cost			
Raw materials & consumables	66.07	79.28	92.49
Power	0.56	0.67	0.78
Other expenses	0.15	0.18	0.22
Total variable cost	66.78	80.14	93.49
C. Contribution (A-B)	12.42	14.90	17.39
D. Fixed & Semi-fixed Costs			
Salary	5.16	5.21	5.26
Repair & maintenance	0.21	0.23	0.25
Interest on Term Loan	1.10	0.98	0.80
Depreciation	0.70	0.70	0.70
Total fixed cost	7.17	7.12	7.01
E. BREAK EVEN POINT	57.70%	47.75%	40.34%
F. BEP at operating capacity	28.85%	28.65%	28.24%
G. Cash BEP	26.05%	25.85%	25.44%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	14.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital		21.88	3.51	3.51	0.00	0.00	0.00	0.00
Total (A)	14.95	21.88	3.51	3.51	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		10.44	5.21	7.38	7.48	7.58	7.67	7.76
Add: Depreciation		0.70	0.70	0.70	0.70	0.70	0.70	0.70
Add: Interest		1.10	0.98	0.80	0.63	0.45	0.27	0.10
Add: Salvage Value (10%)								1.50
Total (B)	0.00	12.24	6.89	8.88	8.80	8.72	8.64	10.05
NET FLOW (B-A)	-14.95	-9.64	3.38	5.37	8.80	8.72	8.64	10.05

IRR = 15%

MACHINERY SUPPLIERS

(a) Rising Industries
Teghoria Loknath Mandir, Jhowtala, Ghosh Dutta Para, Near Honda Service Center, Tanushree Apartment, Kolkata - 700157, West Bengal, India

(b) Durga Bhawani Enterprises
Vikram Vihar, D-Block, Shop No. 6, Opposite Jain Hospital, No. 493B/18, G. T. Road South, Shibpur, Howrah - 711102, West Bengal, India

(c) Technocraft
5- B, Kundu Lane, Belgachia, Kolkata - 700 037, West Bengal, India

PAPAIN EXTRACTION

1.0 INTRODUCTION

Papain is a proteolytic enzyme from the cysteine proteinase family. It is manufactured from the latex of raw papaya fruits as papaya is very rich in papain. A milky fluid known as latex containing papain oozes out of the green papaya. The greener the fruit, more active is the papain. Papain tenderises meat and can act as a clarifying agent in many food industry processes. It is a common ingredient in brewery and meat processing. Although synthetic substitutes are available at lower cost, the demand for papain is still strong as a food ingredient since it is perceived as a natural product.

Dry powder made from the latex of raw papaya is commonly known as crude papain. Dried papain is stored in powder or flake form. They are diluted with lactose powder to get BPC grade papain. There is market for raw as well as BPC grade papain.

This project profile is for setting up of a BPC grade papain production unit with installed processing capacity of 20 tonnes per annum of raw/ unripe papaya.

2.0 MARKET POTENTIAL

Papain is used in many industries for variety of reasons. Some of the end-users are breweries, pharmaceuticals, food, leather, detergents, meat and fish processing etc. Thus, the end use segments are many. Most of these industries are growing. Good quality papain has export demand as well. In spite of very good domestic as well as export demand, papain manufacturing has not yet picked up in the North-East and hence there are good prospects for new entrants.

3.0 PROCESS DETAILS

White milky latex of green and fully grown papaya fruits are collected in the early morning by making deep longitudinal cuts by stainless steel or wooden sharp knives. Latex is collected in stainless steel trays while latex coagulated in the surface of the fruits is scrapped and collected in the trays. A fruit is tapped about 6 times in the course of 16 days. This latex is passed through 50 mesh sieves to remove dirt and then it is mixed with potassium metabisulphate and spread on trays and dried in a vacuum shield drier at a temperature of about 55 C for 4-5 hours. The dried product is packed in air-tight containers and stored in a cool, dry place. It should be kept in flake form as powdering decreases the stability of the product during storage. Dried flakes are powdered and diluted with lactose powder to get BPC grade papain. Plastic containers should be used to pack crude papain flakes or powder as metal containers would result in loss of enzyme activity.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land & Site Development	-
Building & Civil Works	5.61
Machinery & Equipment	6.10
Misc. Fixed Assets	2.00
Preliminary & Pre-operative Expenses	0.86
Contingencies & Escalation @ 3%	0.41
Working Capital Margin	1.33
TOTAL	16.31

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Workshed (Open shed, CGI sheet roof, Concrete floor)	60	3500	210000
Store cum office (Brick wall, CGI sheet roof, Concrete floor)	60	5000	300000
		Sub-total	510000
Add: Electrification, water supply, etc @ 10%			51000
		TOTAL	561000
		Say (Rs. in lacs)	5.61

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
5 HP Pump-set with hose pipe	2	20000	40000
Vacuum Shield Drier	1	160000	160000
De-humidifier	1	60000	60000
Hammer Mill	1	100000	100000
Blender	1	70000	70000
Packing Machine	1	50000	50000
Weighing scales, testing equipment etc.	LS	LS	50000
		Sub-total	530000
Add: Transportation, taxes, etc @ 15%			79500
		TOTAL	609500
		Say (Rs. in lacs)	6.10

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (30 HP)	1	100000	100000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	80000
Furniture & fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	200000
		Say (Rs. in lacs)	2.00

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.30
Professional & other fees	0.20
Interest during implementation	0.26
Miscellaneous expenses	0.10
TOTAL	0.86

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

	Period (Days)	Amount (Rs lacs)		
		Year 1	Year 2	Year 3
Raw Materials & Consumables	30	0.07	0.09	0.10
Power	30	0.08	0.09	0.11
Salary	30	0.47	0.48	0.48
Finished Goods	15	0.32	0.34	0.36
Receivables	15	0.39	0.46	0.54
Total		1.33	1.46	1.59

Working Capital Margin in Year 1 (100%)	1.33

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	6.53
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	9.79
TOTAL	100%	16.31

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Installed capacity (MT)	5	5	5	5	5	5	5
Capacity utilisation	50%	60%	70%	70%	70%	70%	70%
Production at CU	3	3	4	4	4	4	4
Price (Rs/tonne)	375000	375000	375000	375000	375000	375000	375000
Income from sales	9.38	11.25	13.13	13.13	13.13	13.13	13.13
B. OPERATING EXPENSES							
Raw Materials & Consumables	0.90	1.08	1.26	1.26	1.26	1.26	1.26
Power	0.94	1.13	1.32	1.32	1.32	1.32	1.32
Salary	5.76	5.79	5.82	5.85	5.88	5.91	5.93
Repair & Maintenance	0.14	0.16	0.20	0.24	0.28	0.34	0.41
Selling Expenses	0.09	0.11	0.13	0.13	0.13	0.13	0.13

Miscellaneous Expenses	0.05	0.06	0.07	0.07	0.07	0.07	0.07
Total Operating Expenses	7.88	8.33	8.79	8.86	8.93	9.02	9.12
Less: Working expenses capitalised	1.33	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	2.83	2.92	4.34	4.27	4.19	4.11	4.01
C. FINANCIAL EXPENSES							
Depreciation	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Interest on Term Loan	0.78	0.69	0.57	0.44	0.32	0.19	0.07
Net Profit	1.41	1.59	3.13	3.19	3.24	3.28	3.30
Net cash accruals	2.05	2.23	3.77	3.82	3.87	3.91	3.94
Principal Repayment	0.39	1.57	1.57	1.57	1.57	1.57	1.57

6.1 Production Capacity: Annual production of papain at installed capacity is estimated as below.

Rated processing capacity/annum (tonnes of raw materials)	20
Yield of papain	25%
Production of papain per annum at installed capacity (tonnes)	5

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Raw/unripe papaya	Tonnes	20	5000	100000
Plastic containers (20 kg capacity)	Nos	1000	50	50000
			Sun-total	150000
Add: Additives, etc @ 20%				30000
Expenses on raw materials & consumables at installed capacity (Rs)				180000

6.3 Power: Expenses on power at installed capacity is estimated as below.

Connected load (kw)	22
Avg. load factor	70%
Hrs/day	8
Days/annum	300
Annual power consumption (kwh)	37598
Rate per unit (Rs)	5.00
Expenses on power at installed capacity (Rs)	187992

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	8000	96000
Machine operators/skilled workers	4	6000	288000
Helpers	2	3000	72000
Casual labour	5	2000	120000
Expenses on salary in the 1st year (Rs)			576000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	5.61	1%	0.06
Machinery & Equipment	6.10	1%	0.06
Misc. Fixed Assets	2.00	1%	0.02
Expenses on repair & maintenance in year 1			0.14

6.6 Selling Expenses: Selling expenses has been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/ annum (Rs lacs)
Building & Civil Works	5.61	3.34%	0.19
Machinery & Equipment	6.10	5.28%	0.32
Misc. Fixed Assets	2.00	6.33%	0.13
TOTAL			0.64

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	9.79	9.40	7.83	6.26	4.70	3.13	1.57
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest (8%)	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	9.27	7.70	6.13	4.57	3.00	1.44
Month 2	Opening balance	9.79	9.27	7.70	6.13	4.57	3.00	1.44
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	9.14	7.57	6.00	4.44	2.87	1.31
Month 3	Opening balance	9.79	9.14	7.57	6.00	4.44	2.87	1.31
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	9.00	7.44	5.87	4.31	2.74	1.17
Month 4	Opening balance	9.79	9.00	7.44	5.87	4.31	2.74	1.17
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	8.87	7.31	5.74	4.18	2.61	1.04
Month 5	Opening balance	9.79	8.87	7.31	5.74	4.18	2.61	1.04
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	8.74	7.18	5.61	4.05	2.48	0.91
Month 6	Opening balance	9.79	8.74	7.18	5.61	4.05	2.48	0.91
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	8.61	7.05	5.48	3.92	2.35	0.78
Month 7	Opening balance	9.79	8.61	7.05	5.48	3.92	2.35	0.78
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.79	8.48	6.92	5.35	3.78	2.22	0.65
Month 8	Opening balance	9.79	8.48	6.92	5.35	3.78	2.22	0.65
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.04	0.03	0.01	0.00
	Closing balance	9.79	8.35	6.79	5.22	3.65	2.09	0.52
Month 9	Opening balance	9.79	8.35	6.79	5.22	3.65	2.09	0.52
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.07	0.06	0.05	0.03	0.02	0.01	0.00
	Closing balance	9.79	8.22	6.66	5.09	3.52	1.96	0.39
Month 10	Opening balance	9.79	8.22	6.66	5.09	3.52	1.96	0.39
	Repayment	0.13	0.13	0.13	0.13	0.13	0.13	0.13

	Interest	0.07	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.66	8.09	6.53	4.96	3.39	1.83	0.26
Month 11	Opening balance	9.66	8.09	6.53	4.96	3.39	1.83	0.26
	Repayment	0.13	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.53	7.96	6.39	4.83	3.26	1.70	0.13
Month 12	Opening balance	9.53	7.96	6.39	4.83	3.26	1.70	0.13
	Repayment	0.13	0.13	0.13	0.13	0.13	0.13	0.13
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.40	7.83	6.26	4.70	3.13	1.57	0.00
Principal Repayment		0.39	1.57	1.57	1.57	1.57	1.57	1.57
Interest		0.78	0.69	0.57	0.44	0.32	0.19	0.07

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	Total
Profit After Tax (Net Profit)	1.41	1.59	3.13	3.19	3.24	3.28	3.30	
Depreciation	0.64	0.64	0.64	0.64	0.64	0.64	0.64	
Interest	0.78	0.69	0.57	0.44	0.32	0.19	0.07	
Total	2.83	2.92	4.34	4.27	4.19	4.11	4.01	26.66
Interest	0.78	0.69	0.57	0.44	0.32	0.19	0.07	
Loan repayment	0.39	1.57	1.57	1.57	1.57	1.57	1.57	
Total	1.17	2.26	2.13	2.01	1.88	1.76	1.63	12.85
DSCR	2.42	1.29	2.03	2.12	2.22	2.33	2.45	

Average DSCR = 2.07

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	9.38	11.25	13.13
B. Variable cost			
Raw Materials & Consumables	0.90	1.08	1.26
Power	0.94	1.13	1.32
Selling Expenses	0.09	0.11	0.13
Miscellaneous Expenses	0.05	0.06	0.07
Total variable cost	1.98	2.38	2.77
C. Contribution (A-B)	7.39	8.87	10.35
D. Fixed & Semi-fixed Costs			
Salary	5.76	5.79	5.82
Repair & maintenance	0.14	0.16	0.20
Interest on Term Loan	0.78	0.69	0.57
Depreciation	0.64	0.64	0.64
Total fixed cost	7.31	7.28	7.22
E. BREAK EVEN POINT	98.91%	82.08%	69.75%
F. BEP at operating capacity	49.45%	49.25%	48.82%
G. Cash BEP	45.15%	44.95%	44.52%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	14.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	1.33	0.13	0.13	0.00	0.00	0.00	0.00
Total (A)	14.12	1.33	0.13	0.13	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		1.41	1.59	3.13	3.19	3.24	3.28	3.30
Add: Depreciation		0.64	0.64	0.64	0.64	0.64	0.64	0.64
Add: Interest		0.78	0.69	0.57	0.44	0.32	0.19	0.07
Add: Salvage Value								
Total (B)	0.00	2.83	2.92	4.34	4.27	4.19	4.11	4.01
NET FLOW (B-A)	-14.12	1.50	2.79	4.21	4.27	4.19	4.11	4.01

IRR = 15%

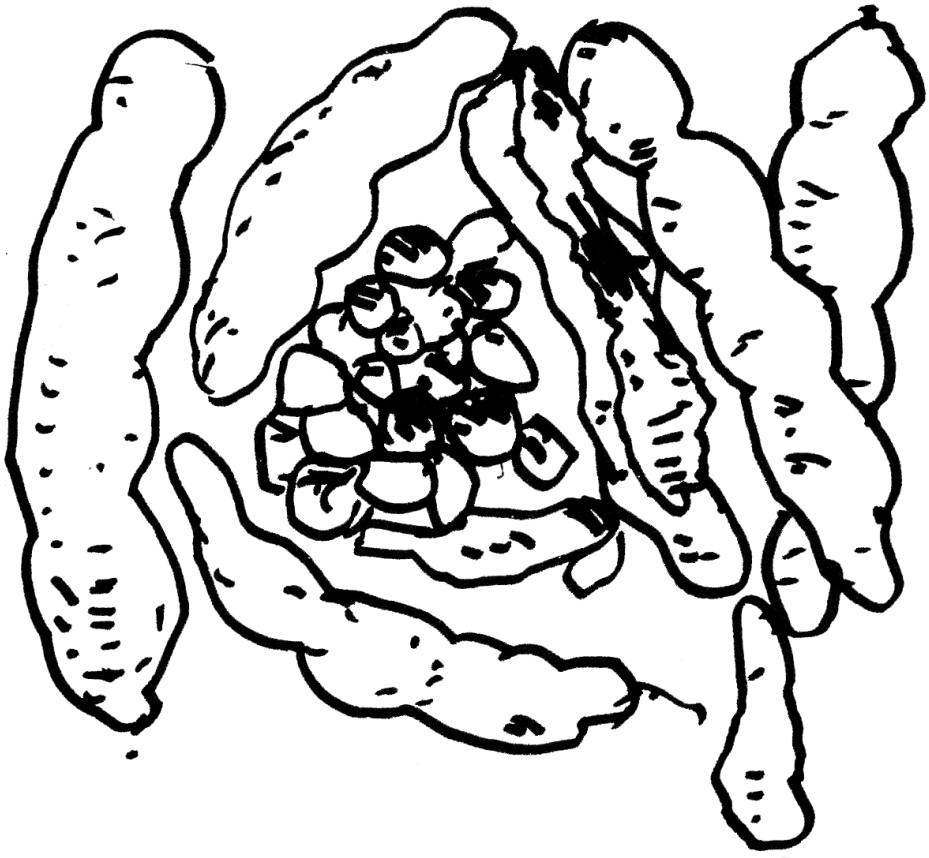
MACHINERY SUPPLIERS

(a) Spectec Technoprojects Private Limited
CB-254, Off. No. 1, 1st Floor, Ring Road, Naraina, Delhi - 110 028, Delhi, India

(b) Premur Impex Limited
44/45, King Road, Howrah - 711 101, West Bengal, India

(c) Bansal Ltd.
A - 8, Rajasthan Udyog Nagar, G. T. Karnal Road, Near Jahangirpuri Metro Station, Delhi - 110033, Delhi, India

STARCH FROM TAMARIND SEEDS



1.0 INTRODUCTION

Tamarind trees are grown almost in all parts of India. The fruits are used for edible purposes and seeds are generally thrown away. These seeds could be used for producing starch which is used for sizing in textile industry and as a general adhesive material. This is one of the cheapest available non-edible starch. Production process is simple and easy and no special skills are required. It is necessary that adequate arrangements for procurement of tamarind seeds are made.

This project profile is for setting up of a Tamarind Seed processing unit for production of Starch with installed processing capacity of 450 Tonnes per annum of tamarind seeds.

2.0 MARKET POTENTIAL

Starch made from tamarind seeds is considered to be the cheapest non-edible starch with many industrial applications. Tamarind fruits are used for edible purposes and seeds are wasted. Processing of these seeds will result in substantial value-addition. This starch is used by textile units and industries manufacturing starch based adhesives. Plywood industry is yet another bulk consumer. Thus, this product has growing market and with the anticipated growth in textile and plywood industry in coming years, demand is bound to go up.

3.0 PROCESS DETAILS

Tamarind seeds are roasted in oil-fired roaster and then they are decorticated to remove the skin. Seeds are then broken into small pieces in a grinder. These broken pieces are finally pulverised to make starch. Starch is packed in polythene lined gunny bags. The yield is around 60%.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land and Site Development	-
Building & Civil Works	4.84
Plant & Machinery	4.83
Misc. Fixed Assets	2.00
Preliminary & Pre-operative Expenses	0.92
Contingencies & Escalation @ 3%	0.35
Working Capital	2.52
TOTAL	15.46

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed (Open shed, CGI sheet roof, Concrete Floor)	80	3000	240000
Office & Store (Brick wall, CGI sheet roof, Concrete Floor)	40	5000	200000
		Sub total	440000
Add: Electrification, Water Supply, etc @ 10%			44000
		TOTAL	484000
		Say (Rs. in lacs)	4.84

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Oil-fired Roaster complete with accessories	1	60000	60000
Decorticator	1	100000	100000
Elevator with conveyor	1	35000	35000
Beater type pulveriser with accessories	1	150000	150000
Miscellaneous items	LS	LS	40000
		Sub total	385000
Add: Transportation, installation, etc @ 15%			57750
		TOTAL	482750
		Say (Rs. in lacs)	4.83

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (50 HP)	1	100000	100000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	80000
Furniture & Fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	200000
		Say (Rs. in lacs)	2.00

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.40
Professional & other fees	0.20
Interest during implementation	0.22
Miscellaneous expenses	0.10
TOTAL	0.92

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipment and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw Materials & Consumables	30	0.74	0.88	1.03
Utilities	30	0.14	0.17	0.20
Salary	30	0.34	0.34	0.34
Finished Goods	15	0.62	0.71	0.81
Receivables	15	0.68	0.82	0.96
TOTAL		2.52	2.93	3.33
Working Capital Margin in Yr 1 (100%)	2.52			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	6.18
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	9.27
TOTAL	100%	15.46

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (MT)	270	270	270	270	270	270	270
Capacity utilisation	50%	60%	70%	70%	70%	70%	70%
Production/annum at C. U.	135	162	189	189	189	189	189
Price of starch (Rs/MT)	12300	12300	12300	12300	12300	12300	12300
Income from sales/annum	16.61	19.93	23.25	23.25	23.25	23.25	23.25
B. OPERATING EXPENSES							
Raw Materials & Consumables	8.96	10.75	12.54	12.54	12.54	12.54	12.54
Utilities	1.72	2.07	2.41	2.41	2.41	2.41	2.41
Salary	4.08	4.12	4.16	4.20	4.25	4.29	4.33
Repair & Maintenance	0.12	0.14	0.17	0.20	0.24	0.29	0.35
Selling Expenses	0.17	0.20	0.23	0.23	0.23	0.23	0.23
Miscellaneous Expenses	0.08	0.10	0.12	0.12	0.12	0.12	0.12
Total Operating Expenses	15.13	17.38	19.63	19.71	19.79	19.88	19.98
Less: Working expenses capitalised	2.52	0.00	0.00	0.00	0.00	0.00	0.00

Operating profit	3.99	2.55	3.61	3.54	3.45	3.36	3.26
C. FINANCIAL EXPENSES							
Depreciation	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Interest on Term Loan	0.74	0.66	0.54	0.42	0.30	0.18	0.06
Net Profit	2.63	1.26	2.45	2.49	2.53	2.55	2.57
Net cash accruals	3.25	1.89	3.07	3.12	3.15	3.18	3.20
Principal Repayment	0.37	1.48	1.48	1.48	1.48	1.48	1.48

6.1 Estimation of Production Capacity: Production of Tamarind Starch at installed capacity is estimated as below.

Rated processing capacity (tonnes/annum of Tamarind seeds)	450
Recovery of starch from seeds (%)	60%
Production/annum of starch at installed capacity (tonnes)	270

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Tamarind seed	MT	450	3500	1575000
Jute Bags (80 kg capacity)	Nos	3375	16	54000
			Sub total	1629000
Add: Expenses on additives, etc @ 10%				162900
Expenses on raw materials & consumables at installed capacity (Rs)				1791900

6.3 Utilities: Expenses on utilities at installed capacity is estimated as below.

Expenses on power

Connected Load (kw)	37
Avg. load factor	70%
Hrs/day	8
Days/annum	300
Annual power consumption (kwh)	62664
Rate per unit (Rs)	5
Expenses on power per annum at installed capacity (Rs)	313320
Add: Expenses on oil for Roaster @ 10%	31332
Expenses on utilities per annum at installed capacity (Rs)	344652

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	Self	0	0
Skilled Workers/Machine Operators	2	7000	168000
Sales Staff	1	4000	48000
Helpers	2	3000	72000
Casual labour	4	2500	120000
Expenses on salary in the 1st year (Rs)			408000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount
Building & Civil Works	4.84	1%	0.05
Plant & Machinery	4.83	1%	0.05
Misc. Fixed Assets	2.00	1%	0.02
Expenses on repair & maintenance in the 1st year (Rs)			0.12

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/ annum (Rs lacs)
Building & Civil Works	4.84	3.34%	0.16
Plant & Machinery	4.83	7.07%	0.34
Misc. Fixed Assets	2.00	6.23%	0.12
TOTAL			0.63

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	9.27	8.90	7.42	5.94	4.45	2.97	1.48
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest (8%)	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.78	7.30	5.81	4.33	2.84	1.36
Month 2	Opening balance	9.27	8.78	7.30	5.81	4.33	2.84	1.36
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.66	7.17	5.69	4.20	2.72	1.24
Month 3	Opening balance	9.27	8.66	7.17	5.69	4.20	2.72	1.24
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.53	7.05	5.56	4.08	2.60	1.11
Month 4	Opening balance	9.27	8.53	7.05	5.56	4.08	2.60	1.11
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.41	6.93	5.44	3.96	2.47	0.99
Month 5	Opening balance	9.27	8.41	6.93	5.44	3.96	2.47	0.99
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.29	6.80	5.32	3.83	2.35	0.87
Month 6	Opening balance	9.27	8.29	6.80	5.32	3.83	2.35	0.87
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	9.27	8.16	6.68	5.19	3.71	2.23	0.74
Month 7	Opening balance	9.27	8.16	6.68	5.19	3.71	2.23	0.74
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00

	Closing balance	9.27	8.04	6.55	5.07	3.59	2.10	0.62
Month 8	Opening balance	9.27	8.04	6.55	5.07	3.59	2.10	0.62
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.27	7.91	6.43	4.95	3.46	1.98	0.49
Month 9	Opening balance	9.27	7.91	6.43	4.95	3.46	1.98	0.49
	Repayment	0.00	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.27	7.79	6.31	4.82	3.34	1.85	0.37
Month 10	Opening balance	9.27	7.79	6.31	4.82	3.34	1.85	0.37
	Repayment	0.12	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.15	7.67	6.18	4.70	3.22	1.73	0.25
Month 11	Opening balance	9.15	7.67	6.18	4.70	3.22	1.73	0.25
	Repayment	0.12	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	9.03	7.54	6.06	4.58	3.09	1.61	0.12
Month 12	Opening balance	9.03	7.54	6.06	4.58	3.09	1.61	0.12
	Repayment	0.12	0.12	0.12	0.12	0.12	0.12	0.12
	Interest	0.06	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	8.90	7.42	5.94	4.45	2.97	1.48	0.00
Principal Repayment		0.37	1.48	1.48	1.48	1.48	1.48	1.48
Interest		0.74	0.66	0.54	0.42	0.30	0.18	0.06

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	Total
Profit After Tax (Net Profit)	2.63	1.26	2.45	2.49	2.53	2.55	2.57	
Depreciation	0.63	0.63	0.63	0.63	0.63	0.63	0.63	
Interest	0.74	0.66	0.54	0.42	0.30	0.18	0.06	
Total	3.99	2.55	3.61	3.54	3.45	3.36	3.26	23.77
Interest	0.74	0.66	0.54	0.42	0.30	0.18	0.06	
Loan repayment	0.37	1.48	1.48	1.48	1.48	1.48	1.48	
Total	1.11	2.14	2.02	1.90	1.79	1.67	1.55	12.18
DSCR	3.60	1.19	1.79	1.86	1.93	2.02	2.11	

Average DSCR = 1.95

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	16.61	19.93	23.25
B. Variable cost			
Raw Materials & Consumables	8.96	10.75	12.54
Utilities	1.72	2.07	2.41
Selling Expenses	0.17	0.20	0.23
Miscellaneous Expenses	0.08	0.10	0.12
Total variable cost	10.93	13.12	15.30
C. Contribution (A-B)	5.67	6.81	7.94
D. Fixed & Semi-fixed Costs			
Salary	4.08	4.12	4.16

Repair & Maintenance	0.12	0.14	0.17
Interest on Term Loan	0.74	0.66	0.54
Depreciation	0.63	0.63	0.63
Total fixed cost	5.56	5.55	5.50
E. BREAK EVEN POINT	98.07%	81.47%	69.21%
F. BEP at operating capacity	49.04%	48.88%	48.45%
G. Cash BEP	43.50%	43.35%	42.91%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	12.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	2.52	0.41	0.41	0.00	0.00	0.00	0.00
Total (A)	12.02	2.52	0.41	0.41	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		2.63	1.26	2.45	2.49	2.53	2.55	2.57
Add: Depreciation		0.63	0.63	0.63	0.63	0.63	0.63	0.63
Add: Interest		0.74	0.66	0.54	0.42	0.30	0.18	0.06
Add: Salvage Value (15%)								1.80
Total (B)	0.00	3.99	2.55	3.61	3.54	3.45	3.36	5.07
NET FLOW (B-A)	-12.02	1.48	2.14	3.20	3.54	3.45	3.36	5.07

IRR = 15%

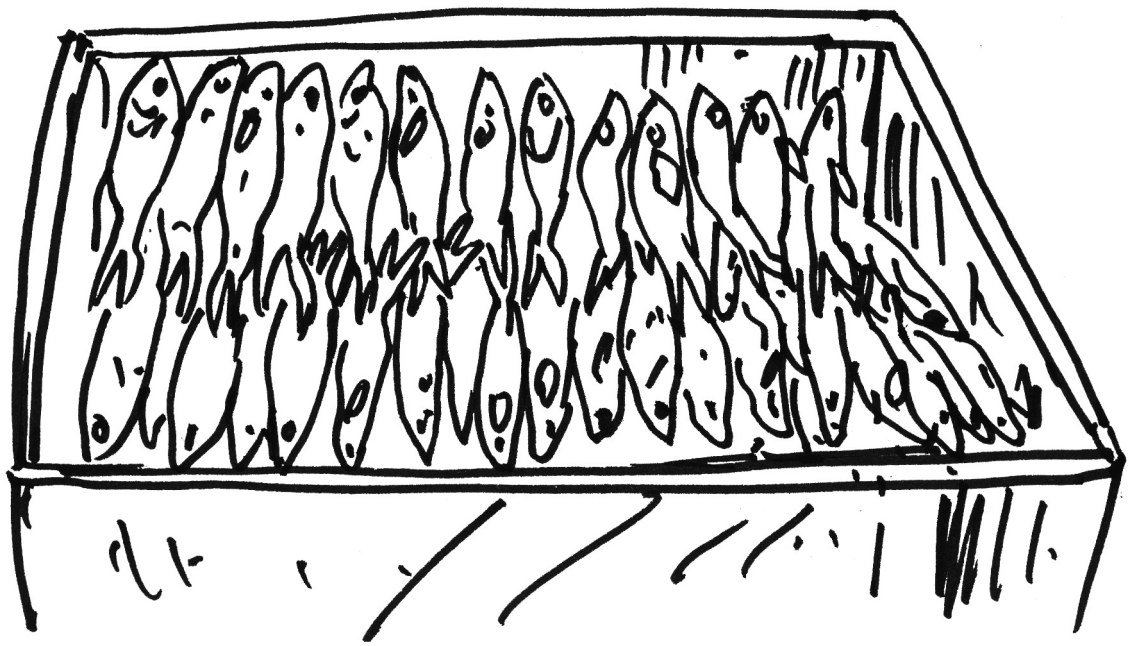
MACHINERY SUPPLIERS

(a) S. K. Engineering Works
B-28, Sector-10, Noida - Noida. Uttar Pradesh India

(b) Hind Agro Industries
No.142, IDA, Tummkunta industrial Area, Hindupur, Ananthapur Dist., Hindupur - 515201, Andhra Pradesh , India

(c) Alfa Engineering Works
Goxla No. B/13, L.b.S. Marg, Vardhman Services Complex, Behind Punjab Bank, Vikroli(W), Mumbai - 400083, Maharashtra , India

FISH PROCESSING



1.0 INTRODUCTION

Fish is a highly perishable item and reportedly, bulk of the catch is sun-dried after salt curing which is an unhygienic process. Fish, when carefully processed under most hygienic conditions with addition of required quantity of salt, preservatives and spices will have generally an average shelf life of one year. Most of the sea fish like Prawn, Tuna, Pomfret, Mackerel, etc. are ideally suitable for canning.

This project profile is for setting up of Fish Processing unit for production of processed and canned fish with installed processing capacity of 100 tonnes per annum of fresh fish.

2.0 MARKET POTENTIAL

Fish is a popular non-vegetarian variety and many delicious food and snack items are prepared from fish and prawns. Number of non-vegetarians are growing steadily. Fish is a highly perishable item and salt curing and sun-drying method of processing is not only unhygienic but also imparts limited shelf life. Fresh fish is available only near the coastal areas and consumers at other locations get processed varieties. Apart from individual households, fish is regularly consumed in restaurants, canteens, clubs etc. Flight kitchens and caterers are another important segment. The Defence Purchase Department of the Govt. of India is a major bulk consumer. There are many varieties, which can be processed like tuna, prawn, pomfret, mackerel and so on. Apart from institutional supplies, retailing can be undertaken with proper placement in the departmental stores, super bazars, shopping malls etc.

3.0 PROCESS DETAILS

After cleaning fish in water, certain items like head, fins, tail etc. are removed and remaining parts are washed in water again to remove blood, dirt etc. Then they are cut and packed in sterilised tins. They are canned with tomato sauce, brine or oil. Then these cans are subjected to live steam in the exhaust box at a temperature of around 80-90° C for 15-20 minutes. Exhausted cans are immediately sealed air tight and treated in retort at a pressure of 10 to 15 lbs for 30 to 90 minutes. Pressure and processing time depends upon size of cans and products. Cans taken out from retort need to be cooled as early as possible. The net yield of finished product is around 65%.

4.0 COST OF THE PROJECT

The estimated project cost is given below:

Particulars	Amount (Rs lacs)
Land & Site Development	-
Building & Civil Works	7.51
Machinery & Equipment	7.13
Misc. Fixed Assets	2.50
Preliminary & Pre-operative Expenses	0.81
Contingencies & Escalation @ 3%	0.51
Working Capital	4.93
TOTAL	23.40

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Machine Room (Half brick wall, CGI roof, Concrete floor)	120	4500	540000
Dressing Room (Open shed, CGI roof, Concrete floor)	50	3500	175000
		Sub-total	715000
Add: Electrification, water supply, etc @ 5%			35750
		TOTAL	750750
		Say (Rs. in lacs)	7.51

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Oil-fired Boiler	1	125000	125000
Autoclave complete with all accessories	1	60000	60000
Double-seamer complete with all accessories	1	70000	70000
SS blanching tank with steam heating pipe etc.	1	25000	25000
Straight line type exhaust box complete with heating pipe, reduction gear, electrical etc	1	90000	90000
Canning Retort	1	70000	70000
Can reformer with flanger	1	80000	80000
Weighing scales, sealing machine, etc	LS	LS	100000
		Sub-total	620000
Add: Transportation, taxes, etc @ 15%			93000
		TOTAL	713000
		Say (Rs. in lacs)	7.13

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (60 HP)	1	150000	150000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	80000
Furniture & fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	250000
		Say (Rs. in lacs)	2.50

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.30
Professional & other fees	0.20
Interest during implementation	0.21
Miscellaneous expenses	0.10
TOTAL	0.81

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

	Period (Days)	Amount (Rs lacs)		
		Year 1	Year 2	Year 3
Packing cans	30	0.13	0.16	0.19
Power	30	0.12	0.15	0.19
Salary	30	0.49	0.50	0.50
Finished Goods	15	2.05	2.50	2.95
Receivables	15	2.14	2.67	3.21
Total		4.93	5.98	7.03
Working Capital Margin in Year 1 (100%)	4.93			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	9.36
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	14.04
TOTAL	100%	23.40

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Installed capacity (Nos)	130000	130000	130000	130000	130000	130000	130000
Capacity utilisation	40%	50%	60%	60%	60%	60%	60%
Production at CU	52000	65000	78000	78000	78000	78000	78000
Price (Rs/can)	100	100	100	100	100	100	100
Income from sales	52.00	65.00	78.00	78.00	78.00	78.00	78.00
B. OPERATING EXPENSES							
Raw Materials & Consumables	41.32	51.65	61.97	61.97	61.97	61.97	61.97
Power	1.50	1.88	2.26	2.26	2.26	2.26	2.26
Salary	6.00	6.03	6.06	6.09	6.12	6.15	6.18
Repair & Maintenance	0.26	0.28	0.31	0.34	0.37	0.41	0.45
Selling Expenses	0.52	0.65	0.78	0.78	0.78	0.78	0.78

Miscellaneous Expenses	0.26	0.33	0.39	0.39	0.39	0.39	0.39
Total Operating Expenses	49.86	60.81	71.77	71.83	71.89	71.96	72.03
Less: Working expenses capitalised	4.93	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	7.08	4.19	6.23	6.17	6.11	6.04	5.97
C. FINANCIAL EXPENSES							
Depreciation	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Interest on Term Loan	1.12	1.00	0.82	0.64	0.46	0.28	0.10
Net Profit	5.17	2.41	4.63	4.75	4.86	4.98	5.08
Net cash accruals	5.96	3.19	5.42	5.53	5.65	5.76	5.87
Principal Repayment	0.56	2.25	2.25	2.25	2.25	2.25	2.25

6.1 Production Capacity: Total production of canned fish at installed capacity is estimated as below.

Rated processing capacity/annum (tonnes)	100
Yield of finished good	65%
Total production of processed fish (tonnes)	65
Capacity of packing cans (kg)	0.50
Total Nos. canned fish per annum at installed capacity (Nos)	130000

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
Fresh fish	Tonnes	100	90000	9000000
Cans	Nos	130000	3	390000
			Total	9390000
Add: Additives, etc @ 10%				939000
Expenses on raw materials & consumables at installed capacity (Rs)				10329000

6.3 Power: Expenses on power at installed capacity is estimated as below.

Connected load (kw)	44.76
Avg. load factor	70%
Hrs/day	8
Days/annum	300
Annual power consumption (kwh)	75197
Rate per unit (Rs)	5.00
Expenses on power at installed capacity (Rs)	375984

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	-	-	-
Machine operators/skilled workers	3	6000	216000
Sales Staff	2	4000	96000
Helpers	8	3000	288000
Expenses on salary in the 1st year (Rs)			600000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	7.51	1%	0.08
Machinery & Equipment	7.13	2%	0.14
Misc. Fixed assets	2.50	2%	0.04
Expenses on repair & maintenance in year 1			0.26

6.6 Selling Expenses: Selling expenses has been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	7.51	3.34%	0.25
Machinery & Equipment	7.13	5.28%	0.38
Misc. Fixed assets	2.50	6.33%	0.16
TOTAL			0.79

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	14.04	13.48	11.23	8.98	6.74	4.49	2.25
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest (8%)	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	14.04	13.29	11.04	8.80	6.55	4.31	2.06
Month 2	Opening balance	14.04	13.29	11.04	8.80	6.55	4.31	2.06
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	14.04	13.10	10.86	8.61	6.36	4.12	1.87
Month 3	Opening balance	14.04	13.10	10.86	8.61	6.36	4.12	1.87
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	14.04	12.92	10.67	8.42	6.18	3.93	1.68
Month 4	Opening balance	14.04	12.92	10.67	8.42	6.18	3.93	1.68
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	14.04	12.73	10.48	8.24	5.99	3.74	1.50
Month 5	Opening balance	14.04	12.73	10.48	8.24	5.99	3.74	1.50
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	14.04	12.54	10.29	8.05	5.80	3.56	1.31
Month 6	Opening balance	14.04	12.54	10.29	8.05	5.80	3.56	1.31
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	14.04	12.35	10.11	7.86	5.62	3.37	1.12
Month 7	Opening balance	14.04	12.35	10.11	7.86	5.62	3.37	1.12
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	14.04	12.17	9.92	7.67	5.43	3.18	0.94

Month 8	Opening balance	14.04	12.17	9.92	7.67	5.43	3.18	0.94
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	14.04	11.98	9.73	7.49	5.24	2.99	0.75
Month 9	Opening balance	14.04	11.98	9.73	7.49	5.24	2.99	0.75
	Repayment	0.00	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	14.04	11.79	9.55	7.30	5.05	2.81	0.56
Month 10	Opening balance	14.04	11.79	9.55	7.30	5.05	2.81	0.56
	Repayment	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.85	11.60	9.36	7.11	4.87	2.62	0.37
Month 11	Opening balance	13.85	11.60	9.36	7.11	4.87	2.62	0.37
	Repayment	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.66	11.42	9.17	6.93	4.68	2.43	0.19
Month 12	Opening balance	13.66	11.42	9.17	6.93	4.68	2.43	0.19
	Repayment	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.48	11.23	8.98	6.74	4.49	2.25	0.00
Principal Repayment		0.56	2.25	2.25	2.25	2.25	2.25	2.25
Interest		1.12	1.00	0.82	0.64	0.46	0.28	0.10

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	Total
Profit After Tax (Net Profit)	5.17	2.41	4.63	4.75	4.86	4.98	5.08	
Depreciation	0.79	0.79	0.79	0.79	0.79	0.79	0.79	
Interest	1.12	1.00	0.82	0.64	0.46	0.28	0.10	
Total	7.08	4.19	6.23	6.17	6.11	6.04	5.97	41.78
Interest	1.12	1.00	0.82	0.64	0.46	0.28	0.10	
Loan repayment	0.56	2.25	2.25	2.25	2.25	2.25	2.25	
Total	1.68	3.24	3.06	2.88	2.70	2.52	2.34	18.44
DSCR	4.21	1.29	2.03	2.14	2.26	2.39	2.55	

Average DSCR = 2.27

BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	52.00	65.00	78.00
B. Variable cost			
Raw Materials & Consumables	41.32	51.65	61.97
Power	1.50	1.88	2.26
Selling Expenses	0.52	0.65	0.78
Miscellaneous Expenses	0.26	0.33	0.39
Total variable cost	43.60	54.50	65.40

C. Contribution (A-B)	8.40	10.50	12.60
D. Fixed & Semi-fixed Costs			
Salary	6.00	6.03	6.06
Repair & maintenance	0.26	0.28	0.31
Interest on Term Loan	1.12	1.00	0.82
Depreciation	0.79	0.79	0.79
Total fixed cost	8.16	8.09	7.97
E. BREAK EVEN POINT	97.14%	77.07%	63.26%
F. BEP at operating capacity	38.86%	38.53%	37.95%
G. Cash BEP	35.12%	34.79%	34.21%

8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	17.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	4.93	1.05	1.05	0.00	0.00	0.00	0.00
Total (A)	17.65	4.93	1.05	1.05	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		5.17	2.41	4.63	4.75	4.86	4.98	5.08
Add: Depreciation		0.79	0.79	0.79	0.79	0.79	0.79	0.79
Add: Interest		1.12	1.00	0.82	0.64	0.46	0.28	0.10
Add: Salvage Value								
Total (B)	0.00	7.08	4.19	6.23	6.17	6.11	6.04	5.97
NET FLOW (B-A)	-17.65	2.14	3.14	5.18	6.17	6.11	6.04	5.97

IRR = 17%

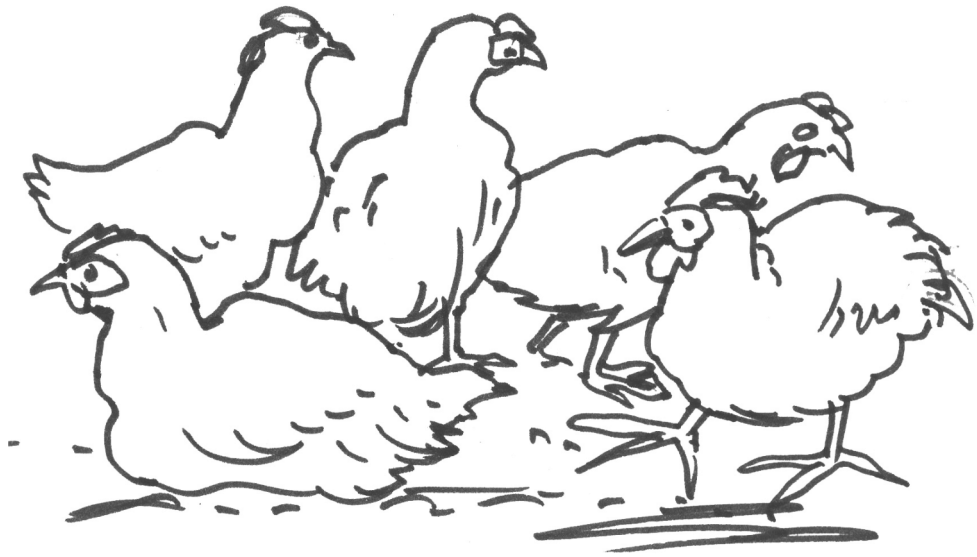
MACHINERY SUPPLIERS

(a) Blue Point
No. 14, Sudder Street, Kolkata - 700 016, West Bengal, India

(b) Globe Marine Products
Al- Rahaba Plaza, Nellikai Road, Mangalore - 575 001, Karnataka, India

(c) Dr. Froeb (India) Private Limited
C - 22, 2nd Floor, Sector - 2, Noida - 201 301, Uttar Pradesh, India

POULTRY PROCESSING



1.0 INTRODUCTION

Poultry farms are increasing steadily. Many government agencies are encouraging poultry farming and even short term training courses are organised regularly. Such farms have generated considerable employment opportunities in semi urban and rural areas. Marketing of poultry birds is expensive and death of birds during transit is the main bottleneck. This compels most of the poultry farms to concentrate on nearby markets even if it means less prices. Instead, if these birds are processed after dressing and packed in tins then transportation is easier and shelf life of the product increases.

Good quality poultry birds are slaughtered and after dressing, they are cooked and packed in cans. This ensures longer shelf life and also takes care of problems associated with transportation of live birds, higher costs and loss of birds during transit.

The project profile is for setting up of a Poultry Processing unit with installed capacity of 600 kg per day based on single shift of 8 hrs.

2.0 MARKET POTENTIAL

Number of non-vegetarians are steadily increasing and because of changing social structure, eating non vegetarian food is no more a taboo. Even amongst the non vegetarians, various food and snack preparations made from chicken are popular. Increase in the disposable incomes of people, changing lifestyles and preference for instant or convenience food has seen many new products becoming popular during last few years. Likewise, number of star hotels, exclusive restaurants and other eateries are also going up year after year. Clubs, canteens, caterers and flight kitchens is yet another growing market. Longer shelf life and hygienically packed poultry products would be preferred by many.

3.0 PROCESS DETAILS

The process starts with slaughtering of birds and subsequently their feathers, lungs, kidneys, head and other unwanted parts are removed and balance portion is thoroughly washed in water. Then this cleaned portion is cut into required sizes and packed into sterilised tins. They are canned either with 3 to 5% brine or with curried vegetables. These tins are then subjected to live steam in an exhaust box for around 15 minutes at a temperature of about 60-65 C. Then the cans are sealed air tight and are further processed in retort at a pressure of 10 to 15 lbs. for about 40-45 minutes. Then the cans are immediately cooled to room temperature and labelling and further packing is undertaken.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land & Site Development	-
Building & Civil Works	6.01
Machinery & Equipment	8.40
Misc. Fixed Assets	1.85
Preliminary & Pre-operative Expenses	1.46
Contingencies & Escalation @ 3%	0.49
Working Capital	4.79
TOTAL	22.99

4.1 Land & Site Development: No. cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed (Open shed, CGI sheet roofs, Concrete Floor)	100	3000	300000
Office cum Store (Brick wall, CGI sheet roofings, Concrete Floor)	25	5000	125000
		Sub total	425000
Add: Electrification, water supply, etc @ 12%			51000
		TOTAL	601000
		Say (Rs. in lacs)	6.01

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Oil-fired Steam Boiler	1	120000	120000
Straight Line Exhaust Box with accessories	1	80000	80000
Canning Retort with accessories	1	70000	70000
Can Reformer & Flanger	1	120000	120000
Can Seamer	1	90000	90000
Can Tester	1	120000	120000
Miscellaneous items	LS	LS	100000
		Sub total	700000
Add: Transportation, taxes, etc. @ 20%			140000
		TOTAL	840000
		Say (Rs. in lacs)	8.40

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
40 HP power connection	1	100000	80000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	75000
Furniture & Fixtures	LS	LS	20000
Miscellaneous items	LS	LS	10000
		TOTAL	185000
		Say (Rs. in lacs)	1.85

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.50
Professional & other fees	0.50
Interest during implementation	0.26
Miscellaneous expenses	0.20
TOTAL	1.46

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipment and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

Particulars	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw Materials & Consumables	15	3.11	3.73	4.35
Power	30	0.10	0.12	0.14
Salary	30	1.10	1.12	1.13
Finished Goods	15	3.78	4.43	5.08
Receivables	15	3.88	4.66	5.44
Total		11.97	14.05	16.13
Working Capital Margin in Yr 1 (40%)	4.79			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	9.20
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	13.80
TOTAL	100%	22.99

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Installed capacity (kg)	126000	126000	126000	126000	126000	126000	126000
Capacity utilisation	50%	60%	70%	70%	70%	70%	70%
Production at CU (kg)	63000	75600	88200	88200	88200	88200	88200
Price (Rs/kg)	150	150	150	150	150	150	150
Income from sales (Rs)	94.50	113.40	132.30	132.30	132.30	132.30	132.30
B. OPERATING EXPENSES							
Raw Materials & Consumables	75.60	90.72	105.84	105.84	105.84	105.84	105.84
Power	1.25	1.50	1.75	1.75	1.75	1.75	1.75
Salary	13.44	13.57	13.71	13.85	13.99	14.13	14.27
Repair & Maintenance	0.16	0.20	0.23	0.28	0.34	0.40	0.49
Selling Expenses	0.95	1.13	1.32	1.32	1.32	1.32	1.32
Miscellaneous Expenses	0.47	0.57	0.66	0.66	0.66	0.66	0.66
Total Operating Expenses	91.87	107.69	123.52	123.71	123.90	124.11	124.33

Less: Working expenses capitalised	4.79	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	7.42	5.71	8.78	8.59	8.40	8.19	7.97
C. FINANCIAL EXPENSES							
Depreciation	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Interest on Term Loan	1.10	0.98	0.80	0.63	0.45	0.27	0.10
Interest on WC Loan	1.15	1.35	1.55	0.00	0.00	0.00	0.00
Net Profit	4.26	2.47	5.52	7.06	7.04	7.01	6.96
Net cash accruals	5.17	3.38	6.43	7.97	7.95	7.92	7.87
Principal Repayment	0.55	2.21	2.21	2.21	2.21	2.21	2.21

6.1 Estimation of Production Capacity: Production of processed chicken at installed capacity is estimated as below.

Rated processing capacity (kg/day in single shift of 8 hrs)	600
Days/annum	300
Quantity of raw materials processed/annum (kg)	180000
Less: Process loss	30%
Total production/annum at installed capacity (kg)	126000

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Raw material (poultry birds) required at installed capacity (kg)	180000
Rate (Rs/kg)	70
Expenses on raw materials (Rs)	12600000
Add: Additives, transportation charges, packing materials, etc @ 20%	2520000
Expenses on raw materials & consumables at installed capacity (Rs)	15120000

6.3 Power: Expenses on power at installed capacity is estimated as below.

Connected load ((kw)	30
Avg. load factor	70%
Total working days	300
Hrs/day	8
Total power consumption (kwh)	50131
Rate per unit (Rs)	5
Expenses on power per annum at installed capacity (Rs)	250656

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	20000	240000
Skilled workers/Machine Operators	5	10000	600000
Salesperson	2	6000	144000
Helpers	10	3000	360000
Expenses on salary in the 1st year (Rs)			1344000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	6.01	1%	0.06
Machinery & Equipment	8.4	1%	0.08
Misc. Fixed Assets	1.85	1%	0.02
Expenses on repair & maintenance in the 1st year (Rs)			0.16

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	6.01	3.34%	0.20
Machinery & Equipment	8.40	7.07%	0.59
Misc. Fixed Assets	1.85	6.23%	0.12
TOTAL			0.91

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	13.80	13.24	11.04	8.83	6.62	4.41	2.21
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest (8%)	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.80	13.06	10.85	8.65	6.44	4.23	2.02
Month 2	Opening balance	13.80	13.06	10.85	8.65	6.44	4.23	2.02
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.80	12.88	10.67	8.46	6.25	4.05	1.84
Month 3	Opening balance	13.80	12.88	10.67	8.46	6.25	4.05	1.84
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.09	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.80	12.69	10.49	8.28	6.07	3.86	1.66
Month 4	Opening balance	13.80	12.69	10.49	8.28	6.07	3.86	1.66
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.06	0.04	0.03	0.01
	Closing balance	13.80	12.51	10.30	8.09	5.89	3.68	1.47
Month 5	Opening balance	13.80	12.51	10.30	8.09	5.89	3.68	1.47
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.80	12.32	10.12	7.91	5.70	3.50	1.29
Month 6	Opening balance	13.80	12.32	10.12	7.91	5.70	3.50	1.29
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.80	12.14	9.93	7.73	5.52	3.31	1.10
Month 7	Opening balance	13.80	12.14	9.93	7.73	5.52	3.31	1.10
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.07	0.05	0.04	0.02	0.01
	Closing balance	13.80	11.96	9.75	7.54	5.33	3.13	0.92

Month 8	Opening balance	13.80	11.96	9.75	7.54	5.33	3.13	0.92
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.04	0.02	0.01
	Closing balance	13.80	11.77	9.57	7.36	5.15	2.94	0.74
Month 9	Opening balance	13.80	11.77	9.57	7.36	5.15	2.94	0.74
	Repayment	0.00	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.80	11.59	9.38	7.17	4.97	2.76	0.55
Month 10	Opening balance	13.80	11.59	9.38	7.17	4.97	2.76	0.55
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.61	11.41	9.20	6.99	4.78	2.58	0.37
Month 11	Opening balance	13.61	11.41	9.20	6.99	4.78	2.58	0.37
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.08	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.43	11.22	9.01	6.81	4.60	2.39	0.18
Month 12	Opening balance	13.43	11.22	9.01	6.81	4.60	2.39	0.18
	Repayment	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Interest	0.09	0.07	0.06	0.05	0.03	0.02	0.00
	Closing balance	13.24	11.04	8.83	6.62	4.41	2.21	0.00
Principal Repayment		0.55	2.21	2.21	2.21	2.21	2.21	2.21
Interest		1.10	0.98	0.80	0.63	0.45	0.27	0.10

6.10 Interest on Working Capital Loan: Interest rate on working capital loan has been assumed at 16%. Details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	11.97	14.05	16.13
Bank Loan (60%)	7.18	8.43	9.68
Interest @ 16%	1.15	1.35	1.55

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	Total
Profit After Tax (Net Profit)	4.26	2.47	5.52	7.06	7.04	7.01	6.96	
Depreciation	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Interest	1.10	0.98	0.80	0.63	0.45	0.27	0.10	
Total	6.27	4.36	7.23	8.59	8.40	8.19	7.97	51.00
Interest	1.10	0.98	0.80	0.63	0.45	0.27	0.10	
Loan repayment	0.55	2.21	2.21	2.21	2.21	2.21	2.21	
Total	1.65	3.19	3.01	2.83	2.66	2.48	2.30	18.12
DSCR	3.79	1.37	2.40	3.03	3.16	3.30	3.46	

Average DSCR = 2.81

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	94.50	113.40	132.30
B. Variable cost			
Raw Materials & Consumables	75.60	90.72	105.84
Power	1.25	1.50	1.75
Selling Expenses	0.95	1.13	1.32
Miscellaneous Expenses	0.47	0.57	0.66
Total variable cost	78.27	93.92	109.58
C. Contribution (A-B)	16.23	19.48	22.72
D. Fixed & Semi-fixed Costs			
Salary	13.44	13.57	13.71
Repair & Maintenance	0.16	0.20	0.23
Interest on Term Loan	1.10	0.98	0.80
Depreciation	0.91	0.91	0.91
Total fixed cost	15.61	15.66	15.66
E. BREAK EVEN POINT	96.20%	80.40%	68.91%
F. BEP at operating capacity	48.10%	48.24%	48.23%
G. Cash BEP	45.30%	45.44%	45.43%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	16.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	11.97	2.08	2.08	0.00	0.00	0.00	0.00
Total (A)	16.75	11.97	2.08	2.08	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		4.26	2.47	5.52	7.06	7.04	7.01	6.96
Add: Depreciation		0.91	0.91	0.91	0.91	0.91	0.91	0.91
Add: Interest		1.10	0.98	0.80	0.63	0.45	0.27	0.10
Add: Salvage Value (20%)								3.35
Total (B)	0.00	6.27	4.36	7.23	8.59	8.40	8.19	11.32
NET FLOW (B-A)	-16.75	-5.71	2.28	5.15	8.59	8.40	8.19	11.32

IRR = 15%

MACHINERY SUPPLIERS

(a) Zigma International
#11, Ground Floor, Narayan Marutham Buildings, Thoundamuthur Road, Vadavalli, , Coimbatore, Tamil Nadu -641041, India

(b) Dr. Froeb (I) Pvt. Ltd.
C-22, 2nd Floor, Sector-2, , Noida, Uttar Pradesh -201301, India

(c) Rising Industries
Tanushree Apartment (Ground Floor), Jhowtala, Hatiara, Near Lokenath Mandir, Ghosh Dutta Para, Opposite Of Honda Service Center, , Kolkata, West Bengal -700157, India

BETEL NUT PROCESSING

1.0 INTRODUCTION

Betel nuts are consumed in large quantities across the country. It is a typical Indian habit and they are consumed by many due to addiction whereas some consume it assuming that it helps the digestive system. Apart from this segment, there is very large market of pan shops literally scattered across the length and breadth of the country. Since last few years, many varieties of betel nuts and mouth fresheners are introduced in the market. Consumption of plain betel nuts is being replaced by flavoured varieties of betel nuts and many pan shops also use it while making special pans.

This project profile is for setting up of a Betel Nut processing unit for production of flavored nuts with installed processing capacity of 25 MT of nuts per annum.

2.0 MARKET POTENTIAL

Betel nuts in plain and other forms are consumed in the country since centuries. With the passage of time, many new varieties and flavours are introduced and being sold in huge quantities all over the country. Attractively packed pouches are available in the market like plain, sweet, mentholated, mixed with dry fruit and so on. There are some big and established companies as well as many regional players in the market and most of them are doing fairly well. Key to success is adequate advertisement budget, proper and adequate placement, affordable price and lucrative discounts to retailers. The product is sold in cities, towns, rural areas, highways, bus-stands and railway stations, theatres and many such places mainly through cigarette and pan shops/vendors.

3.0 PROCESS DETAILS

Betel nuts or areca nuts are cut into small pieces with the help of shredder and are soaked in sugar syrup for 72 hours and then syrup is drained. Same process is repeated for additional 24 hours. Then these pieces are dried in the drying chamber and suitably packed. To make mentholated betel nuts, they are cut into small pieces and then are mixed with paste made of menthol, cloves, cardamom and edible oil for about 72 hours. Then they are dried in a dryer and packed.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land and Site Development	-
Building & Civil Works	6.00
Machinery & Equipment	11.23
Misc. Fixed Assets	3.80
Preliminary & Pre-operative Expenses	1.06
Contingencies & Escalation @ 3%	0.63
Working Capital	3.05
TOTAL	25.77

4.1 Land & Site Development: No. cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed (Half Brick wall, CGI sheet roof, Concrete Floor)	80	4000	320000
Office & Store (Brick wall, CGI sheet roof, Concrete Floor)	50	4500	225000
		Sub total	545000
Add: Electrification, Water Supply, etc @ 10%			54500
		TOTAL	599500
		Say (Rs. in lacs)	6.00

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
SS Soaking Tanks	6	20000	120000
Shredder Knives	25	500	12500
Mixer Grinder	1	25000	25000
Nut-cracker	1	35000	35000
Tray Dryers with 48 trays	2	220000	440000
Form, Fill and Seal Machines	2	150000	300000
Gas-fired Furnace with Burners	1	25000	25000
Miscellaneous items	LS	LS	10000
		Sub total	967500
Add: Transportation, installation, etc @ 15%			145125
		TOTAL	1122625
		Say (Rs. in lacs)	11.23

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (30 HP)	1	100000	100000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	80000
3 Wheeler Delivery Vehicle	1	180000	180000
Furniture & Fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	380000
		Say (Rs. in lacs)	3.80

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.40
Professional & other fees	0.20
Interest during implementation	0.36
Miscellaneous expenses	0.10
TOTAL	1.06

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

Particulars	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw Materials & Consumables	30	2.68	3.22	3.75
Utilities	30	0.13	0.15	0.18
Salary	30	0.90	0.91	0.92
Finished Goods	15	1.89	2.18	2.48
Receivables	15	2.03	2.44	2.85
TOTAL		7.63	8.90	10.17
Working Capital Margin in Yr 1 (40%)	3.05			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	10.31
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	15.46
TOTAL	100%	25.77

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (No. of sachets)	3300000	3300000	3300000	3300000	3300000	3300000	3300000
Capacity utilisation	50%	60%	70%	70%	70%	70%	70%
Production at capacity utilisation	1650000	1980000	2310000	2310000	2310000	2310000	2310000
Price (Rs/sachet)	3	3	3	3	3	3	3
Income from sales (Rs lakh)	49.50	59.40	69.30	69.30	69.30	69.30	69.30

B. OPERATING EXPENSES							
Raw Materials & Consumables	32.60	39.12	45.64	45.64	45.64	45.64	45.64
Utilities	1.54	1.85	2.16	2.16	2.16	2.16	2.16
Salary	10.92	11.03	11.14	11.25	11.36	11.48	11.59
Repair & Maintenance	0.21	0.25	0.30	0.36	0.44	0.52	0.63
Selling Expenses	0.50	0.59	0.69	0.69	0.69	0.69	0.69
Miscellaneous Expenses	0.25	0.30	0.35	0.35	0.35	0.35	0.35
Total Operating Expenses	46.01	53.14	60.28	60.45	60.63	60.84	61.05
Less: Working expenses capitalised	3.05	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	6.54	6.26	9.02	8.85	8.67	8.46	8.25
C. FINANCIAL EXPENSES							
Depreciation	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Interest on Term Loan	1.23	1.10	0.90	0.70	0.50	0.31	0.11
Interest on Working Capital Loan	0.73	0.85	0.98	0.98	0.98	0.98	0.98
Net Profit	3.34	3.08	5.92	5.94	5.96	5.95	5.93
Net cash accruals	4.57	4.31	7.15	7.17	7.19	7.18	7.16
Principal Repayment	0.62	2.47	2.47	2.47	2.47	2.47	2.47

6.1 Estimation of Production Capacity: Production of flavoured betel nuts in sachets at installed capacity is estimated as below.

Rated processing capacity (tonnes/annum of areca nuts)	25
Recovery of processed nuts (%)	90%
Net production of processed nuts (tonnes)	23
Production of flavoured nuts in MT after additives @ 10%	25
Capacity of packing material (Sachets) in gms	7.5
Production/ annum of flavored areca nuts at installed capacity (No. of sachets)	3300000

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Particulars	Qty (MT)	Rate (Rs)	Amount (Rs)
Areca nuts	25.00	220000	5500000
Sugar @ 9.25%	2.31	17000	39313
Edible oil @ 1.85%	0.46	50000	23125
Cloves, Menthol, Cardamom, etc @ 7.40%	1.85	250000	462500
Packing material (Sachets) in Nos	3300000	0.15	495000
Expenses on raw materials & consumables at installed capacity (Rs)			6519938

6.3 Utilities: Expenses on utilities at installed capacity is estimated as below.

Expenses on power

Connected Load (kw)	22
Avg. load factor	70%
Hrs/day	8
Days/annum	300

Annual power consumption (kwh)	37598
Rate per unit (Rs)	5
Expenses on power per annum at installed capacity (Rs)	187992
Add: Expenses on LPG cylinder refill @ Rs 10,000/month	120000
Expenses on utilities at installed capacity (Rs)	307992

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	15000	180000
Skilled Workers/Machine Operators	4	10000	480000
Sales Staff	2	6000	144000
Helpers	8	3000	288000
Expenses on salary in the 1st year (Rs)			1092000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	6.00	1%	0.06
Machinery & Equipment	11.23	1%	0.11
Misc. Fixed Assets	3.80	1%	0.04
Expenses on repair & maintenance in the 1st year (Rs)			0.21

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/ annum (Rs lacs)
Building & Civil Works	6.00	3.34%	0.20
Machinery & Equipment	11.23	7.07%	0.79
Misc. Fixed Assets	3.80	6.23%	0.24
TOTAL			1.23

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	15.46	14.84	12.37	9.89	7.42	4.95	2.47
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest (8%)	0.10	0.10	0.08	0.07	0.05	0.03	0.02
	Closing balance	15.46	14.64	12.16	9.69	7.21	4.74	2.27
Month 2	Opening balance	15.46	14.64	12.16	9.69	7.21	4.74	2.27
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.10	0.08	0.06	0.05	0.03	0.02
	Closing balance	15.46	14.43	11.96	9.48	7.01	4.54	2.06
Month 3	Opening balance	15.46	14.43	11.96	9.48	7.01	4.54	2.06
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.10	0.08	0.06	0.05	0.03	0.01
	Closing balance	15.46	14.22	11.75	9.28	6.80	4.33	1.86

Month 4	Opening balance	15.46	14.22	11.75	9.28	6.80	4.33	1.86
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.05	0.03	0.01
	Closing balance	15.46	14.02	11.54	9.07	6.60	4.12	1.65
Month 5	Opening balance	15.46	14.02	11.54	9.07	6.60	4.12	1.65
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.04	0.03	0.01
	Closing balance	15.46	13.81	11.34	8.86	6.39	3.92	1.44
Month 6	Opening balance	15.46	13.81	11.34	8.86	6.39	3.92	1.44
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.04	0.03	0.01
	Closing balance	15.46	13.61	11.13	8.66	6.18	3.71	1.24
Month 7	Opening balance	15.46	13.61	11.13	8.66	6.18	3.71	1.24
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.06	0.04	0.02	0.01
	Closing balance	15.46	13.40	10.93	8.45	5.98	3.50	1.03
Month 8	Opening balance	15.46	13.40	10.93	8.45	5.98	3.50	1.03
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.06	0.04	0.02	0.01
	Closing balance	15.46	13.19	10.72	8.25	5.77	3.30	0.82
Month 9	Opening balance	15.46	13.19	10.72	8.25	5.77	3.30	0.82
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.04	0.02	0.01
	Closing balance	15.46	12.99	10.51	8.04	5.57	3.09	0.62
Month 10	Opening balance	15.46	12.99	10.51	8.04	5.57	3.09	0.62
	Repayment	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.04	0.02	0.00
	Closing balance	15.25	12.78	10.31	7.83	5.36	2.89	0.41
Month 11	Opening balance	15.25	12.78	10.31	7.83	5.36	2.89	0.41
	Repayment	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.04	0.02	0.00
	Closing balance	15.05	12.57	10.10	7.63	5.15	2.68	0.21
Month 12	Opening balance	15.05	12.57	10.10	7.63	5.15	2.68	0.21
	Repayment	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.08	0.07	0.05	0.03	0.02	0.00
	Closing balance	14.84	12.37	9.89	7.42	4.95	2.47	0.00
Principal Repayment		0.62	2.47	2.47	2.47	2.47	2.47	2.47

Interest	1.23	1.10	0.90	0.70	0.50	0.31	0.11

6.10 Interest on Working Capital: Interest rate on working capital loan has been assumed at 16%. The details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	7.63	8.90	10.17
Bank Loan (60%)	4.58	5.34	6.10
Interest @ 16%	0.73	0.85	0.98

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	Total
Profit After Tax (Net Profit)	3.34	3.08	5.92	5.94	5.96	5.95	5.93	
Depreciation	1.23	1.23	1.23	1.23	1.23	1.23	1.23	
Interest	1.23	1.10	0.90	0.70	0.50	0.31	0.11	
Total	5.81	5.41	8.05	7.87	7.69	7.49	7.27	49.58
Interest	1.23	1.10	0.90	0.70	0.50	0.31	0.11	
Loan repayment	0.62	2.47	2.47	2.47	2.47	2.47	2.47	
Total	1.85	3.57	3.37	3.17	2.98	2.78	2.58	20.30
DSCR	3.14	1.51	2.39	2.48	2.58	2.69	2.82	

Average DSCR = 2.44

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	49.50	59.40	69.30
B. Variable cost			
Raw Materials & Consumables	32.60	39.12	45.64
Utilities	1.54	1.85	2.16
Selling Expenses	0.50	0.59	0.69
Miscellaneous Expenses	0.25	0.30	0.35
Interest on Working Capital Loan	0.73	0.85	0.98
Total variable cost	35.61	42.71	49.81
C. Contribution (A-B)	13.89	16.69	19.49
D. Fixed & Semi-fixed Costs			
Salary	10.92	11.03	11.14
Repair & Maintenance	0.21	0.25	0.30
Interest on Term Loan	1.23	1.10	0.90
Depreciation	1.23	1.23	1.23
Total fixed cost	13.59	13.61	13.57
E. BREAK EVEN POINT	97.90%	81.55%	69.64%
F. BEP at operating capacity	48.95%	48.93%	48.75%
G. Cash BEP	44.52%	44.51%	44.33%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	21.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	7.63	1.27	1.27	0.00	0.00	0.00	0.00
Total (A)	21.66	7.63	1.27	1.27	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		3.34	3.08	5.92	5.94	5.96	5.95	5.93
Add: Depreciation		1.23	1.23	1.23	1.23	1.23	1.23	1.23
Add: Interest		1.23	1.10	0.90	0.70	0.50	0.31	0.11
Add: Salvage Value (15%)								3.25
Total (B)	0.00	5.81	5.41	8.05	7.87	7.69	7.49	10.52
NET FLOW (B-A)	-21.66	-1.82	4.14	6.78	7.87	7.69	7.49	10.52

IRR = 15%

MACHINERY SUPPLIERS

(a) Grace Food Processing & Packaging Machinery
426, 3rd Floor, Zakir Nagar West, Okhla, New Delhi - 110 025, Delhi, India

(b) Darshan Enterprise
Opposite Ashok Garden, Maninagar Main Road, Mavdi Plot, Rajkot - 360 001, Gujarat, India

(c) Gurukrupa Industries
Umakant Pandit Udhyog Nagar, Opposite Kishan Trailer, Near Ashok Garden, Rajkot - 360004, Gujarat, India

TEA PROCESSING

1.0 INTRODUCTION

India is the second largest producer of tea, producing almost close to 1000.00 million kgs now. It is also the highest consumer of tea globally. As a result, 80% of tea produced in India is consumed locally, with the CTC variety being the most preferred. Indian tea's exports have gradually declined over the last 2 decades and now ranks below Kenya, Sri Lanka and China. However, increased domestic demand has compensated for this drop in export volumes.

Tea is India's leading beverage after water. Its huge market, has in a way, prompted many suppliers/ manufacturers & marketers of tea to overlook the finer aspects of this great beverage – in their zeal to produce & present large quantities of inferior products and pass it off as cheap "tea". What's more, some products, claiming "superior quality" actually make huge compromises on that front to hoodwink consumers, who end up being denied the true value for the price paid. All this has overshadowed tea's core essence - its status as a classic beverage, with range of varieties & subtleties of taste.

This project profile is for production of CTC made tea with installed processing capacity of 30 lacs kg of green tea leaves, based on 300 working days per annum and 8 working hours per day.

2.0 MARKET POTENTIAL

Tea trading in India is done in two ways - auction and private selling. Market reports are obtained from six major auction centres in India - Kolkata, Guwahati, Silguri, Cochin, Coonoor and Coimbatore.

Demand supply gap has been increasing in India in recent years. While tea consumption has been growing at 3-3.5% every year, there has been no significant increase in plantation land in the last few years as per the market survey report.

According to the Indian Tea Association, India produced 985 million kg of tea in 2011, up from 966 million kg produced in 2010. But the total output missed the 1 billion kg mark due to unfavourable weather (early winter in North East and rains in South India) in the last year.

Per capita consumption is another interesting factor to look at. India's per capita consumption of 650.00 gms is still less when compared to the markets of Pakistan and UK with a consumption of 1.00 kg and 2.50 kg, respectively. Considering the gap in figures, India has bright chances of increasing its tea production. Recent surge in coffee prices has also added effervescence to the tea industry. The rise in coffee prices has forced people to shift from coffee to tea. Besides, world-over international companies like Coca Cola have plans to launch tea-based beverages.

3.0 PROCESS DETAILS

The process of manufacturing CTC tea comprises of the following different process.

(I) Spreading the leaf on Withering Trough: The collected green Leaf is spread upon the withering trough, while spreading due emphasis is laid upon to remove source and old dried leaves so that it will help to minimize the presence of stalks and help in producing fine tea.

(ii) Withering: The process of withering involves partial removal of moisture from fresh leaf and is carried out in order to condition the leaf physically for subsequent processing. Besides, some chemical changes also take place during withering and these are independent of the physical process. Thus, withering involves (a) Physical wither and (b) Chemical wither. While the physical wither can be completed even in 3-4 hours, however for completion of the chemical wither, a period of 12-16 hours is required as such the withering trough can't normally be used more than once a day. Withering is carried out either by Natural Withering or by Trough withering system.

The green leaves that are spread upon the wire mess of withering trough are charged with cold and warm air through an axial flow fan so that the moisture content is reduced to the desired level. Generally the level of reduction in moisture depends upon the grades and quality of tea, which is to be manufactured.

(iii) Rolling/Rotorvane: The withered leaf are rolled to rupture the leaf cells and release of enzymes and to give a twist to the leaf. It is achieved by processing withered leaf in Rotorvane.

During rolling operation chemical changes among the principal constituents of leaf start as soon as the juice of leaf is squeezed out in contact with the air. The chemical changes are caused by the enzyme present in the leaf. The enzyme brings about chemical changes but it does not change itself. Generally, leaf is rolled in Rotorvane before sent for further processing.

(iv) Operating on C.T.C Machines: After the leaves are rolled, they are put into the C.T.C machine (i.e. cutting, tearing and curling machine). This machine cuts the leaf into uniform size with maximum cell distortion leading to quicker and more even oxidation during fermentation. The C.T.C machine is comprised of two rollers rotating in opposite directions at the arranged speed. The speed of the two rollers are different, one of the roller is fast rotating at a speed of around 675 revolutions per minute, whereas the slow roller rotates at a speed of 60 to 73 revolutions per minute. Generally, a constant clearance between the rollers is maintained.

The roller segment is in sharp condition, which cut the leaves three times. During the process it is specifically seen that leafs are not heated as it destroys briskness and quality.

(v) Fermenting: After processing in the C.T.C machine the leaf are fermented. Fermentation of the tea leaf is a very important process in Tea manufacture for briskness, strength, colour and quality largely depend upon it.

The duration of fermentation varies according to rise and fall of temperature. A temperature of 76'F to 78'F represents the ideal temperature of the fermenting room and it takes roughly between 1 to 2 hours in the fermenting process. The leaf processed in C.T.C is spread on the fermenting floor or fermenting bed of fermenting machine. Generally, they are spread at a thickness of half a inch. Fermentation begins as soon as the juice of the leaf come into contact with the air enzyme present in the leaf being about chemical changes among the constituents of the leaf cell such as latechins (polypheno's) and caffeine. When the leaf become bright red in the fermenting room it is the best time to transfer to the drying room for firing.

(vi) Drying: After the requisite level of fermentation CTC leaf is transferred to the drying room where the leaf is fed on the trays of mechanical dryers and fermented leaf is fired at an inlet temperature of 200'F to 220'F to arrest fermentation process and to remove additional moisture present. The exhaust temperature being 120'F to 135'F. The thickness of spreading of CTC leaf being one fourth of inch. The fair revolution of the quality drying machine should be 350 and the tray speed is 200. The final moisture contained of the tea is kept at around 3%.

(vii) Sorting: The sorting process of the CTC leaf is very simple. At first tea is allowed to pass through the sorter for separation of grades, during this process tea is also made free from any foreign material, fibre and other proper grading which depend largely on size (granule) of tea. After grading tea is packed in tea chest/jute bags of standard size and sent to the auction centre.

4.0 COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & site development	10.00
Building & civil works	133.46
Plant & Machinery	159.20
Misc. Fixed assets	39.48
Preliminary & pre-operative expenses	18.75
Contingencies & escalation @ 3%	10.26
Working capital	16.77
TOTAL	387.92

4.1 Land & Site Development: Details of land & site development are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Site levelling, approach road, construction of boundary wall, etc.	LS	LS	1000000
		Say (Rs. in lacs)	10.00

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Factory Building (Open Shed, CGI sheet roof, concrete floor)	1500	3500	5250000
Trough House (Open Shed, CGI sheet roof, concrete floor)	1800	3500	6300000
Office cum Store Building (Brick wall, CGI sheet roof, Concrete Floor)	140	4000	560000
Staff Quarters (Brick wall, CGI sheet roof, Concrete Floor)	100	4000	400000
Genset Room (Brick wall, CGI sheet roof, Concrete Floor)	50	4000	200000
		Sub total	12710000
Add: Electrification, water supply and sanitation @ 5%			635500
		TOTAL	13345500
		Say (Rs. in lacs)	133.46

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Withering Trough (Axial flow fan model 48" diameter 3HP motor fitted)	1	3395000	3395000
Withered Green leaf Shifter with SS tray	1	85000	85000
Rotorvane (Electrical Motor 20 HP 1440 rpm with suitable starter)	1	327000	327000
Ghoogie Sifter completed fitted with aluminium pain sheet with 1 HP Motor	1	130000	130000
42" x 13" x 4 Cut CTC Machine	1	1833000	1833000
CFM Modular plenum chamber (Inclusive of Feed Conveyor, Polyester Mesh Belt, 5HP AC Drive, & Electrical parts etc)	1	975000	975000
Vibratory Fluid Bed Dryer 300 V	1	1600000	1600000
Air Heater System with accessories	1	3070000	3070000
Fabrication of M.S. Chimney	1	205000	205000

Sorting Machine & Conveyers	1	1599500	1599500
Weighbridge (40 ton PIT Mounted Fully Electronic Lorry)	1	45000	45000
Mono Rail 4 wheel overhead conveyor system with accessories	1	507500	507500
Milling Machine with accessories	1	320000	320000
Chasing Machine with accessories	1	230000	230000
Cutter grinder machine with accessories	1	55000	55000
Miscellaneous items	LS	LS	50000
		Sub total	14427000
Add: Installation, transportation, etc @ 10%			1442700
		TOTAL	15919700
		Say (Rs. in lacs)	159.20

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Electrical Panel board with accessories	1	900000	900000
125 KVA DG Set	1	700000	700000
160 KVA DG Set	1	889000	889000
Transformer 500 KVA	1	950000	950000
Furniture & fixtures	LS	LS	100000
Miscellaneous items	LS	LS	50000
		Sub total	3589000
Add: Installation, transportation, etc @ 10%			358900
		TOTAL	3947900
		Say (Rs. in lacs)	39.48

4.5 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

4.6 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs)
Travelling expenses	50000
Professional & other fees	100000
Interest during implementation	1674764
Miscellaneous expenses	50000
TOTAL	1874764
Say (Rs. in lacs)	18.75

4.7 Working Capital: Details of working capital are given below.

(Rs. in lacs)

	Period (Days)	Amount (Rs)		
		Year 1	Year 2	Year 3
Raw materials	15	11.10	12.95	14.79
Power & fuel	30	0.30	0.35	0.40
Salary	30	1.73	1.73	1.74
Finished Goods	15	12.53	14.46	16.39
Receivables	15	16.27	18.99	21.70
Total		41.93	48.47	55.02
Working capital margin in Year 1 (40%)	16.77			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	40%	155.17
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	232.75
TOTAL	100%	387.92

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (kg/annum)	600000	600000	600000	600000	600000	600000	600000
Capacity utilisation	60%	70%	80%	80%	80%	80%	80%
Production/annum at capacity utilisation	360000	420000	480000	480000	480000	480000	480000
Price of made tea (Rs/kg)	110	110	110	110	110	110	110
Total income/annum	396.00	462.00	528.00	528.00	528.00	528.00	528.00
B. OPERATING EXPENSES							
Raw materials	270.00	315.00	360.00	360.00	360.00	360.00	360.00
Power & fuel	3.65	4.26	4.86	4.86	4.86	4.86	4.86
Salary	21.00	21.11	21.21	21.32	21.42	21.53	21.64
Repair & Maintenance	4.31	4.53	4.76	4.99	5.24	5.51	5.78
Selling Expenses	3.96	4.62	5.28	5.28	5.28	5.28	5.28
Miscellaneous Expenses	1.98	2.31	2.64	2.64	2.64	2.64	2.64
Total Operating Expenses	304.90	351.82	398.75	399.10	399.45	399.82	400.20
Less: Working expenses capitalised	16.77	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	107.87	110.18	129.25	128.90	128.55	128.18	127.80
C. FINANCIAL EXPENSES							
Depreciation	15.36	15.36	15.36	15.36	15.36	15.36	15.36
Interest on Term Loan	31.90	28.38	23.26	18.14	13.01	7.89	2.77
Interest on Working Capital Loan	4.02	4.65	5.28	5.28	5.28	5.28	5.28
Net Profit	60.61	66.44	90.63	95.41	100.17	104.92	109.66
Net cash accruals	75.97	81.80	105.99	110.77	115.53	120.28	125.02
Principal Repayment	9.31	37.24	37.24	37.24	37.24	37.24	37.24

6.1 Production Capacity: Total production of made tea at 100% capacity utilization is estimated as below.

Rated plant capacity (kg/day of green tea leaves)	10000
No. of days/annum	300
Quantity of green leaves processed (kg)	3000000
Recovery rate of made tea from green leaves (%)	20%
Total production of made tea per annum at installed capacity (kg)	600000

6.2 Raw Materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Quantity of green leaves processed (kg)	3000000
Price of green leaf (Rs/kg)	15
Expenses on raw material (green leaves) at installed capacity (Rs)	45000000

6.3 Power & Fuel: Total expenses on power & fuel at 100% capacity utilization is estimated as below.

A. Expenses on power

Particulars	Quantity	Power (Kw)	Total (Kw)	hrs/day	kwh/day
Plant & machinery (Total HP of 510)	1	380	250	8	250
General lighting	71	0.10	7	5	35
				Total power requirement/day (kw)	285

Days/annum	300
Rate/unit (Rs)	5
Expenses on power per annum at 100% capacity	428100

B. Expenses on fuel

Hrs/day	2
Days/annum	300
Diesel consumption (litres per hours)	6
Diesel Price per liter	50
Expenses on diesel (Rs)	180000
Expenses on power & fuel at installed capacity (Rs)	608100

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	15000	180000
Technicians/machine operators	5	10000	600000
Semi skilled workers	10	5000	600000
Helpers	20	3000	720000
Expenses on salary in the 1st year (Rs)			2100000

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 5% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & civil works	133.46	1.00%	1.33
Plant & Machinery	159.2	1.50%	2.39
Misc. Fixed assets	39.48	1.50%	0.59
Expenses on repair & maintenance in year 1			4.31

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & civil works	133.46	3.34%	4.46
Plant & Machinery	159.20	5.28%	8.41
Misc. Fixed assets	39.48	6.33%	2.50
TOTAL			15.36

6.9 Interest on term loan & principal repayment: Interest rate has been assumed at 13.75%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	232.75	223.44	186.20	148.96	111.72	74.48	37.24
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest (13.75%)	2.67	2.56	2.13	1.71	1.28	0.85	0.43
	Closing balance	232.75	220.34	183.10	145.86	108.62	71.38	34.14
Month 2	Opening balance	232.75	220.34	183.10	145.86	108.62	71.38	34.14
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.52	2.10	1.67	1.24	0.82	0.39
	Closing balance	232.75	217.23	179.99	142.75	105.51	68.27	31.03
Month 3	Opening balance	232.75	217.23	179.99	142.75	105.51	68.27	31.03
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.49	2.06	1.64	1.21	0.78	0.36
	Closing balance	232.75	214.13	176.89	139.65	102.41	65.17	27.93
Month 4	Opening balance	232.75	214.13	176.89	139.65	102.41	65.17	27.93
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.45	2.03	1.60	1.17	0.75	0.32
	Closing balance	232.75	211.03	173.79	136.55	99.31	62.07	24.83
Month 5	Opening balance	232.75	211.03	173.79	136.55	99.31	62.07	24.83
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.42	1.99	1.56	1.14	0.71	0.28
	Closing balance	232.75	207.92	170.68	133.44	96.20	58.96	21.72
Month 6	Opening balance	232.75	207.92	170.68	133.44	96.20	58.96	21.72
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.38	1.96	1.53	1.10	0.68	0.25
	Closing balance	232.75	204.82	167.58	130.34	93.10	55.86	18.62
Month 7	Opening balance	232.75	204.82	167.58	130.34	93.10	55.86	18.62
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.35	1.92	1.49	1.07	0.64	0.21
	Closing balance	232.75	201.72	164.48	127.24	90.00	52.76	15.52
Month 8	Opening balance	232.75	201.72	164.48	127.24	90.00	52.76	15.52
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.31	1.88	1.46	1.03	0.60	0.18
	Closing balance	232.75	198.61	161.37	124.13	86.89	49.65	12.41
Month 9	Opening balance	232.75	198.61	161.37	124.13	86.89	49.65	12.41
	Repayment	0.00	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.28	1.85	1.42	1.00	0.57	0.14
	Closing balance	232.75	195.51	158.27	121.03	83.79	46.55	9.31
Month 10	Opening balance	232.75	195.51	158.27	121.03	83.79	46.55	9.31

	Repayment	3.10	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.67	2.24	1.81	1.39	0.96	0.53	0.11
	Closing balance	229.65	192.41	155.17	117.93	80.69	43.45	6.21
Month 11	Opening balance	229.65	192.41	155.17	117.93	80.69	43.45	6.21
	Repayment	3.10	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.63	2.20	1.78	1.35	0.92	0.50	0.07
	Closing balance	226.54	189.30	152.06	114.82	77.58	40.34	3.10
Month 12	Opening balance	226.54	189.30	152.06	114.82	77.58	40.34	3.10
	Repayment	3.10	3.10	3.10	3.10	3.10	3.10	3.10
	Interest	2.60	2.17	1.74	1.32	0.89	0.46	0.04
	Closing balance	223.44	186.20	148.96	111.72	74.48	37.24	0.00
Principal Repayment		9.31	37.24	37.24	37.24	37.24	37.24	37.24
Interest		31.90	28.38	23.26	18.14	13.01	7.89	2.77

6.10 Interest on Working Capital Loan: Interest rate on working capital loan has been assumed at 16%. The details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	41.93	48.47	55.02
Bank Loan (60%)	25.16	29.08	33.01
Interest @ 16%	4.02	4.65	5.28

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	TOTAL
Net Profit	60.61	66.44	90.63	95.41	100.17	104.92	109.66	
Depreciation	15.36	15.36	15.36	15.36	15.36	15.36	15.36	
Interest	31.90	28.38	23.26	18.14	13.01	7.89	2.77	
Total	107.87	110.18	129.25	128.90	128.55	128.18	127.80	860.72
Interest	31.90	28.38	23.26	18.14	13.01	7.89	2.77	
Loan repayment	9.31	37.24	37.24	37.24	37.24	37.24	37.24	
Total	41.21	65.62	60.50	55.38	50.25	45.13	40.01	358.10
DSCR	2.62	1.68	2.14	2.33	2.56	2.84	3.19	

Average DSCR = 2.40

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	396.00	462.00	528.00
B. Variable cost			
Raw materials	270.00	315.00	360.00
Power & fuel	3.65	4.26	4.86
Selling expenses	3.96	4.62	5.28
Other expenses	1.98	2.31	2.64
Interest on Working Capital Loan	4.02	4.65	5.28
Total variable cost	283.61	330.84	378.07
C. Contribution (A-B)	112.39	131.16	149.93
D. Fixed & Semi-fixed Costs			
Salary	21.00	21.11	21.21

Repair & maintenance	4.31	4.53	4.76
Interest on Term Loan	31.90	28.38	23.26
Depreciation	15.36	15.36	15.36
Total fixed cost	72.57	69.37	64.59
E. BREAK EVEN POINT	64.57%	52.89%	43.08%
F. BEP at operating capacity	38.74%	37.02%	34.46%
G. Cash BEP	30.54%	28.83%	26.26%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	352.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	41.93	6.55	6.55	0.00	0.00	0.00	0.00
Total (A)	352.40	41.93	6.55	6.55	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		60.61	66.44	90.63	95.41	100.17	104.92	109.66
Add: Depreciation		15.36	15.36	15.36	15.36	15.36	15.36	15.36
Add: Interest		31.90	28.38	23.26	18.14	13.01	7.89	2.77
Add: Salvage Value								
Total (B)	0.00	107.87	110.18	129.25	128.90	128.55	128.18	127.80
NET FLOW (B-A)	-352.40	65.94	103.63	122.70	128.90	128.55	128.18	127.80

IRR = 23%

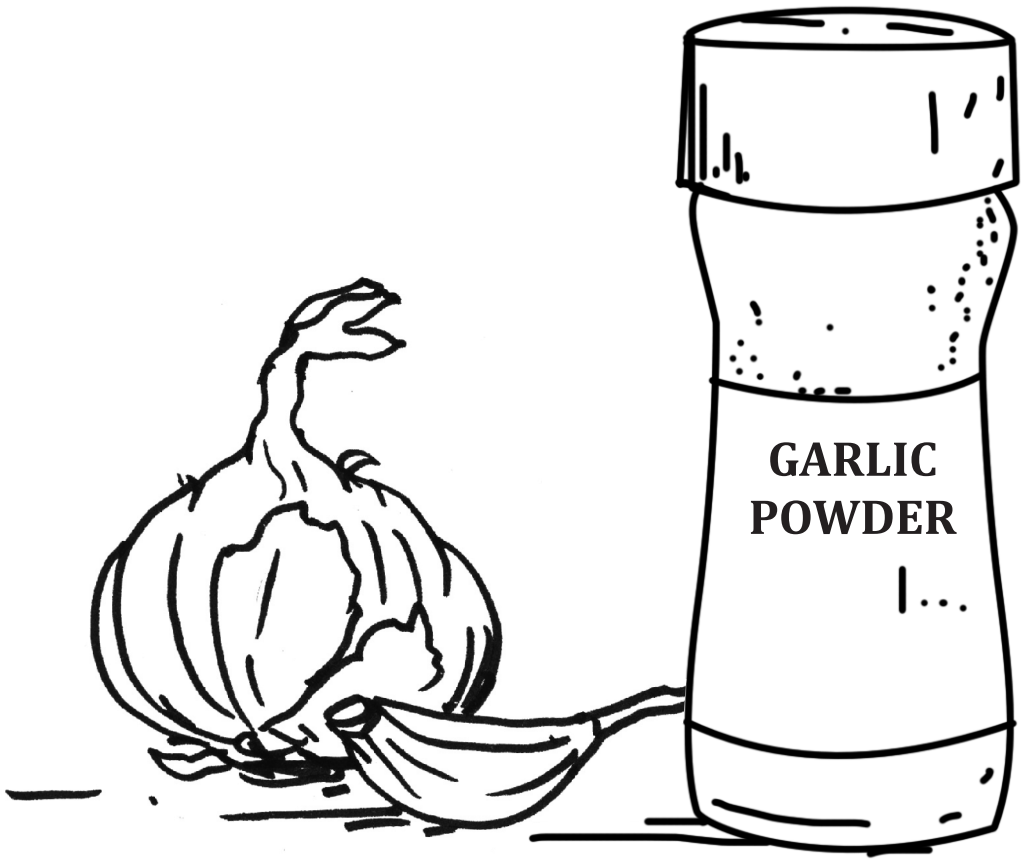
MACHINERY SUPPLIERS

(a) Commercial Enterprises
No. 136, Jnan Goswami Sarani, Formerly No. 13 N, Block A, New Alipore, Kolkata - 700053, West Bengal, India

(b) Bhargab Engineering Works
P-292, Benaras Road, Belgachia, Howrah - 711 108, West Bengal, India

(c) Workson Industries
No. 2, Russel Street, Suite No. 11, 1st Floor, Kolkata - 700 071, West Bengal, India

GARLIC POWDER



1.0 INTRODUCTION

Garlic is being used in the Indian culinary since hundreds of years as a condiment. It helps in absorption and digestion of food, has anthelmintic and antiseptic properties and is thus used in several medicinal preparations as well. Manufacture of garlic powder from raw garlic bulbs is a very well established activity in many European countries and the USA but it has taken its root in India since the last few years. Garlic powder is a hygienically-prepared good quality product. It is easy and convenient to use and store and can be transported without any difficulty.

This project profile is for setting up of a Garlic Powder processing unit with installed processing capacity of 30 Tonnes per annum of garlic bulbs.

2.0 MARKET POTENTIAL

Conventionally, garlic is used since centuries as a condiment in various food preparations like flavouring mayonnaise and tomato ketchup, salad dressings, chutney and pickles, spaghetti, meat sausages, stews and many others. Thus, market for garlic is very widely spread and bulk of the households, restaurants, eateries, caterers, canteens and clubs etc. use it regularly. Due to its medicinal properties, it has many applications in several medicinal preparations also. Use of garlic powder is increasing as it is easy to handle, avoids wastage and also hygienic. There are good prospects of exports to the Gulf countries and some of the European countries.

3.0 PROCESS DETAILS

Raw garlic bulbs are scrubbed manually under mild pressure to facilitate removal of papery skin and separation of cloves. Cloves are then conditioned and dehydrated. Dried cloves are powdered in the powdering unit to the required mesh size and packed in airtight containers.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land and Site Development	-
Building & Civil Works	5.50
Plant & Machinery	5.79
Misc. Fixed Assets	2.00
Preliminary & Pre-operative Expenses	0.95
Contingencies & Escalation @ 3%	0.40
Working Capital	0.86
TOTAL	15.50

4.1 Land & Site Development: No. cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed (Open shed, CGI sheet roof, Concrete Floor)	80	3500	280000
Office & Store (Brick wall, CGI sheet roof, Concrete Floor)	40	5500	220000
		Sub total	500000
Add: Electrification, Water Supply, etc @ 10%			50000
		TOTAL	550000
		Say (Rs. in lacs)	5.50

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Pre-conditioning Machine	1	60000	60000
Tray drier	1	100000	100000
Husk Remover	1	35000	35000
Powdering Unit	1	150000	150000
Air-classifier	1	30000	30000
Sealing Machine	1	35000	35000
Weighing scales, utensils, etc.	LS	LS	50000
		Sub total	460000
Add: Transportation, installation, etc @ 15%			69000
		TOTAL	579000
		Say (Rs. in lacs)	5.79

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (35 HP)	1	100000	100000
Water supply system (STW boring, 3 HP pump set, storage, pipes & fittings)	1	80000	80000
Furniture & Fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	200000
		Say (Rs. in lacs)	2.00

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.40
Professional & other fees	0.20
Interest during implementation	0.25
Miscellaneous expenses	0.10
TOTAL	0.95

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and misc. fixed assets.

4.7 Working Capital: Details of working capital are given below.

Particulars	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw Materials & Consumables	30	0.30	0.36	0.41
Utilities	30	0.09	0.11	0.13
Salary	30	0.63	0.64	0.64
Finished Goods	15	0.52	0.57	0.61
Receivables	15	0.62	0.74	0.86
TOTAL		2.16	2.41	2.66
Working Capital Margin in Yr 1 (40%)	0.86			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	6.20
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	9.30
TOTAL	100%	15.50

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (MT)	24	24	24	24	24
Capacity utilisation	50%	60%	70%	70%	70%
Production/annum at capacity utilisation	12	14	17	17	17
Price/tonne of garlic powder (Rs)	125000	125000	125000	125000	125000
Income from sales/annum (Rs lakh)	15.00	18.00	21.00	21.00	21.00
B. OPERATING EXPENSES					
Raw Materials & Consumables	3.60	4.32	5.04	5.04	5.04
Utilities	1.10	1.32	1.54	1.54	1.54
Salary	7.68	7.76	7.83	7.91	7.99
Repair & Maintenance	0.13	0.16	0.19	0.23	0.28
Selling Expenses	0.15	0.18	0.21	0.21	0.21
Miscellaneous Expenses	0.08	0.09	0.11	0.11	0.11
Total Operating Expenses	12.73	13.82	14.92	15.03	15.16
Less: Working expenses capitalised	0.86	0.00	0.00	0.00	0.00

Operating profit	3.13	4.18	6.08	5.97	5.84
C. FINANCIAL EXPENSES					
Depreciation	0.72	0.72	0.72	0.72	0.72
Interest on Term Loan	0.74	0.62	0.44	0.27	0.09
Interest on Working Capital Loan	0.21	0.23	0.26	0.26	0.26
Net Profit	1.46	2.61	4.67	4.72	4.77
Net cash accruals	2.18	3.33	5.38	5.44	5.49
Principal Repayment	0.55	2.19	2.19	2.19	2.19

6.1 Estimation of Production Capacity: Production of Garlic Powder at installed capacity is estimated as below.

Rated processing capacity (tonnes/annum of Garlic bulbs)	30
Recovery of powder from bulbs (%)	80%
Production/annum of garlic powder at installed capacity (tonnes)	24

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Raw material required at installed capacity (tonnes)	30
Price of garlic bulbs (Rs/tonne)	20000
Expenses on raw materials at installed capacity (Rs)	600000
Add: Expenses on packaging materials, etc @ 20%	120000
Expenses on raw materials & consumables at installed capacity (Rs)	720000

6.3 Utilities: Expenses on utilities at installed capacity is estimated as below.

Expenses on power

Connected Load (kw)	26
Avg. load factor	70%
Hrs/day	8
Days/annum	300
Annual power consumption (kwh)	43865
Rate per unit (Rs)	5
Expenses on power per annum at installed capacity (Rs)	219324

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	Self	0	0
Skilled Workers/Machine Operators	4	8000	384000
Sales Staff	1	5000	60000
Helpers	3	4000	144000
Casual labour	6	2500	180000
Expenses on salary in the 1st year (Rs)			768000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	5.50	1%	0.06
Plant & Machinery	5.79	1%	0.06
Misc. Fixed Assets	2.00	1%	0.02
Expenses on repair & maintenance in the 1st year (Rs)			0.13

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Misc. expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/ annum (Rs lacs)
Building & Civil Works	5.50	3.34%	0.18
Plant & Machinery	5.79	7.07%	0.41
Misc. Fixed Assets	2.00	6.23%	0.12
TOTAL			0.72

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	9.30	8.75	6.57	4.38	2.19
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest (8%)	0.06	0.06	0.04	0.03	0.01
	Closing balance	9.30	8.57	6.38	4.19	2.01
Month 2	Opening balance	9.30	8.57	6.38	4.19	2.01
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.06	0.04	0.03	0.01
	Closing balance	9.30	8.39	6.20	4.01	1.82
Month 3	Opening balance	9.30	8.39	6.20	4.01	1.82
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.06	0.04	0.03	0.01
	Closing balance	9.30	8.21	6.02	3.83	1.64
Month 4	Opening balance	9.30	8.21	6.02	3.83	1.64
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.04	0.03	0.01
	Closing balance	9.30	8.02	5.84	3.65	1.46
Month 5	Opening balance	9.30	8.02	5.84	3.65	1.46
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.04	0.02	0.01
	Closing balance	9.30	7.84	5.65	3.47	1.28
Month 6	Opening balance	9.30	7.84	5.65	3.47	1.28
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.04	0.02	0.01
	Closing balance	9.30	7.66	5.47	3.28	1.09
Month 7	Opening balance	9.30	7.66	5.47	3.28	1.09
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.04	0.02	0.01
	Closing balance	9.30	7.48	5.29	3.10	0.91
Month 8	Opening balance	9.30	7.48	5.29	3.10	0.91
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.04	0.02	0.01
	Closing balance	9.30	7.30	5.11	2.92	0.73
Month 9	Opening balance	9.30	7.30	5.11	2.92	0.73
	Repayment	0.00	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.03	0.02	0.00
	Closing balance	9.30	7.11	4.92	2.74	0.55

Month 10	Opening balance	9.30	7.11	4.92	2.74	0.55
	Repayment	0.18	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.03	0.02	0.00
	Closing balance	9.12	6.93	4.74	2.55	0.36
Month 11	Opening balance	9.12	6.93	4.74	2.55	0.36
	Repayment	0.18	0.18	0.18	0.18	0.18
	Interest	0.06	0.05	0.03	0.02	0.00
	Closing balance	8.94	6.75	4.56	2.37	0.18
Month 12	Opening balance	8.94	6.75	4.56	2.37	0.18
	Repayment	0.18	0.18	0.18	0.18	0.18
	Interest	0.06	0.04	0.03	0.02	0.00
	Closing balance	8.75	6.57	4.38	2.19	0.00
Principal Repayment		0.55	2.19	2.19	2.19	2.19
Interest		0.74	0.62	0.44	0.27	0.09

6.10 Interest on Working Capital: Interest rate on working capital loan has been assumed at 16%. The details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	2.16	2.41	2.66
Bank Loan (60%)	1.29	1.45	1.60
Interest @ 16%	0.21	0.23	0.26

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	Total
Profit After Tax (Net Profit)	1.46	2.61	4.67	4.72	4.77	
Depreciation	0.72	0.72	0.72	0.72	0.72	
Interest	0.74	0.62	0.44	0.27	0.09	
Total	2.92	3.95	5.83	5.71	5.59	24.00
Interest	0.74	0.62	0.44	0.27	0.09	
Loan repayment	0.55	2.19	2.19	2.19	2.19	
Total	1.29	2.81	2.63	2.46	2.28	11.47
DSCR	2.27	1.41	2.21	2.32	2.45	

Average DSCR = 2.09

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	15.00	18.00	21.00
B. Variable cost			
Raw Materials & Consumables	3.60	4.32	5.04
Utilities	1.10	1.32	1.54
Selling Expenses	0.15	0.18	0.21
Miscellaneous Expenses	0.08	0.09	0.11
Interest on Working Capital Loan	0.21	0.23	0.26
Total variable cost	5.13	6.14	7.15
C. Contribution (A-B)	9.87	11.86	13.85
D. Fixed & Semi-fixed Costs			
Salary	7.68	7.76	7.83
Repair & Maintenance	0.13	0.16	0.19
Interest on Term Loan	0.74	0.62	0.44

Depreciation	0.72	0.72	0.72
Total fixed cost	9.27	9.25	9.19
E. BREAK EVEN POINT	93.92%	78.01%	66.32%
F. BEP at operating capacity	46.96%	46.81%	46.43%
G. Cash BEP	43.32%	43.18%	42.80%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	13.69	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	2.16	0.25	0.25	0.00	0.00
Total (A)	13.69	2.16	0.25	0.25	0.00	0.00
CASH INFLOW						
Profit After Tax		1.46	2.61	4.67	4.72	4.77
Add: Depreciation		0.72	0.72	0.72	0.72	0.72
Add: Interest		0.74	0.62	0.44	0.27	0.09
Add: Salvage Value (15%)						2.05
Total (B)	0.00	2.92	3.95	5.83	5.71	7.64
NET FLOW (B-A)	-13.69	0.76	3.70	5.58	5.71	7.64

IRR = 16%

MACHINERY SUPPLIERS

(a) Sejal Enterprises
No. 181, Shukrawar Peth, Shinde Lane , Pune - 411002, Maharashtra, India

(b) Blaze Machinery
Gala No. 3, Dixit Compound, Navapada Lane, Behind Amee Steel, S. V. Road, Ajit Glass, Jogeshwari West, Mumbai - 400 102, Maharashtra, India

(c) Padmatech Engineering Systems
Plot No. 219, Sector No.10, P. C. N. T. D. A., Bhosari , Pune - 411 026, Maharashtra, India

MUSTARD OIL

1.0 INTRODUCTION

Oil seed crop occupies an important position in the agricultural and industrial economy of India and accounts for about 10% of the total crop area. Mustard seed is one of the five major oil seeds from which edible oil is produced. Mustard oil is the medium of cooking in almost all the states of the Eastern Region, especially in West Bengal. The North-East region of the country also consumes mustard oil in large quantity. Mustard oil cake (by-product) is the common cattle feed which has got high nutritional value. It is also used as manure.

This project profile is for setting up of a Mustard Oil processing unit with installed processing capacity of 100 kg mustard seeds per day.

2.0 MARKET POTENTIAL

Due to peculiar food habits and preparation methods, Indians use large quantities of edible oils every day. With growing population, demand is increasing every year and the country is importing semi-processed edible oils since long. Mustard oil is preferred as a cooking medium by the people of North-East region. As per one estimate, there are more than 100 oil mills in Assam alone but even then mustard seeds are sold to other states and mustard oil produced in other states is sold in Assam in ample quantity. Thus, good quality mustard oil produced locally can be sold in the market.

3.0 PROCESS DETAILS

The seeds are to be dried in sun (if these are not dried) and then cleaned by shakers to remove dust and foreign particles. The seeds are initially steamed and then passed through the expeller wherein about 90% of the oil is extracted. Further processing in expeller results in additional extraction of oil. Liquid oil and solid portion is then separated in filters. The solid portion known as oil cake is sold as cattle feed. Edible oil is packed either in tins, jars or food grade plastic pouches for marketing. On an average 33 to 35 per cent of recovery of oil from the seed is made depending upon the quality of the seeds.

4.0 COST OF THE PROJECT

The estimated project cost is given below:

Particulars	Amount (Rs lacs)
Land and Site Development	-
Building & Civil Works	6.93
Plant & Machinery	3.20
Misc. Fixed Assets	1.70
Preliminary & Pre-operative Expenses	0.75
Contingencies & Escalation @ 3%	0.35
Working Capital	5.18
TOTAL	18.11

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed cum Store (7x20 sqm, Half Brick wall, CGI sheet roof, Concrete Floor)	140	4500	630000
Add: Electrification, Water Supply, etc @ 10%			63000
		TOTAL	693000
		Say (Rs. in lacs)	6.93

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Baby oil expeller	1	90000	90000
25 HP Motor with starter & switch	1	25000	25000
Filter press with accessories	1	40000	40000
Oil skimmer (Ghani)	1	25000	25000
Baby boiler (200 kg capacity)	1	40000	40000
Oil storage tank	2	5000	10000
Shaker screen with blower	1	20000	20000
Weighing scales, sealing machine, etc.	LS	LS	15000
		Sub total	265000
Add: Transportation, installation, etc @ 15%			39750
		TOTAL	319750
		Say (Rs. in lacs)	3.20

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power connection (25 HP)	1	150000	150000
Furniture & fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	170000
		Say (Rs. in lacs)	1.70

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.20
Professional & other fees	0.20
Interest during implementation	0.25
Miscellaneous expenses	0.10
TOTAL	0.75

4.6 Contingencies & escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and misc. fixed assets.

4.7 Working capital: Details of working capital are given below.

	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw materials & consumables	30	1.56	1.88	2.19
Salary	30	0.40	0.41	0.41
Finished Goods	30	2.05	2.39	2.72
Receivables	15	1.15	1.38	1.62
TOTAL		5.18	6.06	6.94
Working Capital Margin in Yr 1 (100%)	5.18			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	7.24
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	10.87
TOTAL	100%	18.11

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (kg/annum)					
(i) Oil	47520	47520	47520	47520	47520
(ii) Oil cake	86400	86400	86400	86400	86400
Capacity utilisation	50%	60%	70%	70%	70%
Production/annum at capacity utilisation					
(i) Oil	23760	28512	33264	33264	33264
(ii) Oil cake	43200	51840	60480	60480	60480
Price/kg of oil (Rs)	100	100	100	100	100
Price/kg of oil cake (Rs)	10	10	10	10	10
Income from sale of oil/annum (Rs lakh)	23.76	28.51	33.26	33.26	33.26
Income from sale of oil cake/annum (Rs lakh)	4.32	5.18	6.05	6.05	6.05
Total income/annum	28.08	33.70	39.31	39.31	39.31
B. OPERATING EXPENSES					
Raw Materials & Consumables	19.03	22.83	26.64	26.64	26.64
Power	0.47	0.56	0.66	0.66	0.66
Salary	4.92	4.97	5.02	5.07	5.12
Repair & Maintenance	0.17	0.18	0.20	0.22	0.24
Selling Expenses	0.28	0.34	0.39	0.39	0.39
Miscellaneous Expenses	0.12	0.14	0.17	0.17	0.17
Total Operating Expenses	24.98	29.03	33.08	33.15	33.22
Less: Working expenses capitalised	5.18	0.00	0.00	0.00	0.00
Operating profit	8.27	4.67	6.24	6.17	6.09
C. FINANCIAL EXPENSES					
Depreciation	0.56	0.56	0.56	0.56	0.56
Interest on Term Loan	0.87	0.72	0.52	0.32	0.11

Net Profit	6.84	3.38	5.15	5.29	5.42
Net cash accruals	7.41	3.94	5.72	5.85	5.98
Principal Repayment	0.64	2.56	2.56	2.56	2.56

6.1 Estimation of Production Capacity: Production of Oil and Oil Cake at installed capacity is estimated as below.

Capacity of oil expeller (kg/hr) - processing of mustard seeds	100
No. of working hrs/day	8
No. of days/annum (Seasonal)	180
Total working hrs/annum	1440
Quantity of raw materials processed/annum (kg)	144000
Recovery of oil from seed (%)	33%
Recovery of oil cake from seed (%)	60%
Total production/ annum of oil at 100% capacity (kg)	47520
Total production/ annum of oil cake at 100% capacity (kg)	86400

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Raw material required at 100% capacity (kg)	144000
Add: Provision for spoilage at 0.1%	144
Total quantity of raw material required (kg)	144144
Price of mustard seed (Rs/kg)	24
Expenses on raw materials at 100% capacity (Rs)	3459456
Add: Consumables, packaging, etc @ 10%	345946
Expenses on raw materials & consumables at 100% capacity (Rs)	3805402

6.3 Power: Expenses on power at installed capacity is estimated as below.

Connected Load (kw)	19
Avg. load factor	70%
Hrs/day	8
Days/annum	180
Annual power consumption (kwh)	18799.2
Rate per unit (Rs)	5
Expenses on power per annum at 100% capacity (Rs)	93996

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	8000	96000
Skilled/Semi Skilled Workers	2	5000	120000
Sales Staff	2	4000	96000
Helpers	5	3000	180000
Expenses on salary in the 1st year (Rs)			492000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	6.93	1%	0.07
Plant & Machinery	3.2	2%	0.06
Misc. Fixed Assets	1.70	2%	0.03
Expenses on repair & maintenance in the 1st year (Rs)			0.17

6.6 Selling Expenses: Selling expenses have been assumed at 1% of sales.

6.7 Miscellaneous Expenses: Misc. expenses have been assumed at 0.5% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil Works	6.93	3.34%	0.23
Plant & Machinery	3.20	7.07%	0.23
Misc. Fixed Assets	1.70	6.23%	0.11
TOTAL			0.56

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	10.87	10.23	7.67	5.11	2.56
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest (8%)	0.07	0.07	0.05	0.03	0.02
	Closing balance	10.87	10.01	7.46	4.90	2.34
Month 2	Opening balance	10.87	10.01	7.46	4.90	2.34
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.07	0.05	0.03	0.02
	Closing balance	10.87	9.80	7.24	4.69	2.13
Month 3	Opening balance	10.87	9.80	7.24	4.69	2.13
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.07	0.05	0.03	0.01
	Closing balance	10.87	9.59	7.03	4.47	1.92
Month 4	Opening balance	10.87	9.59	7.03	4.47	1.92
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.05	0.03	0.01
	Closing balance	10.87	9.37	6.82	4.26	1.70
Month 5	Opening balance	10.87	9.37	6.82	4.26	1.70
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.05	0.03	0.01
	Closing balance	10.87	9.16	6.61	4.05	1.49
Month 6	Opening balance	10.87	9.16	6.61	4.05	1.49
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.04	0.03	0.01
	Closing balance	10.87	8.95	6.39	3.84	1.28
Month 7	Opening balance	10.87	8.95	6.39	3.84	1.28
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.04	0.03	0.01
	Closing balance	10.87	8.74	6.18	3.62	1.07
Month 8	Opening balance	10.87	8.74	6.18	3.62	1.07
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.04	0.02	0.01
	Closing balance	10.87	8.52	5.97	3.41	0.85
Month 9	Opening balance	10.87	8.52	5.97	3.41	0.85
	Repayment	0.00	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.04	0.02	0.01
	Closing balance	10.87	8.31	5.75	3.20	0.64

Month 10	Opening balance	10.87	8.31	5.75	3.20	0.64
	Repayment	0.21	0.21	0.21	0.21	0.21
	Interest	0.07	0.06	0.04	0.02	0.00
	Closing balance	10.65	8.10	5.54	2.98	0.43
Month 11	Opening balance	10.65	8.10	5.54	2.98	0.43
	Repayment	0.21	0.21	0.21	0.21	0.21
	Interest	0.07	0.05	0.04	0.02	0.00
	Closing balance	10.44	7.88	5.33	2.77	0.21
Month 12	Opening balance	10.44	7.88	5.33	2.77	0.21
	Repayment	0.21	0.21	0.21	0.21	0.21
	Interest	0.07	0.05	0.04	0.02	0.00
	Closing balance	10.23	7.67	5.11	2.56	0.00
Principal Repayment		0.64	2.56	2.56	2.56	2.56
Interest		0.87	0.72	0.52	0.32	0.11

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	Total
Profit After Tax (Net Profit)	6.84	3.38	5.15	5.29	5.42	
Depreciation	0.56	0.56	0.56	0.56	0.56	
Interest	0.87	0.72	0.52	0.32	0.11	
Total	8.27	4.67	6.24	6.17	6.09	31.43
Interest	0.87	0.72	0.52	0.32	0.11	
Loan repayment	0.64	2.56	2.56	2.56	2.56	
Total	1.50	3.28	3.08	2.87	2.67	13.40
DSCR	5.50	1.42	2.03	2.15	2.28	

Average DSCR = 2.35

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	28.08	33.70	39.31
B. Variable cost			
Raw Materials & Consumables	19.03	22.83	26.64
Power	0.47	0.56	0.66
Selling Expenses	0.28	0.34	0.39
Other expenses	0.12	0.14	0.17
Total variable cost	19.90	23.88	27.86
C. Contribution (A-B)	8.18	9.82	11.46
D. Fixed & Semi-fixed Costs			
Salary	4.92	4.97	5.02
Repair & maintenance	0.17	0.18	0.20
Interest on Term Loan	0.87	0.72	0.52
Depreciation	0.56	0.56	0.56
Total fixed cost	6.52	6.44	6.30
E. BREAK EVEN POINT	79.62%	65.59%	55.03%
F. BEP at operating capacity	39.81%	39.36%	38.52%
G. Cash BEP	36.37%	35.91%	35.08%

9.0 INTERNAL RATE OF RETURN (IRR)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	12.18	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	5.18	0.88	0.88	0.00	0.00
Total (A)	12.18	5.18	0.88	0.88	0.00	0.00
CASH INFLOW						
Profit After Tax		6.84	3.38	5.15	5.29	5.42
Add: Depreciation		0.56	0.56	0.56	0.56	0.56
Add: Interest		0.87	0.72	0.52	0.32	0.11
Add: Salvage Value						
Total (B)	0.00	8.27	4.67	6.24	6.17	6.09
NET FLOW (B-A)	-12.18	3.10	3.79	5.36	6.17	6.09

IRR = 25%

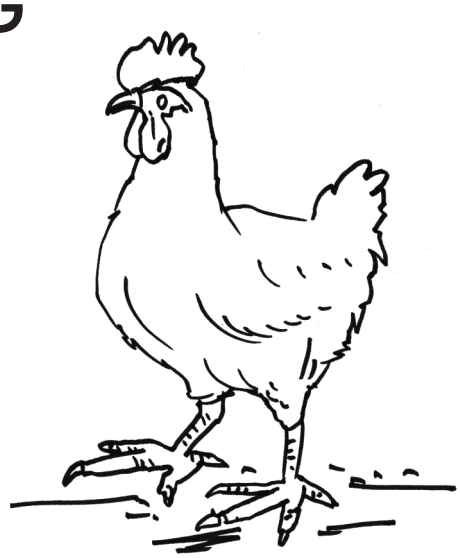
MACHINERY SUPPLIERS

(a) Goyum Screw Press
Plot No. 324/2, Industrial Area A, Ludhiana - 141003, Punjab, India

(b) Frigmaires Engineers
P. O. Box No. 16353, Janata Industrial Estate, Lower Unit No. 8, Senapati Bapat Marg, Opposite Pheonix Mill, Mumbai - 400 013, Maharashtra, India

(c) Muez Hest India Private Limited
No. 231, Blue Rose Industrial Estate, Near Cable Corporation, Western Express Highway, Borivali East, Mumbai - 400066, Maharashtra, India

BROILER FARMING



1.0 INTRODUCTION

Poultry meat is an important source of high quality proteins, minerals and vitamins to balance the human diet. Specially developed varieties of chicken (broilers) are now available with the traits of quick growth and high feed conversion efficiency. Depending on the farm size, broiler farming can be a main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure is of high fertilizer value, which can be used for increasing yield of all crops.

The advantages of broiler farming are:

- Initial investment is a little lower than layer farming.

- Rearing period is 5-6 weeks only

-More number of flocks can be taken in the same shed.

- Broilers have high feed conversion efficiency i.e. the amount of feed required for unit body weight gain is lower in comparison to other livestock.

This project profile on broiler farming is based on the assumption that Day Old Chicks (DOC) will be procured in batches of 2500 at intervals of 2 weeks, i.e, two batches will be procured per month.

2.0 MARKET POTENTIAL

India has made considerable progress in broiler production in the last three decades. The broiler production has sky rocketed at an annual growth rate of about 10% in 2012 has set a new record of broiler production i.e. 3.2 million tons. Similarly, the layer industry is showing increased growth due to increasing demand for protein with low costs.

In North East India, commercialization of poultry farming is yet to take deep roots due to problems on the inputs front. The Animal Husbandry and Veterinary Department caters to the requirement of poultry inputs and training in a limited way. It's the private sector based in the neighbouring states like West Bengal and Bihar, which is catering to the requirement of the Day- Old-Chicks (DOC) and feed in Assam. There is tremendous demand for broiler chicken in the region and a large portion of the demand is met from other states. The industry particularly the broiler sector has grown tremendously during the period. In comparison to the local chicken, broiler chicken has attained a significant rise in growth, because of quick maturity, less hen house days, easy operation and substantial economic return.

In respect of growth of poultry farming, there has been a phenomenal rise in the growth rate of improved poultry (fowls) population in the last one and half decade. As per a survey on consumption pattern of poultry products in India, in urban areas, the per capita consumption of eggs is estimated at 100 nos and 1200 gms of poultry meat per annum. With the increase in income levels, the per capita consumption is bound to increase in the years to come.

3.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	0.00
Building & Civil Works	3.40
Equipment	1.58
Misc. Fixed Assets	0.90
Preliminary & pre-operative expenses	0.37
Contingencies & escalation @ 3%	0.18
Working capital	4.24
TOTAL	10.66

3.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in existing land.

3.2 Building & Civil Works: Details of expenses on building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Broiler Shed (Half brick wall, CGI roof, concrete floor; 1 sqft/bird)	3000	100	300000
Store Room (Brick wall, CGI roof, concrete floor)	100	400	40000
		TOTAL	340000
		Say (Rs. in lacs)	3.40

3.3 Equipment: Details of expenses on equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Mini Feeder	100	125	12500
Medium Feeder	100	160	16000
Large Feeder	100	270	27000
Mini Drinker	100	70	7000
Bell Drinker	100	180	18000
Gas Brooder	5	3650	18250
Bokhari	10	3500	35000
Miscellaneous items	LS	LS	10000
		Sub total	143750
Add: Transportation, installation, etc @ 10%			14375
		TOTAL	158125
		Say (Rs. in lacs)	1.58

3.4 Misc. Fixed Assets: Details of expenses on miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, 3 HP motor pump set, water tank, pipes & fittings)	1	75000	75000
Electrification	LS	LS	10000
Miscellaneous items	LS	LS	5000
		TOTAL	90000
		Say (Rs. in lacs)	0.90

3.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs)
Travelling expenses	20000
Professional & other fees	10000
Interest during implementation	1800
Miscellaneous expenses	5000
TOTAL	36800
Say (Rs. in lacs)	0.37

3.6 Contingencies & Escalation: Expenses on contingencies & escalation has been assumed at 3% of the cost of building & civil works, equipments and miscellaneous fixed assets.

3.7 Working Capital: Details of expenses on working capital are given below.

(Rs. in lacs)

Particulars	Period (Days)	Amount		
		Year 1	Year 2	Year 3
Day Old Chicks	45	1.15	1.15	1.15
Feeds	45	2.98	2.98	2.98
Power & fuel	30	0.01	0.01	0.01
Salary	30	0.09	0.09	0.09
Total		4.24	4.24	4.24
Working Capital Margin in Year 1 (100%)		4.24		

4.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	4.27
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	6.40
TOTAL	100%	10.66

5.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (kg/annum)	50160	54720	54720	54720	54720
Price of chicken (Rs/kg)	70	70	70	70	70
Income from sales/annum	35.11	38.30	38.30	38.30	38.30
B. OPERATING EXPENSES					
Day Old Chicks	9.36	9.36	9.36	9.36	9.36
Feeds	24.19	24.19	24.19	24.19	24.19
Power & fuel	0.17	0.17	0.17	0.17	0.17
Salary	1.08	1.09	1.10	1.11	1.12
Repair & Maintenance	0.07	0.08	0.09	0.10	0.11
Insurance	0.18	0.18	0.18	0.18	0.18
Miscellaneous Expenses	0.07	0.08	0.08	0.08	0.08
Total Operating Expenses	35.12	35.15	35.17	35.19	35.21

Less: Working expenses capitalised	4.24	0.00	0.00	0.00	0.00
Operating profit	4.23	3.16	3.14	3.12	3.10
C. FINANCIAL EXPENSES					
Depreciation	0.16	0.16	0.16	0.16	0.16
Interest on Term Loan	0.51	0.43	0.31	0.19	0.07
Net Profit	3.56	2.57	2.67	2.77	2.87
Net cash accruals	3.72	2.73	2.83	2.93	3.03
Principal Repayment	0.38	1.51	1.51	1.51	1.51

5.1 Production Capacity: Production of broiler chicken per annum is estimated as below.

No. of birds/batch	1500
No. of batches/month	2
Duration of a cycle (Months)	1.5

Schedule of batches (No. of birds) & disposal of chicks	Year 1		Year 2 onwards	
	In	Out	In	Out
Month 1	3000		3000	3000
Month 2	3000	3000	3000	3000
Month 3	3000	3000	3000	3000
Month 4	3000	3000	3000	3000
Month 5	3000	3000	3000	3000
Month 6	3000	3000	3000	3000
Month 7	3000	3000	3000	3000
Month 8	3000	3000	3000	3000
Month 9	3000	3000	3000	3000
Month 10	3000	3000	3000	3000
Month 11	3000	3000	3000	3000
Month 12	3000	3000	3000	3000
No. of birds for sale per annum (Scheduled)		33000		36000
Mortality rate of chicks (5%)		1650		1800
No. of birds available for sale per annum		31350		34200
Avg. weight of birds (kg)		1.60		1.60
Total production of chicken per annum (kg)		50160		54720

5.2 Day Old Chicks: Expenses on purchase of day old chicks are estimated as below.

Particulars	Quantity	Rate (Rs)	Amount (Rs)
Expenses on purchase of day old chicks per annum	36000	26	936000

5.3 Feeds: Expenses on purchase of feeds is estimated as below.

Particulars	No. of birds	Feed (kg/bird)	Rate (Rs/kg)	Amount (Rs)
Expenses on feeds per annum	36000	3.20	21	2419200

5.4 Power & Fuel: Expenses on power & fuel is as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	hrs/day	kwh/day
Pump Set (3 HP)	1	2.24	2.24	1	2.24
General Lighting	14	0.10	1.38	8	11.02
				Total power requirement/ day (Kw)	13.26

Days/annum	360
Rate per unit (Rs)	3.50
Expenses on power per annum (Rs)	16708

5.5 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that expenses on salary will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	-	-	-
Helpers	3	3000	108000
Expenses on salary in the 1st year (Rs)			108000

5.6 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on salary will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil Works	3.40	1%	0.03
Equipment	1.58	2%	0.03
Misc. Fixed Assets	0.90	1%	0.01
Expenses on repair & maintenance in year 1			0.07

5.7 Insurance: Insurance expense is estimated as below.

Particulars	No. of birds/annum	Rate (Rs/bird)	Amount (Rs)
Expenses on insurance per annum	36000	0.50	18000

5.8 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.2% of income.

5.9 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/annum (Rs)
Pig Sty	3.40	3.34%	0.11
Misc. Fixed Assets	0.90	5.28%	0.05
TOTAL			0.16

5.10 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	6.40	6.02	4.52	3.01	1.51
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest (8%)	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.90	4.39	2.89	1.38
Month 2	Opening balance	6.40	5.90	4.39	2.89	1.38
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.77	4.27	2.76	1.25
Month 3	Opening balance	6.40	5.77	4.27	2.76	1.25
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.65	4.14	2.63	1.13
Month 4	Opening balance	6.40	5.65	4.14	2.63	1.13
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.52	4.01	2.51	1.00

Month 5	Opening balance	6.40	5.52	4.01	2.51	1.00
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.40	3.89	2.38	0.88
Month 6	Opening balance	6.40	5.40	3.89	2.38	0.88
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.27	3.76	2.26	0.75
Month 7	Opening balance	6.40	5.27	3.76	2.26	0.75
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.04	0.03	0.02	0.01
	Closing balance	6.40	5.14	3.64	2.13	0.63
Month 8	Opening balance	6.40	5.14	3.64	2.13	0.63
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.03	0.02	0.01	0.00
	Closing balance	6.40	5.02	3.51	2.01	0.50
Month 9	Opening balance	6.40	5.02	3.51	2.01	0.50
	Repayment	0.00	0.13	0.13	0.13	0.13
	Interest	0.04	0.03	0.02	0.01	0.00
	Closing balance	6.40	4.89	3.39	1.88	0.38
Month 10	Opening balance	6.40	4.89	3.39	1.88	0.38
	Repayment	0.13	0.13	0.13	0.13	0.13
	Interest	0.04	0.03	0.02	0.01	0.00
	Closing balance	6.27	4.77	3.26	1.76	0.25
Month 11	Opening balance	6.27	4.77	3.26	1.76	0.25
	Repayment	0.13	0.13	0.13	0.13	0.13
	Interest	0.04	0.03	0.02	0.01	0.00
	Closing balance	6.15	4.64	3.14	1.63	0.13
Month 12	Opening balance	6.15	4.64	3.14	1.63	0.13
	Repayment	0.13	0.13	0.13	0.13	0.13
	Interest	0.04	0.03	0.02	0.01	0.00
	Closing balance	6.02	4.52	3.01	1.51	0.00
Principal Repayment		0.38	1.51	1.51	1.51	1.51
Interest		0.51	0.43	0.31	0.19	0.07

6.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	TOTAL
Profit After Tax (Net Profit)	3.56	2.57	2.67	2.77	2.87	
Depreciation	0.16	0.16	0.16	0.16	0.16	
Interest	0.51	0.43	0.31	0.19	0.07	
Total	4.23	3.16	3.14	3.12	3.10	16.73
Interest	0.51	0.43	0.31	0.19	0.07	
Loan repayment	0.38	1.51	1.51	1.51	1.51	
Total	0.89	1.93	1.81	1.69	1.57	7.89
DSCR	4.77	1.63	1.73	1.84	1.97	

Average DSCR = 2.12

7.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	35.11	38.30	38.30
B. Variable cost			
Day Old Chicks	9.36	9.36	9.36
Feeds	24.19	24.19	24.19
Power & fuel	0.17	0.17	0.17
Insurance	0.18	0.18	0.18
Miscellaneous expenses	0.07	0.08	0.08
Total variable cost	33.97	33.98	33.98
C. Contribution (A-B)	1.14	4.33	4.33
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.09	1.10
Repair & maintenance	0.07	0.08	0.09
Interest on Term Loan	0.51	0.43	0.31
Depreciation	0.16	0.16	0.16
Total fixed cost	1.83	1.76	1.66
E. BREAK EVEN POINT	159.72%	40.68%	38.33%
F. Cash Breakeven Point	145.62%	36.95%	34.61%

8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	5.88	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	4.24	0.00	0.00	0.00	0.00
Total (A)	5.88	4.24	0.00	0.00	0.00	0.00
CASH INFLOW						
Profit After Tax		3.56	2.57	2.67	2.77	2.87
Add: Depreciation		0.16	0.16	0.16	0.16	0.16
Add: Interest		0.51	0.43	0.31	0.19	0.07
Add: Salvage Value (15%)						0.88
Total (B)	0.00	4.23	3.16	3.14	3.12	3.98
NET FLOW (B-A)	-5.88	-0.01	3.15	3.14	3.12	3.98

IRR = 27%

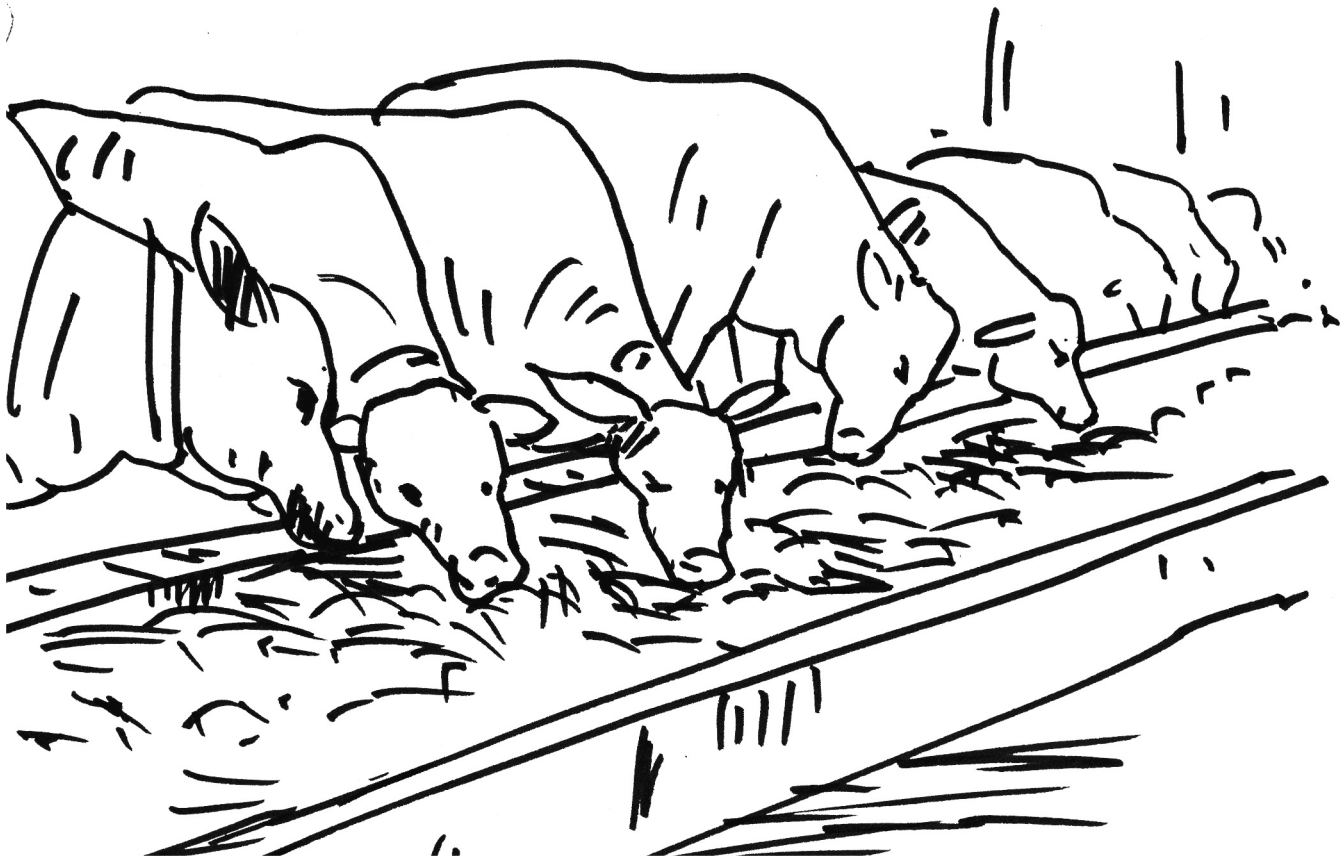
MACHINERY SUPPLIERS

(a) Mittal Enterprises Poultry
No. 13/13, Shakti Nagar, Delhi - 110 007, Delhi, India

(b) Safe Poultries
No. 448, Shahbad Daulatpur, Bawana Road, Near Delhi Engineering College, New Delhi - 110 042, Delhi, India

(c) White Meat Co
No. 58, Poultry Market, Ghazipur, Delhi - 110 096, Delhi, India

DAIRY FARMING



1.0 INTRODUCTION

Dairy farming provides an opportunity for self-employment and important source of income generation to small/ marginal farmers and agricultural labourers. India is the largest milk producer of the world.

While starting a Dairy Farm, the increasing cost of feed ingredients and its seasonal variability can be reduced by undertaking fodder cultivation.

This project profile on dairy farming is based on following assumptions:

-Freshly calved crossbred cows will be purchased in two batches of 5 animals each at an Interval of 6 months.

-Availability of atleast 2 acres of land is prerequisite for cultivation of green fodder. Provision for Shallow Tube Well has been included in the project cost for the purpose. Accordingly, expenses on green fodder have been ignored in profitability estimate.

-Cow dung produced will be utilized as manure for fodder cultivation.

- Cost of rearing calves has beed ignored, as it will be adjusted by their sale.

2.0 MARKET POTENTIAL

The total milk production in the country for the year 2008-09 was estimated at 108.5 million metric tonnes and the demand is expected to be 180 million tonnes by 2020. To achieve this demand annual growth rate in milk production has to be increased from the present 2.5 % to 5%. Thus, there is a tremendous scope/ potential for increasing the milk production through profitable dairy farming.

3.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	0.00
Construction of Shed	2.08
Cost of Livestock	3.50
Implements & Misc. Assets	1.35
Preliminary & pre-operative expenses	0.39
Contingencies & escalation @ 3%	0.10
Working capital margin	0.16
TOTAL	7.58

3.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in existing farmland.

3.2 Construction of Animal Shed: Details of construction of animal shed are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Shed for 10 milch animals (Half brick wall, CGI roof, concrete floor; 40 sqft/animal)	400	400	160000
Shed for 6 calves (Half brick wall, CGI roof, concrete floor; 20 sqft/ animal)	120	400	48000
		TOTAL	208000
		Say (Rs. in lacs)	2.08

3.3 Cost of Livestock: Details of cost of livestock are given below.

Particulars	Qty.	Rate (Rs)	Amount (Rs)
Milch animals	10	35000	350000
		Say (Rs. in lacs)	3.50

3.4 Implements & Misc. Assets: Details of implements & miscellaneous assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Chaff cutter (2 HP motor)	1	50000	50000
STW (3 HP motor)	1	75000	75000
Miscellaneous items	LS	LS	10000
		TOTAL	135000
		Say (Rs. in lacs)	1.35

3.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs)
Travelling expenses	20000
Professional & other fees	10000
Interest during implementation	3600
Miscellaneous expenses	5000
TOTAL	38600
Say (Rs. in lacs)	0.39

3.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of cost of animal shed construction, livestock and implements & miscellaneous assets.

3.7 Working Capital: Details of working capital are given below.

(Rs. in lacs)

	Period (Days)	Amount		
		Year 1	Year 2	Year 3
Feeds & fodders	30	0.10	0.12	0.12
Power & fuel	30	0.00	0.00	0.00
Salary	30	0.06	0.06	0.06
Total		0.16	0.18	0.18
Working Capital Margin in Year 1 (100%)		0.16		

4.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount (Rs)
EQUITY		
A. Equity from Promoters	40%	3.03
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	4.55
TOTAL	100%	7.58

5.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (litres/annum)	18000	16800	16800	16800	19200
Price of milk (Rs/litre)	25	25	25	25	25
Income from sales/annum	4.50	4.20	4.20	4.20	4.80
B. OPERATING EXPENSES					
Feeds & Fodders	1.19	1.44	1.44	1.44	1.54
Power	0.02	0.02	0.02	0.02	0.02
Salary	0.72	0.73	0.73	0.74	0.75
Repair & Maintenance	0.05	0.06	0.07	0.08	0.10
Miscellaneous Expenses	0.05	0.04	0.04	0.04	0.05
Total Operating Expenses	2.02	2.29	2.31	2.33	2.45
Less: Working expenses capitalised	0.16	0.00	0.00	0.00	0.00
Operating profit	2.64	1.91	1.89	1.87	2.35
C. FINANCIAL EXPENSES					
Depreciation	0.14	0.14	0.14	0.14	0.14
Interest on Term Loan	0.36	0.30	0.22	0.13	0.05
Net Profit	2.13	1.47	1.54	1.60	2.16
Net cash accruals	2.27	1.61	1.68	1.74	2.30
Principal Repayment	0.27	1.07	1.07	1.07	1.07

5.1 Production Capacity: Total production of fresh milk per annum is estimated as below.

	Year 1	Year 2	Year 3	Year 4	Year 5
Lactation days (270 days/animal)					
(i) 1st batch	1350	1050	1050	1050	1050
(ii) 2nd batch	900	1050	1050	1050	1350
Total	2250	2100	2100	2100	2400
Dry days (150 days/animal)					
(i) 1st batch	0	750	750	750	750
(ii) 2nd batch	0	750	750	750	450
Total	0	1500	1500	1500	1200
Avg. milk yield/lactating day	8	8	8	8	8
Total yield of milk per annum (litres)	18000	16800	16800	16800	19200

- It is assumed that freshly calved milch animals are purchased in two batches of 5 nos each, with an interval of 6 months.
- No. of lactation days and dry days is assumed at 270 and 150 days respectively.
- No. of days per annum has been considered at 360 days.
- No. of lactating days & dry days per annum for each batch has been scheduled based on the above assumptions.

5.2 Feeds & Fodders: Expenses on feeds & fodders is estimated as below.

Particulars	Qty/day (kg)		Rate (Rs)	Cost/day (Rs)	
	Lactation	Dry		Lactation	Dry
Concentrate Feed	3.50	1.00	12	42	12
Dry Fodder	5.50	5.00	2	11	10
Green Fodder (Own cultivation; hence cost ignored)					
	Year 1	Year 2	Year 3	Year 4	Year 5
Expenses on feeds & fodders per annum (lactating days)	119250	111300	111300	111300	127200
Expenses on feeds & fodders per annum (dry days)	0	33000	33000	33000	26400
Expenses on feeds & fodders per annum (Rs)	119250	144300	144300	144300	153600

5.3 Power: Total expenses on power & fuel is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	hrs/day	Kwh/day
Chaff cutter (2 HP motor)	1	0.15	0.15	2.00	0.30
STW (3 HP motor)	1	0.22	0.22	1.00	0.22
General Lighting	2	0.10	0.17	5.00	0.87
Total power requirement/day (Kw)					1.39

Days/ annum	360
Rate per unit (Rs)	3.50
Expenses on power per annum (Rs)	1750

5.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	-	-	-
Helpers	2	3000	72000
Expenses on salary in the 1st year (Rs)			72000

5.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 20% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Shed	2.08	1%	0.02
Implements & Misc. Assets	1.35	2%	0.03
Expenses on repair & maintenance in year 1			0.05

5.6 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of income.

5.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Shed	2.08	3.34%	0.07
Implements & Misc. Assets	1.35	5.28%	0.07
TOTAL			0.14

5.8 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	4.55	4.28	3.21	2.14	1.07
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest (8%)	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.55	4.19	3.12	2.05	0.98
Month 2	Opening balance	4.55	4.19	3.12	2.05	0.98
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.55	4.10	3.03	1.96	0.89
Month 3	Opening balance	4.55	4.10	3.03	1.96	0.89
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.55	4.01	2.94	1.87	0.80
Month 4	Opening balance	4.55	4.01	2.94	1.87	0.80
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.55	3.92	2.85	1.78	0.71
Month 5	Opening balance	4.55	3.92	2.85	1.78	0.71
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.00
	Closing balance	4.55	3.83	2.76	1.69	0.62
Month 6	Opening balance	4.55	3.83	2.76	1.69	0.62
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.00
	Closing balance	4.55	3.74	2.67	1.60	0.53
Month 7	Opening balance	4.55	3.74	2.67	1.60	0.53
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.55	3.66	2.59	1.52	0.45
Month 8	Opening balance	4.55	3.66	2.59	1.52	0.45
	Repayment	0.00	0.09	0.09	0.09	0.09

	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.55	3.57	2.50	1.43	0.36
Month 9	Opening balance	4.55	3.57	2.50	1.43	0.36
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.55	3.48	2.41	1.34	0.27
Month 10	Opening balance	4.55	3.48	2.41	1.34	0.27
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.46	3.39	2.32	1.25	0.18
Month 11	Opening balance	4.46	3.39	2.32	1.25	0.18
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.37	3.30	2.23	1.16	0.09
Month 12	Opening balance	4.37	3.30	2.23	1.16	0.09
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	4.28	3.21	2.14	1.07	0.00
Principal Repayment		0.27	1.07	1.07	1.07	1.07
Interest		0.36	0.30	0.22	0.13	0.05

6.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	TOTAL
Net Profit	2.13	1.47	1.54	1.60	2.16	
Depreciation	0.14	0.14	0.14	0.14	0.14	
Interest	0.36	0.30	0.22	0.13	0.05	
Total	2.64	1.91	1.89	1.87	2.35	10.67
Interest	0.36	0.30	0.22	0.13	0.05	
Loan repayment	0.27	1.07	1.07	1.07	1.07	
Total	0.63	1.37	1.29	1.20	1.12	5.61
DSCR	4.19	1.39	1.47	1.56	2.11	

Average DSCR = 1.90

7.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	4.50	4.20	4.20
B. Variable cost			
Feeds & Fodders	1.19	1.44	1.44
Power	0.02	0.02	0.02
Other expenses	0.05	0.04	0.04
Total variable cost	1.25	1.50	1.50
C. Contribution (A-B)	3.25	2.70	2.70
D. Fixed & Semi-fixed Costs			
Salary	0.72	0.73	0.73
Repair & maintenance	0.05	0.06	0.07
Interest on Term Loan	0.36	0.30	0.22
Depreciation	0.14	0.14	0.14
Total fixed cost	1.27	1.23	1.16
E. BREAK EVEN POINT	39.15%	45.54%	43.06%

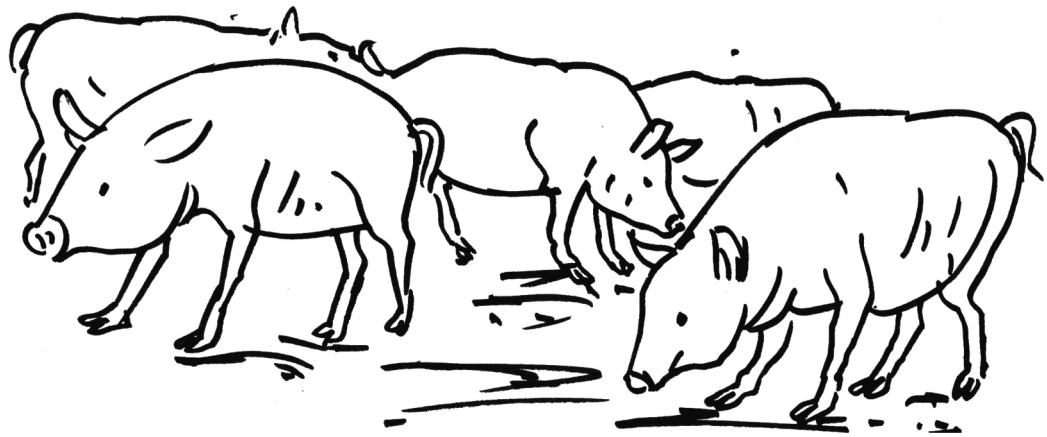
8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	6.93	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	0.16	0.02	0.00	0.00	0.00
Total (A)	6.93	0.16	0.02	0.00	0.00	0.00
CASH INFLOW						
Profit After Tax		2.13	1.47	1.54	1.60	2.16
Add: Depreciation		0.14	0.14	0.14	0.14	0.14
Add: Interest		0.36	0.30	0.22	0.13	0.05
Add: Salvage Value (10%)						0.69
Total (B)	0.00	2.64	1.91	1.89	1.87	3.04
NET FLOW (B-A)	-6.93	2.48	1.89	1.89	1.87	3.04

IRR = 18%

PIGGERY



1.0 INTRODUCTION

Among the various livestock species, piggery has most potential as a source of meat production and is the most efficient feed converters after the broiler.

The advantages of the pig farming are:

i. Pig has the highest feed conversion efficiency i.e. they produce more live weight gain from a given weight of feed than any other class of meat producing animals except broilers.

ii. They can utilise wide variety of feed stuffs viz. grains, forages, damaged feeds and garbage and convert them into valuable nutritious meat. However, feeding of damaged grains, garbage and other unbalanced rations may result in lower feed efficiency.

iii. They are prolific with shorter generation interval. A sow can be breed as early as 8-9 months of age and can farrow twice in a year. They produce 6-12 piglets in each farrowing.

iv. Pigs are known for their meat yield, which in terms of dressing percentage ranges from 65 - 80 in comparison to other livestock species whose dressing yields may not exceed 65%.

v. Pork is most nutritious with high fat and low water content and has better energy value than that of other meats. It is rich in vitamins like thiamin, Niacin and riboflavin.

vi. Pigs manure is widely used as fertilizer for agriculture farms and fish ponds.

This project profile on piggery is based on the following assumptions:

- 10 nos. of 6-7 month old breeding sows are purchased in 2 batches of 5 nos each at an interval of 3 months. 1 boar is also purchased to service the sows.

- The 1st batch of sow is serviced immediately upon procurement so that farrowing happens in the 5th month of 1st year. The 2nd batch of sow is also serviced likewise so that farrowing happens in the 1st month of next year. Subsequent farrowings occur at an interval of 6 months.

-The sows are culled after 10 farrowings so that the project duration is for 6 years.

2.0 MARKET POTENTIAL

According to 18th Livestock Census of India (2007), the total swine population, while small, has grown consistently over the past 50 years.

Pork occupies an important place in the diet of most of the people in North East India. Consequently, there is a great local demand for pork meat, which is mostly met with imports from outside the Region. A market is growing fast for the local bred pigs, giving the people a marketing opportunity to sustainably increase their household incomes.

3.0 COST OF THE PROJECT

The estimated project cost is given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	0.00
Construction of Pig Sty	6.63
Cost of Livestock	0.67
Implements & Misc. Assets	0.90
Preliminary & Pre-operative Expenses	1.13
Contingencies & Escalation @ 3%	0.23
Working Capital	4.53
TOTAL	14.08

3.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in existing farmland.

3.2 Construction of Pig Sty: Details of animal shed are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Farrowing Pens (5 nos) for lactating sow (Half brick wall, CGI roof, concrete floor; 100 sqft/ pen)	500	250	125000
Boar cum Service Pen (1 Nos; Half brick wall, CGI roof, concrete floor; 70 sqft/ pen)	70	250	17500
Dry Sow Pens (5 nos; Half brick wall, CGI roof, concrete floor; 20 sqft/ pen)	100	250	25000
Fattener Shed (120 nos; Half brick wall, CGI roof, concrete floor; 15 sqft/ pen)	1800	250	450000
Store Room (Brick wall, CGI roof, concrete floor)	150	300	45000
TOTAL			662500
Say (Rs. in lacs)			6.63

3.3 Cost of Livestock: Details of cost of livestock are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Cost of Sows	10	6000	60000
Cost of Boar	1	7000	7000
		TOTAL	67000
		Say (Rs. in lacs)	0.67

3.4 Implements & Misc. Assets: Details of implements & miscellaneous assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water Supply System (STW boring, 3 HP motor pump set, water tank, pipes & fittings)	1	75000	75000
Electrification	LS	LS	10000
Miscellaneous items	LS	LS	5000
		TOTAL	90000
		Say (Rs. in lacs)	0.90

3.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. in lacs)

Particulars	Amount (Rs)
Travelling expenses	0.20
Professional & other fees	0.20
Interest during implementation	0.02
Interest during gestation period	0.66
Miscellaneous expenses	0.05
TOTAL	1.13

3.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of construction, cost of livestock and implements & miscellaneous assets.

3.7 Working Capital: It is assumed that total operating expenses in the first year is capitalised, details of which are given below.

Particulars	Amount (Rs lacs)
Operating expenses (Yr 1)	4.53

4.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	5.63
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	8.45
TOTAL	100%	14.08

5.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
A. INCOME						
Production capacity (kg/annum)	0	10640	10640	10640	10640	10640
Price of pork (Rs/kg)	105	105	105	105	105	105
Income from sales/annum	0.00	11.17	11.17	11.17	11.17	11.17
B. OPERATING EXPENSES						
Feeds	2.08	4.01	4.01	4.01	4.01	2.53
Power	0.08	0.08	0.08	0.08	0.08	0.08
Salary	1.08	1.09	1.10	1.11	1.12	1.14
Repair & Maintenance	0.09	0.10	0.11	0.12	0.14	0.15
Medicines for Breeder Stock & Fatteners	0.66	0.86	0.86	0.86	0.86	0.26
Insurance	0.55	0.55	0.55	0.55	0.55	0.55
Miscellaneous Expenses	0.00	0.34	0.34	0.34	0.34	0.34
Total Operating Expenses	4.53	7.02	7.05	7.07	7.09	5.03
Less: Working expenses capitalised	4.53	0.00	0.00	0.00	0.00	0.00
Operating profit	0.00	4.15	4.13	4.10	4.08	6.14
C. FINANCIAL EXPENSES						
Depreciation	0.27	0.27	0.27	0.27	0.27	0.27

Interest on Term Loan	0.68	0.61	0.48	0.34	0.21	0.07
Net Profit	-0.94	3.26	3.38	3.49	3.60	5.80
Net cash accruals	-0.68	3.53	3.65	3.76	3.87	6.07
Principal Repayment	0.00	1.69	1.69	1.69	1.69	1.69

5.1 Production capacity: Total production of pork per annum is estimated as below.

Particulars		Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
		B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2
Schedule & number of surviving piglets/ annum	Month 2				40		40		40		40		40
	Month 5	40		40		40		40		40			
	Month 8		40		40		40		40		40		
	Month 11	40		40		40		40		40			
Schedule & number of disposal of fatteners/ annum	Month 1			38		38		38		38		38	
	Month 4				38		38		38		38		38
	Month 7			38		38		38		38		38	
	Month 10				38		38		38		38		38
No. of fatteners for sale/ annum		0		152		152		152		152		152	
Avg. wt. of fatteners (kg)		100		100		100		100		100		100	
Recovery of pork from live animal (%)		70%		70%		70%		70%		70%		70%	
Total production of pork per annum (kg)		0		10640		10640		10640		10640		10640	

**B1 – Batch 1: B2 – Batch 2

- There are two batches of sows at 3 months interval. 1st batch will start farrowing in the 5th month, while 2nd batch will start in the 8th month. Subsequent farrowings are at an interval of 6 months.
- 10 piglets will be produced per sow per farrowing. Considering mortality rate for piglets at 20%, each farrowing of a batch will produce 40 surviving piglets.
- Sows are culled after 10 farrowings.
- There is no sale of piglets. All piglets are raised as fatteners and disposed off after 8 months. Mortality rate for fatteners has been assumed at 5%.

5.2 Feeds: Expenses on feeds are estimated as below.

Particulars	Quantity/ animal/ day (kg)	Feed composition (%)		Rate (Rs/kg)		Cost/ animal/ day (Rs)
		Feed concentrates	Kitchen/Farm waste	Feed concentrates	Kitchen /Farm waste	
Fattener feed	2.00	30%	70%	12	2	10
Breeder feed	3.00	30%	70%	12	2	15
Piglet feed	0.25	30%	70%	12	2	1

Schedule of annual piglet production & fattener disposal	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2
Month 1			-40		-40		-40		-40		-40	
Month 2				40		40		40		40		40
Month 3												
Month 4				-40		-40		-40		-40		-40
Month 5	40		40		40		40		40			
Month 6												
Month 7			-40		-40		-40		-40		-40	
Month 8		40		40		40		40		40		
Month 9												
Month 10				-40		-40		-40		-40		-40
Month 11	40		40		40		40		40			
Month 12												
No. of feed units for fatteners (days x No. of animals) – figure in 100's												
Batch 1 (1st farrow)	84											
Batch 2 (1st farrow)		48		36								
Batch 1 (2nd farrow)	12		72									
Batch 2 (2nd farrow)				84								
Batch 1 (3rd farrow)			84									
Batch 2 (3rd farrow)				48		36						
Batch 1 (4th farrow)			12		72							
Batch 2 (4th farrow)						84						
Batch 1 (5th farrow)					84							
Batch 2 (5th farrow)						48		36				
Batch 1 (6th farrow)					12		72					
Batch 2 (6th farrow)								84				
Batch 1 (7th farrow)							84					
Batch 2 (7th farrow)								48		36		
Batch 1 (8th farrow)							12		72			
Batch 2 (8th farrow)										84		
Batch 1 (9th farrow)									84			
Batch 2 (9th farrow)										48		36
Batch 1 (10th farrow)									12		72	
Batch 2 (10th farrow)												84

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
Total feed units per annum for fatteners	14400	33600	33600	33600	33600	19200
Expenses on fattener feeds per annum (Rs)	144000	336000	336000	336000	336000	192000
Expenses on breeder feed per annum	59400	59400	59400	59400	59400	59400
No. of piglets (upto 30 days) per annum	120	160	160	160	160	40
Expenses on piglet feeds per annum (Rs)	4500	6000	6000	6000	6000	1500
Expenses on feeds per annum (Rs)	207900	401400	401400	401400	401400	252900

5.3 Power: Expenses on power is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Pump set (3 HP motor)	1	0.22	0.22
General Lighting	10	0.10	1.00
Total power requirement/ day (Kw)			1.22

No. of hrs/ day	5
Days/ annum	360
Annual power requirement (kwh)	2203
Rate per unit (Rs)	3.50
Expenses on power per annum (Rs)	7710

5.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	-	-	-
Helpers	3	3000	108000
Expenses on salary in the 1st year (Rs)			108000

5.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Pig Sty	6.63	1%	0.07
Implements & Misc. Assets	0.90	3%	0.03
Expenses on repair & maintenance in year 1			0.09

5.6 Medicines: Expenses on medicines for breeder stock & fatteners is estimated as below.

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
No. of breeders/annum	11	11	11	11	11	11
No. of fatteners/annum	120	160	160	160	160	40
Cost/ animal/annum	500	500	500	500	500	500
Expenses on medicines per annum	65500	85500	85500	85500	85500	25500

5.7 Insurance: Insurance expense has been assumed at 5% of breeder stock.

5.8 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 3% of income.

5.9 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/annum (Rs)
Pig Sty	6.63	3.34%	0.22
Implements & Misc. Assets	0.90	5.28%	0.05
TOTAL			0.27

5.10 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 6 years including moratorium period of 12 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6
Month 1	Opening balance	8.45	8.45	6.76	5.07	3.38	1.69
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest (8%)	0.06	0.06	0.05	0.03	0.02	0.01
	Closing balance	8.45	8.31	6.62	4.93	3.24	1.55
Month 2	Opening balance	8.45	8.31	6.62	4.93	3.24	1.55
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.06	0.04	0.03	0.02	0.01
	Closing balance	8.45	8.17	6.48	4.79	3.10	1.41
Month 3	Opening balance	8.45	8.17	6.48	4.79	3.10	1.41
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	8.45	8.03	6.34	4.65	2.96	1.27
Month 4	Opening balance	8.45	8.03	6.34	4.65	2.96	1.27
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	8.45	7.89	6.20	4.51	2.82	1.13
Month 5	Opening balance	8.45	7.89	6.20	4.51	2.82	1.13
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	8.45	7.75	6.06	4.37	2.68	0.99
Month 6	Opening balance	8.45	7.75	6.06	4.37	2.68	0.99
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	8.45	7.61	5.92	4.23	2.54	0.85
Month 7	Opening balance	8.45	7.61	5.92	4.23	2.54	0.85
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.01
	Closing balance	8.45	7.46	5.77	4.08	2.39	0.70
Month 8	Opening balance	8.45	7.46	5.77	4.08	2.39	0.70
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.00
	Closing balance	8.45	7.32	5.63	3.94	2.25	0.56
Month 9	Opening balance	8.45	7.32	5.63	3.94	2.25	0.56
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.02	0.00
	Closing balance	8.45	7.18	5.49	3.80	2.11	0.42
Month 10	Opening balance	8.45	7.18	5.49	3.80	2.11	0.42
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.03	0.01	0.00
	Closing balance	8.45	7.04	5.35	3.66	1.97	0.28
Month 11	Opening balance	8.45	7.04	5.35	3.66	1.97	0.28
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.04	0.02	0.01	0.00
	Closing balance	8.45	6.90	5.21	3.52	1.83	0.14
Month 12	Opening balance	8.45	6.90	5.21	3.52	1.83	0.14
	Repayment	0.00	0.14	0.14	0.14	0.14	0.14
	Interest	0.06	0.05	0.03	0.02	0.01	0.00
	Closing balance	8.45	6.76	5.07	3.38	1.69	0.00

Principal Repayment		0.00	1.69	1.69	1.69	1.69	1.69
Interest		0.68	0.61	0.48	0.34	0.21	0.07

6.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	TOTAL
Profit After Tax (Net Profit)	-0.94	3.26	3.38	3.49	3.60	5.80	
Depreciation	0.27	0.27	0.27	0.27	0.27	0.27	
Interest	0.68	0.61	0.48	0.34	0.21	0.07	
Total	0.00	4.15	4.13	4.10	4.08	6.14	22.60
Interest	0.68	0.61	0.48	0.34	0.21	0.07	
Loan repayment	0.00	1.69	1.69	1.69	1.69	1.69	
Total	0.68	2.30	2.17	2.03	1.90	1.76	10.85
DSCR	0.00	1.80	1.90	2.02	2.15	3.48	

Average DSCR = 2.08

7.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	0.00	11.17	11.17
B. Variable cost			
Feeds	2.08	4.01	4.01
Power	0.08	0.08	0.08
Medicines	0.66	0.86	0.86
Insurance	0.55	0.55	0.55
Other expenses	0.00	0.34	0.34
Total variable cost	3.36	5.83	5.83
C. Contribution (A-B)	-3.36	5.34	5.34
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.09	1.10
Repair & maintenance	0.09	0.10	0.11
Interest on Term Loan	0.68	0.61	0.48
Depreciation	0.27	0.27	0.27
Total fixed cost	2.12	2.08	1.96
E. BREAK EVEN POINT	-63.02%	38.88%	36.74%

8.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6
CASH OUTFLOW							
Capital Expenditure	8.20	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	0.38	0.21	0.00	0.00	0.00	0.00
Total (A)	8.20	0.38	0.21	0.00	0.00	0.00	0.00
CASH INFLOW							
Profit After Tax		-0.94	3.26	3.38	3.49	3.60	5.80
Add: Depreciation		0.27	0.27	0.27	0.27	0.27	0.27
Add: Interest		0.68	0.61	0.48	0.34	0.21	0.07
Add: Salvage Value							
	0.00	0.00	4.15	4.13	4.10	4.08	6.14
NET FLOW (B-A)	-8.20	-0.38	3.94	4.12	4.10	4.08	6.14

IRR = 28%

VERMICOMPOST

1.0 INTRODUCTION

Vermicomposting is defined as the production of compost with the use of worms. It is a fast way to convert organic farm waste into organic fertilizer. It degrades waste as vermi or earthworm feed on and digests waste materials. Vermicomposting results in a better quality product that is produced in only 75 days as compared to ordinary compost that is produced in 8-12 weeks.

Vermicompost is an excellent soil enhancer and bioactive fertilizer for organic farming. Earthworms can also be made into feed for fish or other domesticated animals.

This project profile on Vermicompost is based on HDPE Vermi Beds and Sheds, which are light in weight and can be transported cheaply and makes it easy to set them up in remote locations. The installation cost is much cheaper without any requirement for expensive earthwork, digging and concrete works.

2.0 MARKET POTENTIAL

Organic solid waste management by employing earthworms has multifarious role to play. Firstly, it makes way for utilization of available organic wastes to produce the rich source of organic manure of high quality, which is superior to other types of organic manures in its physico-chemical and biological properties. Secondly, the manure is produced in a short duration of time and is a fully matured, homogenous matter. Thirdly, the programme provides job opportunities for the unskilled labour force. Finally, it is the best way of safeguarding the environment. Vermicompost has been adjudged as the best source of organic amendments to soil. Using vermicompost can fulfill the requirements for organically grown products, which are becoming popular in the modern society.

3.0 PROCESS DETAILS

(a) Collect and shred biodegradable materials/agricultural wastes such as fruit/vegetable trimmings, peelings, and dry leaves and stem.

(b) Mix old animal manure such as cow dung and chicken droppings with shredded agricultural vegetable waste. This will improve the nutrient content of the finish product. Do not use fresh manure for the ammonia, or else will give discomfort to the worms.

(c) Sun-dry these materials for at least three days and let them undergo partial fermentation.

(d) Weigh the shredded grinded materials before putting in the compost bed to determine ratio of compostables and worms.

(e) Before stocking the earthworms, make sure that all materials in the vermi bed are prepared. Moisten the bedding with water and cover it with black plastic garbage bag, old sacks, net, or banana leaves to start “anaerobic process”, which is completed after 1-2 weeks.

(f) After the anaerobic process, remove the cover and stock the vermi bed with earthworms.

(g) Maintain the vermi beds' moisture content and temperature through regular checking. Protect the worms from predatory animals.

(h) Vermicompost is harvested when most of the

materials have been consumed by the worms. This takes about 8-10 weeks depending on the environment and culture conditions.

(I) In harvesting, separate the "vermi" from the vermicompost either manually (handpicking) or using a strainer/sifter.

(j) Properly pack vermicompost in sacks and store in a cool dry place.

(k) Harvested/sifted vermi from the vermi beds may either be used for the next vermicomposting cycle or for expansion by constructing additional vermi beds.

4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land and Site Development	-
Vermi Beds	3.00
Implements & Equipment	0.83
Misc. Fixed Assets	0.88
Preliminary & pre-operative expenses	0.35
Contingencies & Escalation @ 3%	0.14
Working capital	1.14
TOTAL	6.35

4.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the project will be set up in existing land.

4.2 Vermi Beds: Details of expenses on Vermi Beds is below.

Particulars	Unit	Quantity	Rate (Rs)	Amount (Rs)
HDPE Vermi Beds (3.6 x 1.5 x 0.6 cum)	Nos	50	3500	175000
Shed for Vermi Beds	Sqm	280	350	98000
			Sub total	273000
Add: Installation, transportation, etc @ 10%				27300
			TOTAL	300300
			Say (Rs. in lacs)	3.00

4.3 Implements & Equipment: Details of expenses on implement & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Power Shredder	1	25000	25000
Sieving Machine	1	40000	40000
Miscellaneous Implements	LS	LS	10000
		Sub total	75000
Add: Installation, transportation, etc @ 10%			7500
		TOTAL	82500
		Say (Rs. in lacs)	0.83

4.4 Misc. Fixed Assets: Details of expenses on miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Water supply system (STW with 3 HP pump set, storage, pipes & fittings)	1	75000	75000
Miscellaneous items	LS	LS	5000
		Sub total	80000
Add: Installation, transportation, etc @ 10%			8000
		TOTAL	88000
		Say (Rs. in lacs)	0.88

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs)
Travelling expenses	15000
Professional & other fees	10000
Interest during implementation	5144
Miscellaneous expenses	5000
TOTAL	35144
Say (Rs. in lacs)	0.35

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of vermi beds, implements & equipments and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital margin is given below.

	Period (days)	Amount (Rs lacs)		
		Yr 1	Yr 2	Yr 3
Raw Materials & Consumables	75	0.10	0.11	0.13
Power & fuel	75	0.37	0.39	0.41
Salary	75	0.68	0.78	0.87
Total		1.14	1.28	1.42
Working capital margin in Year 1 (100%)	1.14			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	2.54
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	3.81
TOTAL	100%	6.35

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (kg/annum)	94608	94608	94608	94608	94608
Capacity utilisation	70%	80%	90%	90%	90%
Total production at capacity utilisation	66226	75686	85147	85147	85147
Price/kg of compost (Rs)	5.00	5.00	5.00	5.00	5.00
Income from sales	3.31	3.78	4.26	4.26	4.26
B. OPERATING EXPENSES					
Raw Materials & Consumables	0.48	0.55	0.62	0.62	0.62
Power & fuel	0.08	0.09	0.10	0.10	0.10
Salary	1.08	1.09	1.10	1.11	1.12
Repair & Maintenance	0.09	0.10	0.11	0.13	0.14
Miscellaneous Expenses	0.07	0.08	0.09	0.09	0.09
Total Operating Expenses	1.80	1.91	2.02	2.04	2.06
Less: Working expenses capitalised	1.15	0.00	0.00	0.00	0.00

Operating profit	2.66	1.88	2.24	2.22	2.19
C. FINANCIAL EXPENSES					
Depreciation	0.26	0.26	0.26	0.26	0.26
Interest on Term Loan	0.30	0.25	0.18	0.11	0.04
Net Profit	2.09	1.36	1.79	1.84	1.89
Net cash accruals	2.36	1.62	2.06	2.11	2.15
Principal Repayment	0.22	0.90	0.90	0.90	0.90

6.1 Production capacity: Total production capacity per annum is estimated as below.

Volume/Vermi Bed (cum)	3.24
No. of Vermi Beds	50
Total capacity of vermibeds (cum)	162
Proportion of agriculture waste by weight (320 kg/cum)	51840
Proportion of cowdung by weight (80 kg/cum)	12960
Total quantity of raw materials by weight (kg)	64800
Recovery of vermicompost from raw materials (%)	30%
Production of vermicompost/cycle (kg)	19440
Duration of cycle (Days)	75
Days/annum	365
Total production of vermicompost per annum at 100% capacity (kg)	94608

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables is estimated as below.

Particulars	kg/cum	Rate (Rs/kg)	Amount (Rs)
Agricultural waste/cum/cycle	320	0.10	32
Cowdung/ cum/ cycle	80	0.15	12
Earthworms/cum/cycle (350/cum; 500 worms/kg)	0.70	50.00	35
Expenses on raw materials/ cum/ cycle			79
Total capacity of vermibeds			162
No. of cycles/annum			5
Expenses on raw materials per annum (Rs)			62284
Add: Expenses on packing materials, etc. @ 10%			6228
Expenses on raw materials & consumables per annum at 100% capacity (Rs)			68512

6.3 Power: Expenses on power is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)	Hrs/ day	kwh/ day
Pump set (3 HP)	1	2.24	2.24	1.00	2.24
Power Shredder	1	0.20	0.20	1.00	0.20
Sieving Machine	1	0.20	0.20	1.00	0.20
General Lighting	7	0.10	0.70	5.00	3.50
Total power requirement/day (Kwh)					6.14

Days/annum	365
Rate per unit (Rs)	5.00
Expenses on power per annum at installed capacity (Rs)	11202

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that expenses on salary will increase @ 1% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Helpers	3	3000	108000
Expenses on salary in the 1st year (Rs)			108000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount
Vermi Beds	3.00	2%	0.06
Implements & Equipment	0.83	2%	0.02
Misc. Fixed Assets	0.88	2%	0.02
Expenses on repair & maintenance in the 1st year (Rs)			0.09

6.6 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 2% of sales.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Vermi Beds	3.00	5.00%	0.15
Implements & Equipment	0.83	7.07%	0.06
Misc. Fixed Assets	0.88	6.23%	0.05
TOTAL			0.26

6.8 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

	Year	1	2	3	4	5
Month 1	Opening balance	3.81	3.59	2.69	1.79	0.90
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest (8%)	0.03	0.02	0.02	0.01	0.01
	Closing balance	3.81	3.51	2.61	1.72	0.82
Month 2	Opening balance	3.81	3.51	2.61	1.72	0.82
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.02	0.01	0.01
	Closing balance	3.81	3.44	2.54	1.64	0.75
Month 3	Opening balance	3.81	3.44	2.54	1.64	0.75
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.81	3.36	2.47	1.57	0.67
Month 4	Opening balance	3.81	3.36	2.47	1.57	0.67
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.81	3.29	2.39	1.49	0.60
Month 5	Opening balance	3.81	3.29	2.39	1.49	0.60
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.02	0.01	0.00

	Closing balance	3.81	3.21	2.32	1.42	0.52
Month 6	Opening balance	3.81	3.21	2.32	1.42	0.52
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.81	3.14	2.24	1.34	0.45
Month 7	Opening balance	3.81	3.14	2.24	1.34	0.45
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.81	3.06	2.17	1.27	0.37
Month 8	Opening balance	3.81	3.06	2.17	1.27	0.37
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.81	2.99	2.09	1.20	0.30
Month 9	Opening balance	3.81	2.99	2.09	1.20	0.30
	Repayment	0.00	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.81	2.91	2.02	1.12	0.22
Month 10	Opening balance	3.81	2.91	2.02	1.12	0.22
	Repayment	0.07	0.07	0.07	0.07	0.07
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.73	2.84	1.94	1.05	0.15
Month 11	Opening balance	3.73	2.84	1.94	1.05	0.15
	Repayment	0.07	0.07	0.07	0.07	0.07
	Interest	0.02	0.02	0.01	0.01	0.00
	Closing balance	3.66	2.76	1.87	0.97	0.07
Month 12	Opening balance	3.66	2.76	1.87	0.97	0.07
	Repayment	0.07	0.07	0.07	0.07	0.07
	Interest	0.02	0.02	0.01	0.01	0.00
	Closing balance	3.59	2.69	1.79	0.90	0.00
Principal Repayment		0.22	0.90	0.90	0.90	0.90
Interest		0.30	0.25	0.18	0.11	0.04

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	TOTAL
Profit After Tax (Net Profit)	2.09	1.36	1.79	1.84	1.89	
Depreciation	0.26	0.26	0.26	0.26	0.26	
Interest	0.30	0.25	0.18	0.11	0.04	
Total	2.66	1.88	2.24	2.22	2.19	11.19
Interest	0.30	0.25	0.18	0.11	0.04	
Loan repayment	0.22	0.90	0.90	0.90	0.90	
Total	0.53	1.15	1.08	1.01	0.94	4.70
DSCR	5.04	1.63	2.07	2.20	2.34	

Average DSCR = 2.38

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	3.31	3.78	4.26
B. Variable cost			
Raw Materials & Consumables	0.48	0.55	0.62
Power & fuel	0.08	0.09	0.10
Miscellaneous expenses	0.07	0.08	0.09
Total variable cost	0.62	0.71	0.80
C. Contribution (A-B)	2.69	3.07	3.45
D. Fixed & Semi-fixed Costs			
Salary	1.08	1.09	1.10
Repair & maintenance	0.09	0.10	0.11
Interest on Term Loan	0.30	0.25	0.18
Depreciation	0.26	0.26	0.26
Total fixed cost	1.74	1.71	1.66
E. BREAK EVEN POINT	64.81%	55.76%	48.10%
F. BEP at operating capacity	45.37%	44.61%	43.29%
G. Cash BEP	38.50%	37.74%	36.42%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	4.71	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	1.15	0.13	0.13	0.00	0.00
Total (A)	4.71	1.15	0.13	0.13	0.00	0.00
CASH INFLOW						
Profit After Tax		2.09	1.36	1.79	1.84	1.89
Add: Depreciation		0.26	0.26	0.26	0.26	0.26
Add: Interest		0.30	0.25	0.18	0.11	0.04
Add: Salvage Value (10%)						
Total (B)	0.00	2.66	1.88	2.24	2.22	2.19
NET FLOW (B-A)	-4.71	1.51	1.74	2.11	2.22	2.19

IRR = 28%

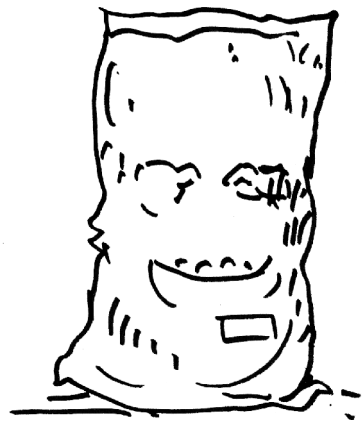
MACHINERY SUPPLIERS

(a) Oasis Irrigation Equipment Company Limited
P - 6, Scheme - 6, M. S., C. I. T., Kolkata - 700054, West Bengal, India

(b) United Sales Agency
No. 174/C, Jamunalal Bajaj Street, Ground Floor, Kolkata - 700007, West Bengal, India

(c) Hansin Bio-Infra India Pvt. Ltd.
Plot No. 16, Ecotech III, Udhyog Kendra I, Gautam Budh Nagar, Noida - 201 306, Uttar Pradesh, India

CATTLE AND POULTRY FEED



1.0 INTRODUCTION

Development of livestock farming is receiving attention considering the nutritional requirements of the population as well as the large employment opportunities generated by these activities. Besides, due to liberal policies, there has been a substantial growth of livestock farms all over the country. Along with the growth of the industry, the feed industry is keeping pace. Cattle and poultry feed are mixtures of various ingredients like maize, rice bran, groundnut cake, molasses, soyabean cake, fish meal etc. The composition of cattle/poultry feed can be varied depending on the availability of various raw materials. Balanced feed is essential for proper growth of cattle and chicks and consequently to increase the output of milk, broiler/eggs.

This project profile is for setting up of cattle and poultry feed unit with installed capacity of 1000 ton per annum, based on 300 working days per annum and 8 working hours per day.

2.0 MARKET POTENTIAL

Livestock production in the North-Eastern Region is characterized by traditional backyard or small scale unit.But due to import of better breed and improvement of the existing livestock through cross-breeding the genetic potentiality of the livestock population can be improved. But livestock feed has been a major constrain to small farmer livestock developers and the most single important constrain for the increased production in this region is the inadequacy of feeds and fodder resources both in quality and quantity.

The availability of feeds and fodder is not commensurate with their requirements. When estimated for the N E Region the shortage is about 75% concentrate, 35% green fodder and 28% dry fodder for the present livestock population alone. It is clear that the region has to depend largely upon other states for procurement of concentrate feeds. The need for animal/poultry feed increasing substantially. There is, thus, untapped potential in the cattle/poultry feed sector and a number of tiny units can be set up to meet the local demand.

3.0 PROCESS DETAILS

The ingredients are pulverized in a pulveriser to the required mesh size. The Product is mixed and meshed in a vibrating screen to ensure correct particle size. The product is packed in ordinary gunny bags or polythene lined gunny bags. The flow diagram of the process is as follows:

RAW MATERIAL
↓
CLEANING
↓
FUMIGATION
↓
GRINDING/PULVERIZING
↓
MIXING
↓
MOLASSING
↓
STORING
↓
PACKING/LOADING/SUPPLY

4.0. COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	**Own Land/ On Lease**
Building & Civil works	**4.95**
Plant & Machinery	**5.50**
Misc. Fixed assets	**0.50**
Preliminary & pre-operative expenses	**0.77**
Contingencies & escalation @ 3%	**0.33**
Working capital	**1.18**
TOTAL	**13.22**

4.1 Land & Site Development: Nil. Total Area: 5,000 Sq. Ft. Covered Area: 1,500 Sq. Ft.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sq ft)	Rate (Rs)	Amount (Rs)
Factory Building cum Office	1500	275	412500
		Sub total	**412500**
Add: Electrification, water supply and sanitation @ 20%			82500
		TOTAL	**495000**
		Say (Rs. in lacs)	**4.95**

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Amount (Rs)
Feed Grinder 15 HP	1	450000
Conveyor 2 HP	1	
Batch Prin Ribbon Blender 1 Ton capacity	1	
Feed Mixer 7.5 HP	1	
Sealing Machine (Manual)	1	
Miscellaneous items	LS	50000
	Sub total	**500000**
Add: Installation, transportation, etc @ 10%		50000
	TOTAL	**550000**
	Say (Rs. in lacs)	**5.50**

4.4 Misc. Fixed assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Furniture & fixtures	LS	--	25000
Miscellaneous items	LS	--	20000
		Sub total	**45000**
Add: Installation, transportation, etc @ 10%			4500
		TOTAL	**49500**
		Say (Rs. in lacs)	**0.50**

4.5 Contingencies & escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

4.6 Preliminary & pre-operative expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	15000
Professional & other fees	20000
Interest during implementation	31790
Miscellaneous expenses	10000
TOTAL	76790
Say (Rs. in lacs)	**0.77**

4.7 Working capital: Details of working capital are given below.

(Rs. in lacs)

	Period (Days)	Total Current Assets		
		Year 1	Year 2	Year 3
Raw materials	15	1.12	1.30	1.49
Power & utility	30	0.06	0.07	0.08
Salary	30	0.30	0.30	0.30
Finished Goods	15	0.00	1.51	1.70
Receivables	15	1.48	1.73	1.97
Total		**2.95**	**4.90**	**5.54**
Working capital margin in Year 1 (40%)	**1.18**			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	**40%**	**5.29**
B. Subsidy from Central/State Govt.	**-**	
DEBT		
Term Loan from Banks/Financial Institutions	**60%**	**7.93**
TOTAL	**100%**	**13.22**

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
A. INCOME						
Production Capacity (Ton/annum)	1000	1000	1000	1000	1000	1000
Capacity utilisation	60%	70%	80%	80%	80%	80%
Production/ annum at capacity utilisation	**600**	**700**	**800**	**800**	**800**	**800**
Total income/annum	**36.00**	**42.00**	**48.00**	**48.00**	**48.00**	**48.00**
B. OPERATING EXPENSES						
Raw Materials	27.17	31.69	36.22	36.22	36.22	36.22
Power & Utility	0.70	0.81	0.93	0.93	0.93	0.93
Salary	3.60	3.62	3.64	3.65	3.67	3.69
Repair & Maintenance	0.17	0.17	0.17	0.18	0.18	0.18
Other Expenses	0.36	0.42	0.48	0.48	0.48	0.48

Total Operating Expenses	0.00	**36.72**	**41.44**	**41.46**	**41.48**	**41.51**
Operating profit	0.27	**5.28**	**6.56**	**6.54**	**6.52**	**6.49**
C. FINANCIAL EXPENSES						
Depreciation	0.49	0.49	0.49	0.49	0.49	0.49
Interest on Term Loan	0.63	0.58	0.45	0.32	0.20	0.07
Interest on Working Capital Loan	0.14	0.24	0.27	0.27	0.27	0.27
Net Profit	**-0.99**	**3.99**	**5.36**	**5.46**	**5.57**	**5.67**
Net cash accruals	**-0.50**	**4.47**	**5.84**	**5.95**	**6.05**	**6.16**
Principal Repayment	0.00	1.59	1.59	1.59	1.59	1.59

6.1 Production capacity and Sales Realisation: Total production of **Cattle and Poultry Feed** at 100% capacity utilization is estimated as below.

Cattle & Poultry Feed	1000 Ton
Total production per annum at 100% capacity (in Ton)	**1000 Ton**

Products	Qnty	Average Rate Per Unit (Rs.)	Amount (Rs)
Cattle & Poultry Feed	1000 Ton	6000	6000000
Total Sales Turnover per annum at 100% capacity			**6000000**

6.2 Raw materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Products	Qnty	Average Rate Per Unit (Rs.)	Amount (Rs)
Broken rice, Maize, Rice bran, Fish meal etc. (In Ton)	1150 Tons	3800 Per Ton	4370000
Gunny Bags (In Nos.)	10500 Nos.	15 Per Bag	157500
Expenses on raw material at 100% capacity (Rs)			**4527500**

6.3 Power & Utility: Total expenses on power & utility at 100% capacity utilization is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Plant & Machinery	--	10.00	10.00
General Lighting	10	0.10	1.00
Total power requirement/ day (Kw)			11.00

No. of hrs/day	8
No. of days/annum	300
Annual power requirement (kwh)	26400
Rate per unit (Rs)	3.50
Expenses on Power (Rs)	92400
Expenses on other Utility (Rs)	24000
Expenses on power & utility at 100% capacity (Rs)	**116400**

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager	1	6000	72000
Sales man	2	5000	120000
Skilled workers	2	4000	96000
Unskilled workers	2	3000	72000
Expenses on salary in the 1st year (Rs)			**360000**

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil works	4.95	1.00%	0.05
Plant & Machinery	5.5	2.00%	0.11
Misc. Fixed assets	0.50	1.50%	0.01
Expenses on repair & maintenance in year 1			**0.17**

6.6 Other Expenses: Other expenses have been assumed at 1% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil works	4.95	3.34%	0.17
Plant & Machinery	5.50	5.28%	0.29
Misc. Fixed assets	0.50	6.33%	0.03
TOTAL			**0.49**

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 6 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6
Month 1	Opening balance	7.93	7.93	6.35	4.76	3.17	1.59
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest (8%)	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.80**	**6.21**	**4.63**	**3.04**	**1.45**
Month 2	Opening balance	7.93	7.80	6.21	4.63	3.04	1.45
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.67**	**6.08**	**4.50**	**2.91**	**1.32**
Month 3	Opening balance	7.93	7.67	6.08	4.50	2.91	1.32
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.54**	**5.95**	**4.36**	**2.78**	**1.19**
Month 4	Opening balance	7.93	7.54	5.95	4.36	2.78	1.19
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.40**	**5.82**	**4.23**	**2.64**	**1.06**
Month 5	Opening balance	7.93	7.40	5.82	4.23	2.64	1.06
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.27**	**5.68**	**4.10**	**2.51**	**0.93**
Month 6	Opening balance	7.93	7.27	5.68	4.10	2.51	0.93
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.14**	**5.55**	**3.97**	**2.38**	**0.79**
Month 7	Opening balance	7.93	7.14	5.55	3.97	2.38	0.79
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.02	0.01
	Closing balance	**7.93**	**7.01**	**5.42**	**3.83**	**2.25**	**0.66**
Month 8	Opening balance	7.93	7.01	5.42	3.83	2.25	0.66
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.03	0.01	0.00
	Closing balance	**7.93**	**6.87**	**5.29**	**3.70**	**2.12**	**0.53**
Month 9	Opening balance	7.93	6.87	5.29	3.70	2.12	0.53
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.05	0.04	0.02	0.01	0.00
	Closing balance	**7.93**	**6.74**	**5.16**	**3.57**	**1.98**	**0.40**
Month 10	Opening balance	7.93	6.74	5.16	3.57	1.98	0.40
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	**7.93**	**6.61**	**5.02**	**3.44**	**1.85**	**0.26**
Month 11	Opening balance	7.93	6.61	5.02	3.44	1.85	0.26
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	**7.93**	**6.48**	**4.89**	**3.31**	**1.72**	**0.13**

Month 12	Opening balance	7.93	6.48	4.89	3.31	1.72	0.13
	Repayment	0.00	0.13	0.13	0.13	0.13	0.13
	Interest	0.05	0.04	0.03	0.02	0.01	0.00
	Closing balance	**7.93**	**6.35**	**4.76**	**3.17**	**1.59**	**0.00**
Principal Repayment		**0.00**	**1.59**	**1.59**	**1.59**	**1.59**	**1.59**
Interest		**0.63**	**0.58**	**0.45**	**0.32**	**0.20**	**0.07**

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5
Profit After Tax (Net Profit)	-0.99	3.99	5.36	5.46	5.57
Depreciation	0.49	0.49	0.49	0.49	0.49
Interest	0.63	0.58	0.45	0.32	0.20
Total	**0.13**	**5.05**	**6.29**	**6.27**	**6.25**
Interest	0.63	0.58	0.45	0.32	0.20
Loan repayment	0.00	1.59	1.59	1.59	1.59
Total	**0.63**	**2.16**	**2.04**	**1.91**	**1.78**
DSCR	**0.20**	**2.33**	**3.09**	**3.29**	**3.51**

Average DSCR = 2.97

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	**36.00**	**42.00**	**48.00**
B. Variable cost			
Raw Materials	27.17	31.69	36.22
Power & Utility	0.70	0.81	0.93
Other expenses	0.36	0.42	0.48
Interest on Working Capital Loan	0.14	0.24	0.27
Total variable cost	**28.36**	**33.16**	**37.90**
C. Contribution (A-B)	**7.64**	**8.84**	**10.10**
D. Fixed & Semi-fixed Costs			
Salary	3.60	3.62	3.64
Repair & maintenance	0.17	0.17	0.17
Interest on Term Loan	0.63	0.58	0.45
Depreciation	0.49	0.49	0.49
Total fixed cost	**4.89**	**4.85**	**4.75**
E. BREAK EVEN POINT	**64.03%**	**54.90%**	**46.98%**
F. BEP at operating capacity	**38.42%**	**38.43%**	**37.58%**
G. Cash BEP	**34.59%**	**34.57%**	**33.73%**

9.0 INTERNAL RATE OF RETURN (IRR)

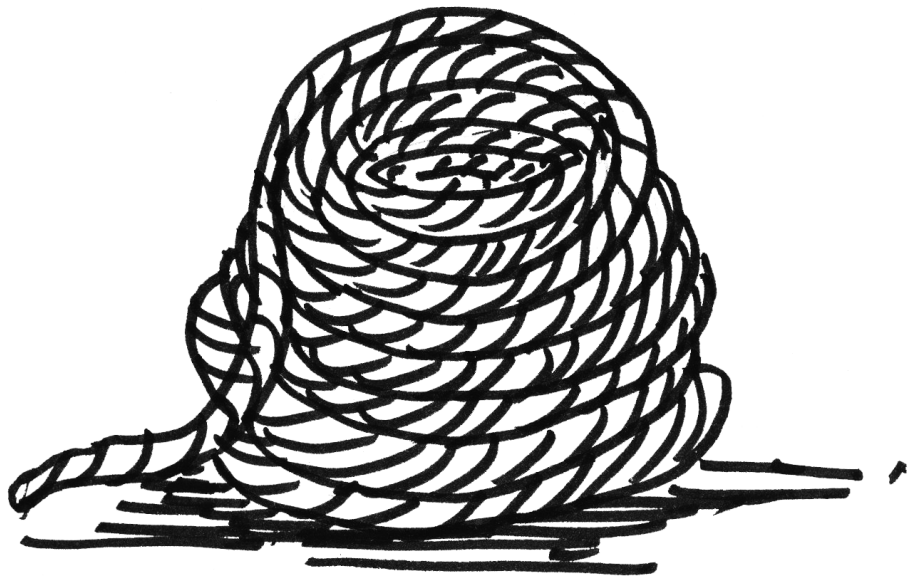
(Rs. in lacs)

Year	0	1	2	3	4	5	6
CASH OUTFLOW							
Capital Expenditure	11.27	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	2.95	1.95	0.64	0.00	0.00	0.00
Total (A)	**11.27**	**2.95**	**1.95**	**0.64**	**0.00**	**0.00**	**0.00**
CASH INFLOW							
Profit After Tax		-0.99	3.99	5.36	5.46	5.57	5.67
Add: Depreciation		0.49	0.49	0.49	0.49	0.49	0.49
Add: Interest		0.63	0.58	0.45	0.32	0.20	0.07
Add: Salvage Value							
Total (B)	**0.00**	**0.13**	**5.05**	**6.29**	**6.27**	**6.25**	**6.23**
NET FLOW (B-A)	**-11.27**	**-2.82**	**3.10**	**5.66**	**6.27**	**6.25**	**6.23**

IRR = 28%

Sl. No.	Name of the Machinery Suppliers	Communication Address
1.	M/s Hardcase Engineering Works (P) Ltd	Mahatma Gandhi Road, Secunderabad, Pin-500 003
2.	M/s James Engineering Co. Ltd	22, Brabourne Road, Kolkata, Pin- 700 001
3.	M/s Spectomes Engineering Pvt. Ltd.	8-A, Shyamaprasad Mukherjee Road, Kolkata, Pin-700 025.

COIR ROPE



1.0 INTRODUCTION

India is the largest coir producer in the world accounting for more than 80 per cent of the total world production of coir fibre. Historically, the coir industry started and flourished in Kerala which has a long coast line, lakes, lagoons and backwaters providing natural conditions required for retting. However, with the expansion of coconut cultivation, coir industry has picked up in the States of Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, West Bengal, Assam, Tripura, Pondicherry and the Union Territories of Lakshadweep and Andaman & Nicobar Islands. There is significant production of coconuts in Tripura also. This could form the basis for development of the coir industry in the North East which can generate substantial employment. The main uses of coir rope/yarn are in the construction of houses, industrial building, tying ladders, packing of large boxes and also for drawing water from wells.

This project profile is for setting up of a Coir Rope Making unit with installed capacity of producing 100 Ton Coir Rope per annum, based on 300 working days per annum and 8 working hours per day.

2.0 MARKET POTENTIAL

Due to tremendous rise in the construction of Multi-storied building, ownership flat, shopping mall in the city and urban areas, stadium, Govt. and Private offices and RCC construction in the rural areas the demand of coir yarn or rope has been increasing drastically.

3.0 PROCESS DETAILS

The main process steps involved are;

A. Collection and storage of husk.

B. Extraction of fibre.

C. Spinning of extracted fibre.

D. Conversion of spun fibre to yarn/rope in machine.

4.0. COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	**Own Land/ On Lease**
Building & Civil works	**4.74**
Plant & Machinery	**7.10**
Misc. Fixed assets	**2.60**
Preliminary & pre-operative expenses	**0.88**
Contingencies & escalation @ 3%	**0.43**
Working capital	**0.85**
TOTAL	**16.60**

4.1 Land & Site Development: Nil.

Total Land: 3,000 Sq. Ft. ; Covered Area: 1,200 Sq. Ft.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sq ft.)	Rate (Rs)	Amount (Rs)
Work Shed, Storage and Office	1500	275	412500
		Sub total	**412500**
Add: Water supply and sanitation @ 10%			61875
		TOTAL	**474375**
		Say (Rs. in lacs)	**4.74**

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Amount (Rs)
Buster 15 HP	1	625000
Decorticator	1	
Shifter	1	
Baling Press 2 HP	1	
Willowing Machine	1	
Traditional Motorised Ratts	20	
Re-hanking Frame & Accessories	15	
Miscellaneous items	LS	20000
	Sub total	**645000**
Add: Installation, transportation, etc @ 15%		64500
	TOTAL	**709500**
	Say (Rs. in lacs)	**7.10**

4.4 Misc. Fixed assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Electrification and Transformer	1	200000	200000
Furniture & fixtures	LS	--	6000
Miscellaneous items like Water Pump etc	LS	--	30000
		Sub total	**236000**
Add: Installation, transportation, etc @ 10%			23600
		TOTAL	**259600**
		Say (Rs. in lacs)	**2.60**

4.5 Contingencies & escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

4.6 Preliminary & pre-operative expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	10000
Professional & other fees	25000
Interest during implementation	38357
Miscellaneous expenses	15000
TOTAL	88357
Say (Rs. in lacs)	**0.88**

4.7 Working capital: Details of working capital are given below.

(Rs. in lacs)

	Period (Days)	Total Current Assets		
		Year 1	Year 2	Year 3
Raw materials	30	0.39	0.45	0.52
Power & utility	30	0.07	0.08	0.10
Salary	30	0.52	0.53	0.53
Finished Goods	15	0.51	0.55	0.59
Receivables	15	0.63	0.73	0.84
Total		**2.12**	**2.34**	**2.57**
Working capital margin in Year 1 (40%)	**0.85**			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	**40%**	**6.64**
B. Subsidy from Central/State Govt.	**-**	
DEBT		
Term Loan from Banks/Financial Institutions	**60%**	**9.96**
TOTAL	**100%**	**16.60**

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
A. INCOME						
Production Capacity (Ton/annum)	100	100	100	100	100	100
Capacity utilisation	60%	70%	80%	80%	80%	80%
Production/annum at capacity utilisation	**60**	**70**	**80**	**80**	**80**	**80**
Total income/annum	**15.30**	**17.85**	**20.40**	**20.40**	**20.40**	**20.40**

B. OPERATING EXPENSES						
Raw Materials	4.72	5.51	6.29	6.29	6.29	6.29
Power & Utility	0.87	1.02	1.17	1.17	1.17	1.17
Salary	6.36	6.39	6.42	6.46	6.49	6.52
Repair & Maintenance	0.23	0.23	0.24	0.24	0.25	0.25
Other Expenses	0.15	0.18	0.20	0.20	0.20	0.20
Total Operating Expenses	**12.33**	**13.33**	**14.32**	**14.36**	**14.40**	**14.43**
Operating profit	**2.97**	**4.52**	**6.08**	**6.04**	**6.00**	**5.97**
C. FINANCIAL EXPENSES						
Depreciation	0.70	0.70	0.70	0.70	0.70	0.70
Interest on Term Loan	0.80	0.72	0.56	0.41	0.25	0.09
Interest on Working Capital Loan	0.10	0.11	0.12	0.12	0.12	0.12
Net Profit	**1.37**	**2.99**	**4.69**	**4.81**	**4.94**	**5.06**
Net cash accruals	**2.07**	**3.68**	**5.39**	**5.51**	**5.63**	**5.76**
Principal Repayment	0.00	1.99	1.99	1.99	1.99	1.99

6.1 Production capacity and Sales Realisation: Total production of **Coir Rope** at 100% capacity utilization is estimated as below.

Coir Rope	100 Ton
Total production per annum at 100% capacity	**100 Ton**

Products	Qnty	Average Rate Per Unit (Rs.)	Amount (Rs)
Coir Rope	100 Ton	25500	2550000
Total Sale Turnover per annum at 100% capacity			**2550000**

6.2 Raw materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Products	Qnty	Average Rate Per Unit (Rs.)	Amount (Rs)
Coconut Husk	143 Ton	5500	786500
Total Raw Material per annum at 100% capacity			**786500**

6.3 Power & Utility: Total expenses on power & utility at 100% capacity utilization is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Plant & Machinery (Total HP of 20)	--	14.92	14.92
General Lighting	10	0.10	1.00
Total power requirement/ day (Kw)			15.92

No. of hrs/day	8
No. of days/annum	300
Annual power requirement (kwh)	38208
Rate per unit (Rs)	3.50
Expenses on Power (Rs)	133728
Expenses on other Utility (Rs)	12000
Expenses on power & utility at 100% capacity (Rs)	**145728**

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager	1	8000	96000
Technicians/ machine operators	2	5000	120000
Skilled workers	5	4000	240000
Unskilled workers	5	3000	180000
Expenses on salary in the 1st year (Rs)			**636000**

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil works	4.74	1.00%	0.05
Plant & Machinery	7.1	2.00%	0.14
Misc. Fixed assets	2.60	1.50%	0.04
Expenses on repair & maintenance in year 1			**0.23**

6.6 Other Expenses: Other expenses have been assumed at 1% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & Civil works	4.74	3.34%	0.16
Plant & Machinery	7.10	5.28%	0.37
Misc. Fixed assets	2.60	6.33%	0.16
TOTAL			**0.70**

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 6 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lakh)

Month	Year	1	2	3	4	5	6
Month 1	Opening balance	9.96	9.96	7.97	5.98	3.98	1.99
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest (8%)	0.07	0.07	0.05	0.04	0.03	0.01
	Closing balance	**9.96**	**9.80**	**7.80**	**5.81**	**3.82**	**1.83**
Month 2	Opening balance	9.96	9.80	7.80	5.81	3.82	1.83
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.07	0.05	0.04	0.03	0.01
	Closing balance	**9.96**	**9.63**	**7.64**	**5.65**	**3.65**	**1.66**
Month 3	Opening balance	9.96	9.63	7.64	5.65	3.65	1.66
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.04	0.02	0.01
	Closing balance	**9.96**	**9.46**	**7.47**	**5.48**	**3.49**	**1.49**
Month 4	Opening balance	9.96	9.46	7.47	5.48	3.49	1.49

	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.04	0.02	0.01
	Closing balance	**9.96**	**9.30**	**7.31**	**5.31**	**3.32**	**1.33**
Month 5	Opening balance	9.96	9.30	7.31	5.31	3.32	1.33
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.04	0.02	0.01
	Closing balance	**9.96**	**9.13**	**7.14**	**5.15**	**3.15**	**1.16**
Month 6	Opening balance	9.96	9.13	7.14	5.15	3.15	1.16
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.03	0.02	0.01
	Closing balance	**9.96**	**8.97**	**6.97**	**4.98**	**2.99**	**1.00**
Month 7	Opening balance	9.96	8.97	6.97	4.98	2.99	1.00
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.03	0.02	0.01
	Closing balance	**9.96**	**8.80**	**6.81**	**4.82**	**2.82**	**0.83**
Month 8	Opening balance	9.96	8.80	6.81	4.82	2.82	0.83
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.05	0.03	0.02	0.01
	Closing balance	**9.96**	**8.63**	**6.64**	**4.65**	**2.66**	**0.66**
Month 9	Opening balance	9.96	8.63	6.64	4.65	2.66	0.66
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.04	0.03	0.02	0.00
	Closing balance	**9.96**	**8.47**	**6.48**	**4.48**	**2.49**	**0.50**
Month 10	Opening balance	9.96	8.47	6.48	4.48	2.49	0.50
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.04	0.03	0.02	0.00
	Closing balance	**9.96**	**8.30**	**6.31**	**4.32**	**2.32**	**0.33**
Month 11	Opening balance	9.96	8.30	6.31	4.32	2.32	0.33
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.06	0.04	0.03	0.02	0.00
	Closing balance	**9.96**	**8.14**	**6.14**	**4.15**	**2.16**	**0.17**
Month 12	Opening balance	9.96	8.14	6.14	4.15	2.16	0.17
	Repayment	0.00	0.17	0.17	0.17	0.17	0.17
	Interest	0.07	0.05	0.04	0.03	0.01	0.00
	Closing balance	**9.96**	**7.97**	**5.98**	**3.98**	**1.99**	**0.00**
Principal Repayment		**0.00**	**1.99**	**1.99**	**1.99**	**1.99**	**1.99**
Interest		**0.80**	**0.72**	**0.56**	**0.41**	**0.25**	**0.09**

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6
Profit After Tax (Net Profit)	1.37	2.99	4.69	4.81	4.94	5.06
Depreciation	0.70	0.70	0.70	0.70	0.70	0.70
Interest	0.80	0.72	0.56	0.41	0.25	0.09
Total	**2.86**	**4.41**	**5.95**	**5.92**	**5.88**	**5.84**
Interest	0.80	0.72	0.56	0.41	0.25	0.09
Loan repayment	0.00	1.99	1.99	1.99	1.99	1.99
Total	**0.80**	**2.72**	**2.56**	**2.40**	**2.24**	**2.08**
DSCR	**3.59**	**1.62**	**2.33**	**2.47**	**2.63**	**2.81**

Average DSCR = 2.87

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	**15.30**	**17.85**	**20.40**
B. Variable cost			
Raw Materials	4.72	5.51	6.29
Power & Utility	0.87	1.02	1.17
Other expenses	0.15	0.18	0.20
Interest on Working Capital Loan	0.10	0.11	0.12
Total variable cost	**5.85**	**6.82**	**7.79**
C. Contribution (A-B)	**9.45**	**11.03**	**12.61**
D. Fixed & Semi-fixed Costs			
Salary	6.36	6.39	6.42
Repair & maintenance	0.23	0.23	0.24
Interest on Term Loan	0.80	0.72	0.56
Depreciation	0.70	0.70	0.70
Total fixed cost	**8.08**	**8.05**	**7.92**
E. BREAK EVEN POINT	**85.52%**	**72.93%**	**62.81%**
F. BEP at operating capacity	**51.31%**	**51.05%**	**50.25%**
G. Cash BEP	**46.88%**	**46.62%**	**45.82%**

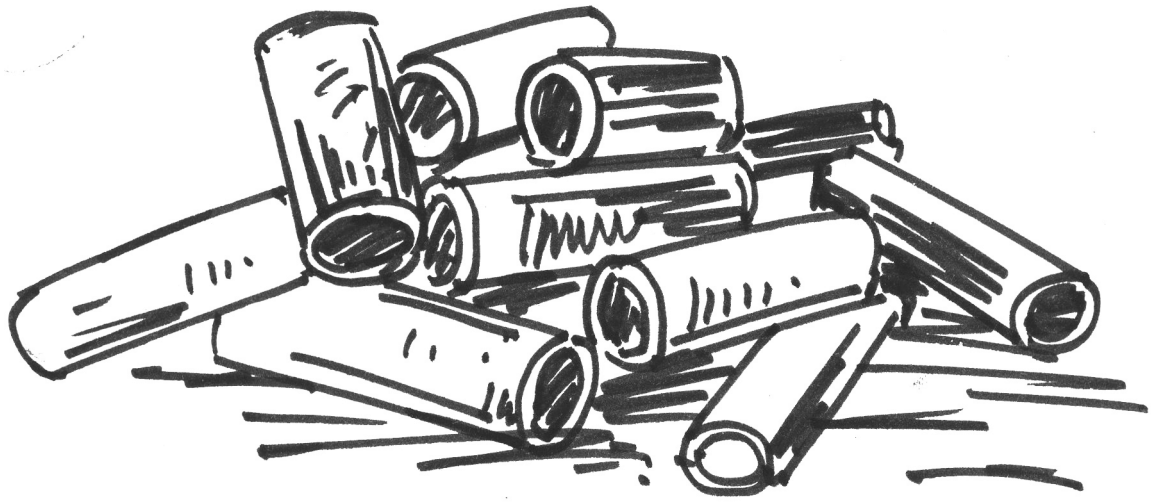
9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6
CASH OUTFLOW							
Capital Expenditure	14.87	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	2.12	0.22	0.22	0.00	0.00	0.00
Total (A)	**14.87**	**2.12**	**0.22**	**0.22**	**0.00**	**0.00**	**0.00**
CASH INFLOW							
Profit After Tax		1.37	2.99	4.69	4.81	4.94	5.06
Add: Depreciation		0.70	0.70	0.70	0.70	0.70	0.70
Add: Interest		0.80	0.72	0.56	0.41	0.25	0.09
Add: Salvage Value							
Total (B)	**0.00**	**2.86**	**4.41**	**5.95**	**5.92**	**5.88**	**5.84**
NET FLOW (B-A)	**-14.87**	**0.75**	**4.18**	**5.73**	**5.92**	**5.88**	**5.84**

IRR = 26%

BAMBOO CHARCOAL



1.0 INTRODUCTION

Charcoal made from bamboo finds ready uses and markets. It has been made for thousands of years in pits and even shallow depressions. Specially designed brick kilns, developed and tested by the National Mission on Bamboo Applications (NMBA), provide an opportunity to make high-quality charcoal from bamboo in an efficient, safe and reliable manner.

Charcoal is a product with many uses, in industry and in the domestic sector. It is utilised:

- at the village level, by blacksmiths and to meet household energy requirements;

- in the domestic sector, as fuel for cooking and heating;

- in the service sector, by dhobis and in dhabas;

- in the industrial sector, at different scales of activity, in furnaces, for forging and metal-working;

- as raw material for further processing into activated carbon and other industrial products.

Charcoal made from bamboo has good properties, similar to wood and other ligno-cellulosic material in terms of high carbon content and calorific value.

Charcoal is produced by heating biomass with a controlled supply of air. This can be done by the conventional pit method, in brick or metal kilns, or in drums. Heating can be direct by igniting the biomass or it can be indirect. Carbonisation in a brick kiln produces uniform-quality charcoal with good yield and low investment.

2.0 RAW MATERIAL

- Any species of bamboo can be used for making charcoal.

- 4–5-year-old bamboo makes the best charcoal. It has by then attained its maximum bio-mass, and its moisture and starch levels have lowered.

- To get the best yield of charcoal, the moisture content of bamboo should be around 20 to 25 per cent. In the monsoon or other rainy periods, bamboo will have higher moisture content. At such times, the bamboo should be left to dry for some time before conversion to charcoal. (For large-scale operations, dryers can be used to bring down the moisture levels.)

- In many applications, the upper and lower portions of bamboo culms are not used, and are often thrown away. These can be used in charcoal-making. Lops and tops of bamboo culms and thicker branches can be used too. Processed waste from stick and sliver units consists of a large amount of particulate matter. Such particulate matter cannot be used in these kilns to make charcoal.

3.0 KILN STRUCTURE

The kiln is hemispherically shaped and has a diameter of 3 metres, made of clay bricks, mud and mortar. It has a rectangular opening at the bottom. Through this opening,

raw bamboo is loaded into the kiln. After conversion, charcoal is taken out through the same opening. The capacity of the Kiln is 2.5–3.5 tons while the volume capacity is 14 cubic metres.

4.0 PROCESS DETAILS:

Step 1: Sizing of Bamboo

- Sizing of bamboo is the first step. The size of the end-product (charcoal) is related to the size of the bamboo placed in the kiln.

- Whole bamboo culms need to be cut to the required size. If the bamboo section is too large, it will not fit into the kiln. The maximum length of any section should be 2.5 metres. The minimum acceptable size is 5 centimetres.

- Homogeneity of size in a batch will make stacking easier and produce better results.

- For every batch, a small quantity of bamboo need to be sized between 10 and 12 centimetres; this will help in kindling the material.

Step 2: Charging of the Feed

- Place the bamboo in the kiln through the door at the bottom. Stack the bamboo horizontally in the kiln.

- Close the door with bricks, and plaster the outer face of the door with mud to provide better insulation and prevent leakage.

- Fire the feed from the opening at the top of the kiln.

- Close the opening at the top of the kiln after the feed has been ignited.

- The openings in the wall of the kiln should be kept open during the initial stages of firing to create the required draft.

- Initially, black smoke will be emitted from the openings in the wall at the upper end. The emission of smoke will gradually spread to the openings at the lower end of the kiln.

- Close the openings in the top rows once the black smoke changes to dense white fumes.

- Close all the openings one by one starting at the top row as the black smoke changes colour.

Step 3: Carbonisation

- Initially regulate a few openings (open/close) across the kiln in both horizontal and vertical directions, to create a draft and enable uniform carbonisation.

- In case a temperature sensor is available,maintain the temperature at 400–550°C by regulating the openings. The temperature should not be allowed to drop below 350°C as this will lead to incompletecarbonisation. The temperature should not rise above 500° C as this will cause the biomass to burn and provide ash instead of charcoal.

- In case a sensor is not available, estimate the temperature. Over time, workers will acquire the necessary skills and experience to regulate the openings even without the use of sensors.

Step 4: Cooling

- Close all openings after 2 days.

- Do not allow air to enter the kiln at this juncture to prevent the charcoal from catching fire.

- Cooling will take a day. The objective is to reduce the kiln temperature to 100° C to allow the charcoal to be safely extracted.

Step 5: Extraction of charcoal

- Break through the opening at the bottom of the kiln.

- In case the char is too hot to handle, sprinkle a small quantity of water. Excessive watering will lower the quality of the charcoal.

- Remove the charcoal carefully to a storage point for disposal.

Step 6: Cleaning

- Clean the kiln of charcoal and residues.

5.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land & Site Development	-
Construction of Kilns	2.50
Miscellaneous Assets	0.20
Preliminary & Pre-operative Expenses	0.38
Working Capital	4.27
TOTAL	7.35

5.1 Land & Site Development: No cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

5.2 Construction of Kilns: Details of construction of kilns are given below.

Particulars	Quantity	Rate (Rs)	Amount (Rs)
Kilns (3000 kg capacity, made with clay bricks, mud and mortar)	10	25000	250000
		TOTAL	250000
		Say (Rs. in lacs)	2.50

5.3 Miscellaneous Assets: Details of miscellaneous assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Implements	LS	LS	15000
Miscellaneous items	LS	LS	5000
		TOTAL	20000
		Say (Rs. in lacs)	0.20

5.4 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	0.10
Fees	0.10
Interest during implementation	0.08
Miscellaneous expenses	0.10
TOTAL	0.38

5.5 Working Capital: Details of working capital are given below.

(Rs. In lacs)

	Period (Months)	Amount (Rs)		
		Yr 1	Yr 2	Yr 3
Raw materials & consumables	1	1.17	1.40	1.64
Salary	1	0.20	0.20	0.20
Finished Goods	1	1.40	1.64	1.88
Receivables	1	1.50	1.80	2.10
Total		4.27	5.04	5.81
Working capital margin in Yr 1 (100%)	4.27			

6.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs. lacs)
EQUITY		
A. Equity from Promoters	40%	2.94
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	4.41
TOTAL	100%	7.35

7.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (kg/annum)	360000	360000	360000	360000	360000
Capacity utilisation	50%	60%	70%	70%	70%
Production/annum at capacity utilisation	180000	216000	252000	252000	252000
Price/kg of charcoal (Rs)	10	10	10	10	10
Total income/annum	18.00	21.60	25.20	25.20	25.20
B. OPERATING EXPENSES					
Raw Materials & Consumables	14.04	16.85	19.66	19.66	19.66
Salary	2.40	2.40	2.40	2.40	2.40
Repair & Maintenance	0.06	0.07	0.09	0.11	0.14
Selling Expenses	0.18	0.22	0.25	0.25	0.25
Miscellaneous Expenses	0.09	0.11	0.13	0.13	0.13
Total Operating Expenses	16.77	19.64	22.52	22.54	22.57
Operating profit	1.23	1.96	2.68	2.66	2.63
C. FINANCIAL EXPENSES					
Depreciation	0.10	0.10	0.10	0.10	0.10
Interest on Term Loan	0.35	0.29	0.21	0.13	0.04
Net Profit	0.79	1.57	2.37	2.43	2.49
Net cash accruals	0.88	1.66	2.47	2.53	2.58
Principal Repayment	0.26	1.04	1.04	1.04	1.04

7.1 Estimation of Production Capacity: Production of bamboo charcoal at installed capacity is estimated as below.

Capacity of kilns (kg/batch of raw material)	3000
Charcoal yield (%)	25%
Yield of charcoal/batch/kiln (kg)	750
Batches/month	4
Months/annum	12
Production of charcoal/kiln/annum	36000
No. of kilns	10
Production of charcoal per annum at installed capacity (kg)	360000

7.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

Raw material (bamboo) required/ batch (kg)	3000
Batches/month	4
Months/annum	12
No. of kilns	10
Quantity of bamboo required/annum (kg)	1440000
Average weight of individual bamboo culms (kg)	10
Quantity of bamboo culms required	144000
Price of individual bamboo culms in situ (Rs)	15
Expenses on raw material at 100% capacity (Rs)	2160000
Add: Consumables, transportation, etc @ 25%	648000
Expenses on raw materials & consumables at installed capacity (Rs)	2808000

7.3 Salary: Expenses on salary per annum is estimated as given below.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Kiln operators	4	5000	240000
Expenses on salary per annum (Rs)			240000

7.4 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 25% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Kilns	2.50	2%	0.05
Miscellaneous Assets	0.20	3%	0.01
Expenses on repair & maintenance in the 1st year (Rs)			0.06

7.5 Selling Expenses: Selling expenses have been assumed at 1% of sales.

7.6 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 0.5% of sales.

7.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/ annum (Rs lacs)
Kilns	2.50	3.34%	0.08
Miscellaneous Assets	0.20	7.07%	0.01
TOTAL			0.10

7.8 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly installments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	4.41	4.15	3.11	2.08	1.04
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest (8%)	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.41	4.07	3.03	1.99	0.95
Month 2	Opening balance	4.41	4.07	3.03	1.99	0.95

	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.41	3.98	2.94	1.90	0.86
Month 3	Opening balance	4.41	3.98	2.94	1.90	0.86
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.41	3.89	2.85	1.82	0.78
Month 4	Opening balance	4.41	3.89	2.85	1.82	0.78
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.01
	Closing balance	4.41	3.81	2.77	1.73	0.69
Month 5	Opening balance	4.41	3.81	2.77	1.73	0.69
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.03	0.02	0.01	0.00
	Closing balance	4.41	3.72	2.68	1.64	0.61
Month 6	Opening balance	4.41	3.72	2.68	1.64	0.61
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.41	3.63	2.59	1.56	0.52
Month 7	Opening balance	4.41	3.63	2.59	1.56	0.52
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.41	3.55	2.51	1.47	0.43
Month 8	Opening balance	4.41	3.55	2.51	1.47	0.43
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.41	3.46	2.42	1.38	0.35
Month 9	Opening balance	4.41	3.46	2.42	1.38	0.35
	Repayment	0.00	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.41	3.37	2.34	1.30	0.26
Month 10	Opening balance	4.41	3.37	2.34	1.30	0.26
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	4.32	3.29	2.25	1.21	0.17
Month 11	Opening balance	4.32	3.29	2.25	1.21	0.17
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	4.24	3.20	2.16	1.12	0.09
Month 12	Opening balance	4.24	3.20	2.16	1.12	0.09
	Repayment	0.09	0.09	0.09	0.09	0.09
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	4.15	3.11	2.08	1.04	0.00
Principal Repayment		0.26	1.04	1.04	1.04	1.04
Interest		0.35	0.29	0.21	0.13	0.04

8.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	TOTAL
Profit After Tax (Net Profit)	0.79	1.57	2.37	2.43	2.49	
Depreciation	0.10	0.10	0.10	0.10	0.10	
Interest	0.35	0.29	0.21	0.13	0.04	
Total	1.23	1.96	2.68	2.66	2.63	11.16

Interest	0.35	0.29	0.21	0.13	0.04	
Loan repayment	0.26	1.04	1.04	1.04	1.04	
Total	0.61	1.33	1.25	1.17	1.08	5.44
DSCR	2.02	1.47	2.14	2.28	2.43	

Average DSCR = 2.05

9.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	18.00	21.60	25.20
B. Variable cost			
Raw Materials & Consumables	14.04	16.85	19.66
Selling Expenses	0.18	0.22	0.25
Miscellaneous Expenses	0.09	0.11	0.13
Total variable cost	14.31	17.17	20.03
C. Contribution (A-B)	3.69	4.43	5.17
D. Fixed & Semi-fixed Costs			
Salary	2.40	2.40	2.40
Repair & maintenance	0.06	0.07	0.09
Interest on Term Loan	0.35	0.29	0.21
Depreciation	0.10	0.10	0.10
Total fixed cost	2.90	2.86	2.80
E. BREAK EVEN POINT	78.72%	64.63%	54.13%
F. BEP at operating capacity	39.36%	38.78%	37.89%
G. Cash BEP	38.04%	37.45%	36.57%

10.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	2.70	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	4.27	0.77	0.77	0.00	0.00
Total (A)	2.70	4.27	0.77	0.00	0.00	0.00
CASH INFLOW						
Profit After Tax		0.79	1.57	2.37	2.43	2.49
Add: Depreciation		0.10	0.10	0.10	0.10	0.10
Add: Interest		0.35	0.29	0.21	0.13	0.04
Add: Salvage Value						
Total (B)	0.00	1.23	1.96	2.68	2.66	2.63
NET FLOW (B-A)	-2.70	-3.03	1.18	2.68	2.66	2.63

IRR = 16%

TECHNICAL CONSULTANT

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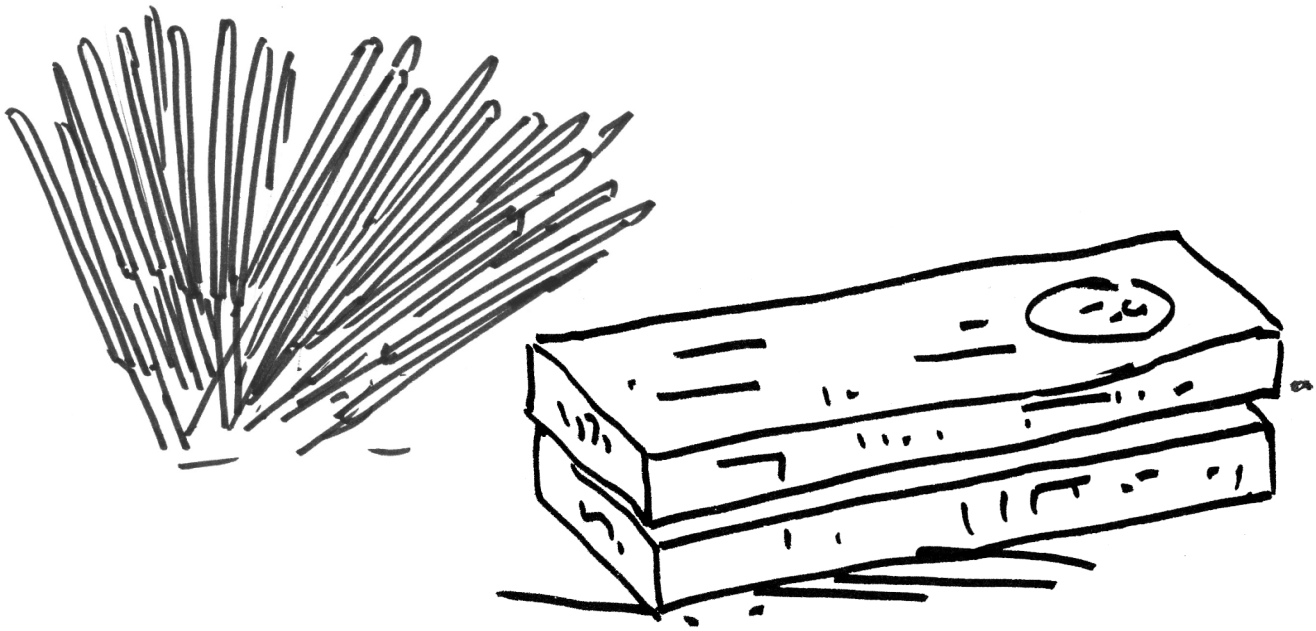
BAMBOO STICK (AGARBATTI) MAKING



1.0 INTRODUCTION

India is the largest producer of incense sticks or agarbatti in the world, with an estimated production of 208 billion sticks annually and market value of more than INR 41.63 billion in 2008. This amounts to over 42,000 tonnes of sticks made from nearly 85,000 tonnes of bamboo. The sector is estimated to be growing at 20 percent annually.

Industry sources say that, at one time, about 90 percent of the bamboo sticks used in the agarbatti industry came from Tripura, a state in the north-eastern part of India. Much of the growth in stick production has since taken place outside the state, and now Tripura's share has come down.

A large number of women are involved in the bamboo stick-making activity. They mostly work during the time spared from domestic chores and subsistence activities. The work brings in the much-needed cash income that has a high opportunity cost for them even though the bamboo sticks capture only 1 percent of the final value of agarbatti.

In the past, bamboo has been mostly obtained free of cost from the forest and hence, all the earnings from the stick making activity belonged to the women involved. Increasingly, these earnings are being affected by the growing scarcity of bamboo, resulting in communities having to buy much of the bamboo used for stick making leading to reduction in net income.

Bamboo sticks are the major raw materials used in the Agarbatti industry. These are collected through contract labour system, prevalent in the unorganized sectors. There are wide differences in wages because of the differences in minimum wage rules that are different in different states. For processing of bamboo, electricity operated high capacity machines are available, which are suitable for industries but not for rural poor who make strips and sticks using knife. Looking at the need, an innovative set of two machines i.e. Bamboo Strip Making Machine and Incense Stick Making Machine has been developed, which are used for making incense sticks from bamboo pieces. These machines are manually operated, easy to use and maintain and most suitable for the tribal people. A first generation entrepreneur can set agarbatti stick making unit by installing the machines.

This project profile is for setting up of a Bamboo Stick Making unit by use of the above mentioned set of machines. The unit will install 5 set of the machines and will have installed capacity of 45,000 kg of sticks based on 8 working hours per day and 300 working days per annum.

2.0 MARKET POTENTIAL

India has a leadership position in agarbatti production and meets more than half of the world's incense sticks requirements. India exports Agarbatti to nearly 90 countries. Every year more than 1000 billion sticks are produced and the market is growing at a rate of 7% per year.

The incense stick market faces a sudden upsurge in demand during the festive season. Demand from both domestic and international sectors peaks up during festivals like Dussehra and Diwali. The market for incense sticks is vast and the demand is high even in the far-flung rural areas. Owing to the low level of technology, production activity of agarbattis can be taken to rural areas without much difficulty.

3.0 PROCESS DETAILS

The first machine (Bamboo Strip Making Machine) is used to slice the bamboo pieces of definite size and length. The slices cut are then fed in the Stick Making Machine to produce the sticks.

4.0 COST OF THE PROJECT

The estimated project cost is given below:

Particulars	Amount (Rs lacs)
Land & Site Development	-
Building & Civil Works	2.87
Machinery & Equipment	2.28
Misc. Fixed Assets	0.20
Preliminary & Pre-operative Expenses	0.61
Working Capital	0.43
TOTAL	6.38

4.1 Land & Site Development: No. cost has been considered for land & site development. It is assumed that the unit will be set up in own land.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Work Shed cum store room (Brick wall, CGI sheet roof, concrete floor)	58	4500	260465
Add: Electrification, etc @ 10%			26046
		TOTAL	286511
		Say (Rs. in lacs)	2.87

4.3 Machinery & Equipment: Details of machinery & equipment are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Bamboo strip making machine	5	20000	100000
Incense stick making machine	5	20000	100000
Weighing balance (10 kg capacity)	3	800	2400
Miscellaneous items	LS	LS	5000
		Sub total	207400
Add: Transportation, taxes, etc @ 10%			20740
		TOTAL	228140
		Say (Rs. in lacs)	2.28

4.4 Misc. Fixed Assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Furniture & fixtures	LS	LS	10000
Miscellaneous items	LS	LS	10000
		TOTAL	20000
		Say (Rs. in lacs)	0.20

4.5 Preliminary & Pre-operative Expenses: Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	0.20
Fees	0.20
Interest during implementation	0.11
Miscellaneous expenses	0.10
TOTAL	0.61

4.6 Contingencies & Escalation: Contingencies & escalation has been assumed at 3% of the cost of building & civil works, machinery & equipments and miscellaneous fixed assets.

4.7 Working Capital: Details of working capital are given below.

	Period (Days)	Amount (Rs lacs)		
		Year 1	Year 2	Year 3
Raw Materials & Consumables	30	0.06	0.07	0.08
Power	30	0.01	0.01	0.01
Salary	30	0.12	0.12	0.12
Finished Goods	15	0.10	0.11	0.12
Receivables	15	0.14	0.17	0.19
Total		0.43	0.48	0.53

Working Capital Margin in Yr 1 (100%)	0.43

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
EQUITY		
A. Equity from Promoters	40%	2.55
B. Subsidy from Central/State Govt.	-	
DEBT		
Term Loan from Banks/FIs	60%	3.83
TOTAL	100%	6.38

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production capacity (kg/annum)	45000	45000	45000	45000	45000
Capacity utilisation	50%	60%	70%	70%	70%
Production/annum at capacity utilisation	22500	27000	31500	31500	31500
Price of agarbatti stick (Rs/kg)	15	15	15	15	15
Total income/annum	3.38	4.05	4.73	4.73	4.73
B. OPERATING EXPENSES					
Raw Materials & Consumables	0.68	0.82	0.95	0.95	0.95
Power	0.09	0.11	0.13	0.13	0.13
Salary	1.50	1.51	1.52	1.52	1.53
Repair & Maintenance	0.10	0.11	0.12	0.14	0.15
Selling Expenses	0.07	0.08	0.09	0.09	0.09
Miscellaneous Expenses	0.03	0.04	0.05	0.05	0.05
Total Operating Expenses	2.48	2.67	2.87	2.89	2.91
Less: Working expenses capitalised	0.43	0.00	0.00	0.00	0.00
Operating profit	1.32	1.38	1.86	1.84	1.82
C. FINANCIAL EXPENSES					
Depreciation	0.27	0.27	0.27	0.27	0.27
Interest on Term Loan	0.30	0.26	0.18	0.11	0.04
Net Profit	0.75	0.85	1.41	1.46	1.51
Net cash accruals	1.02	1.12	1.68	1.73	1.78
Principal Repayment	0.23	0.90	0.90	0.90	0.90

6.1 Estimation of Production Capacity: Production of bamboo sticks at installed capacity is estimated as below.

Machine Capacity (kg/hr of sticks)	3.75
No. of stick making machine	5
No. of working hrs/day	8
No. of days/annum	300
No. of sticks per annum at installed capacity (kg)	45000

6.2 Raw Materials & Consumables: Expenses on raw materials & consumables at installed capacity is estimated as below.

No. of sticks per annum at installed capacity (kg)	45000
Wastage during conversion from bamboo culms (%)	5%
Raw material (bamboo culms) required (kg)	47250
Average weight of individual culms (kg)	10
Quantity of bamboo culms required	4725
Price of individual bamboo culms (Rs/kg)	25
Expenses on raw material (Rs)	118125
Add: Consumables, packing materials, etc @ 15%	17719
Expenses on raw materials & consumables at installed capacity (Rs)	135844

6.3 Power: Expenses on power at installed capacity is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
General Lighting	6	0.10	0.58
Miscellaneous	LS	LS	1.00
Total power requirement/ day (Kw)			1.58
No. of hrs per day			8
No. of days/annum			300
Annual power requirement (kwh)			3789
Rate per unit (Rs)			5.00
Expenses on power per annum at installed capacity (Rs)			18946

6.4 Salary: Expenses on salary in the 1st year is estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager (Self)	0	0	0
Machine operators	5	2500	150000
Expenses on salary in the 1st year (Rs)			150000

6.5 Repair & Maintenance: Expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 10% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Lacs)
Building & Civil Works	2.87	1%	0.03
Machinery & Equipment	2.28	3%	0.07
Misc. Fixed Assets	0.20	3%	0.01
Expenses on repair & maintenance in the 1st year (Rs)			0.10

6.6 Selling Expenses: Selling expenses have been assumed at 2% of sales.

6.7 Miscellaneous Expenses: Miscellaneous expenses have been assumed at 1% of sales.

6.8 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	2.87	3.34%	0.10
Machinery & Equipment	2.28	7.07%	0.16
Misc. Fixed Assets	0.20	6.23%	0.01
TOTAL			0.27

6.9 Interest on Term Loan & Principal Repayment: Interest rate has been assumed at 8% per annum. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 9 months with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	3.83	3.60	2.70	1.80	0.90
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest (8%)	0.03	0.02	0.02	0.01	0.01
	Closing balance	3.83	3.53	2.63	1.73	0.83
Month 2	Opening balance	3.83	3.53	2.63	1.73	0.83
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.01
	Closing balance	3.83	3.45	2.55	1.65	0.75
Month 3	Opening balance	3.83	3.45	2.55	1.65	0.75
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.01
	Closing balance	3.83	3.38	2.48	1.58	0.68
Month 4	Opening balance	3.83	3.38	2.48	1.58	0.68
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.83	3.30	2.40	1.50	0.60
Month 5	Opening balance	3.83	3.30	2.40	1.50	0.60
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.83	3.23	2.33	1.43	0.53
Month 6	Opening balance	3.83	3.23	2.33	1.43	0.53
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.83	3.15	2.25	1.35	0.45
Month 7	Opening balance	3.83	3.15	2.25	1.35	0.45
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.02	0.01	0.00
	Closing balance	3.83	3.08	2.18	1.28	0.38
Month 8	Opening balance	3.83	3.08	2.18	1.28	0.38
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.83	3.00	2.10	1.20	0.30
Month 9	Opening balance	3.83	3.00	2.10	1.20	0.30
	Repayment	0.00	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.83	2.93	2.03	1.13	0.23
Month 10	Opening balance	3.83	2.93	2.03	1.13	0.23
	Repayment	0.08	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.75	2.85	1.95	1.05	0.15
Month 11	Opening balance	3.75	2.85	1.95	1.05	0.15
	Repayment	0.08	0.08	0.08	0.08	0.08
	Interest	0.03	0.02	0.01	0.01	0.00
	Closing balance	3.68	2.78	1.88	0.98	0.08
Month 12	Opening balance	3.68	2.78	1.88	0.98	0.08
	Repayment	0.08	0.08	0.08	0.08	0.08
	Interest	0.02	0.02	0.01	0.01	0.00
	Closing balance	3.60	2.70	1.80	0.90	0.00
Principal Repayment		0.23	0.90	0.90	0.90	0.90
Interest		0.30	0.26	0.18	0.11	0.04

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	TOTAL
Profit After Tax (Net Profit)	0.75	0.85	1.41	1.46	1.51	
Depreciation	0.27	0.27	0.27	0.27	0.27	
Interest	0.30	0.26	0.18	0.11	0.04	
Total	1.32	1.38	1.86	1.84	1.82	8.22
Interest	0.30	0.26	0.18	0.11	0.04	
Loan repayment	0.23	0.90	0.90	0.90	0.90	
Total	0.53	1.16	1.08	1.01	0.94	4.72
DSCR	2.50	1.19	1.72	1.82	1.93	

Average DSCR = 1.74

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales (Rs. lakh)	3.38	4.05	4.73
B. Variable cost			
Raw Materials & Consumables	0.68	0.82	0.95
Power	0.09	0.11	0.13
Selling Expenses	0.07	0.08	0.09
Miscellaneous Expenses	0.03	0.04	0.05
Total variable cost	0.88	1.05	1.23
C. Contribution (A-B)	2.50	3.00	3.50
D. Fixed & Semi-fixed Costs			
Salary	1.50	1.51	1.52
Repair & maintenance	0.10	0.11	0.12
Interest on Term Loan	0.30	0.26	0.18
Depreciation	0.27	0.27	0.27
Total fixed cost	2.18	2.15	2.09
E. BREAK EVEN POINT	87.10%	71.52%	59.78%
F. BEP at operating capacity	43.55%	42.91%	41.85%
G. Cash BEP	38.16%	37.53%	36.46%

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	5.35	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	0.43	0.05	0.05	0.00	0.00
Total (A)	5.35	0.43	0.05	0.05	0.00	0.00
CASH INFLOW						
Profit After Tax		0.75	0.85	1.41	1.46	1.51
Add: Depreciation		0.27	0.27	0.27	0.27	0.27
Add: Interest		0.30	0.26	0.18	0.11	0.04
Add: Salvage Value (15%)						0.80
Total (B)	0.00	1.32	1.38	1.86	1.84	2.62
NET FLOW (B-A)	-5.35	0.90	1.33	1.81	1.84	2.62

IRR = 15%

MACHINERY SUPPLIER/ TECHNICAL CONSULTANT

(a) GIAN (Gujarat Grassroots Innovations Augmentation Network) Enterprises
Bunglow No: 1, Satellite Complex, Nr. Satellite Tower, Mansi Cross Road,
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BROOM STICK

1.0 INTRODUCTION

Brooms are used for floor cleaning, dust removing etc. Broom making is a livelihood for large number of tribal in hill areas. Such are non-timber forest produce, have good potential for generating local employment and can be used for enhancing rural income.

This project profile is for setting up a Broom stick making unit, based on 300 working days per annum and 8 working hours per day. Economics are worked out based on average costs and these may vary moderately from location to location and required to be modified. The installed production capacity of the unit per annum is as follows;

Broom - 36000 Nos.

2.0 MARKET POTENTIAL

Broom is a common household item. It is transported to various districts for marketing. It has good demand and marketed through Super Bazars, Kirana Shops and other outlets.

3.0 PROCESS DETAILS

The process is simple. On harvesting, they are cut into required size with a cutter and made them a suitable bundle using packing machine. Collection of brooms from wild area and arranging them by sizing, grading and packing can be done simultaneously.

4.0. COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & Site Development	Rented
Building & Civil works	Rented
Plant & Machinery	0.55
Misc. Fixed assets	0.17
Preliminary & pre-operative expenses	0.32
Contingencies & escalation @ 3%	0.02
Working capital	0.19
TOTAL	1.25

4.1 Land & Site Development: Nil. Covered Area: 750 Sq. Ft.

4.2 Building & Civil Works: Nil.

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Broom Sizing and Cutting Machine	1	25000	25000
Bundle Making Machine	1	15000	15000
Tools and equipment	LS	--	5000
		Sub total	**45000**
Add: Installation, transportation, etc @ 10%			4500
		TOTAL	**54500**
		Say (Rs. in lacs)	**0.55**

4.4 Misc. Fixed assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Furniture & fixtures	LS	--	10000
Miscellaneous items	LS	--	5000
		Sub total	**15000**
Add: Installation, transportation, etc @ 10%			1500
		TOTAL	**16500**
		Say (Rs. in lacs)	**0.17**

4.5 Contingencies & escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

4.6 Preliminary & pre-operative expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	6000
Professional & other fees	10000
Interest during implementation	1420
Miscellaneous expenses	15000
TOTAL	32420
Say (Rs. in lacs)	**0.32**

4.7 Working capital: Details of working capital are given below.

(Rs. in lacs)

	Period (Days)	Total Current Assets		
		Year 1	Year 2	Year 3
Raw materials	30	0.07	0.09	0.10
Power & Utility	30	0.01	0.01	0.01
Salary	30	0.14	0.14	0.14
Finished Goods	15	0.12	0.13	0.14
Receivables	15	0.12	0.14	0.17
Total		**0.46**	**0.51**	**0.55**
Working capital margin in Year 1 (40%)	**0.19**			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	**40%**	**0.50**
B. Subsidy from Central/State Govt.	**-**	
DEBT		
Term Loan from Banks/Financial Institutions	**60%**	**0.75**
TOTAL	**100%**	**1.25**

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
A. INCOME					
Production Capacity (Nos./annum)	36000	36000	36000	36000	36000
Capacity utilisation	60%	70%	80%	80%	80%
Production/annum at capacity utilisation	**21600**	**25200**	**28800**	**28800**	**28800**
Price of Broom Sticks (Rs/Broomstick)	14	14	14	14	14
Total income/annum	**3.02**	**3.53**	**4.03**	**4.03**	**4.03**
B. OPERATING EXPENSES					
Raw Materials	0.91	1.06	1.22	1.22	1.22
Power & Utility	0.14	0.16	0.18	0.18	0.18
Salary	1.66	1.66	1.67	1.68	1.69
Repair & Maintenance	0.01	0.01	0.01	0.01	0.01
Other Expenses	0.15	0.18	0.20	0.20	0.20
Total Operating Expenses	**2.87**	**3.08**	**3.29**	**3.30**	**3.30**
Operating profit	**0.15**	**0.45**	**0.75**	**0.74**	**0.73**
C. FINANCIAL EXPENSES					
Depreciation	0.04	0.04	0.04	0.04	0.04
Interest on Term Loan	0.06	0.05	0.03	0.02	0.01
Interest on Working Capital Loan	0.02	0.02	0.03	0.03	0.03
Net Profit	**0.06**	**0.36**	**0.67**	**0.68**	**0.68**
Net cash accruals	**0.10**	**0.40**	**0.71**	**0.72**	**0.72**
Principal Repayment	0.08	0.17	0.17	0.17	0.17

6.1 Production capacity: Total production of **Broomsticks** at 100% capacity utilization is estimated as below.

Broom Sticks	36000 Nos.
Total production per annum at 100% capacity (in Nos.)	**36000 Nos.**

6.2 Raw materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Broom-grass from Wild	23 Ton
Collection Expense of Broom-grass	4000 per Ton
Sub Total	92000
Consumables like Plastic Handle and Others	60000
Expenses on raw material at 100% capacity (Rs)	**152000**

6.3 Power & Utility: Total expenses on power & utility at 100% capacity utilization is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Plant & Machinery	--	2.00	2.00
General Lighting	5	0.10	0.50
Total power requirement/ day (Kw)			2.50

No. of hrs/day	8
No. of days/annum	300
Annual power requirement (kwh)	6000
Rate per unit (Rs)	3.50
Expenses on power (Rs)	21000
Expenses on other Utility (Rs)	1800
Expenses on power & utility at 100% capacity (Rs)	**22800**

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/ annum (Rs)
Manager	1	5800	69600
Skilled Worker	1	5000	60000
Unskilled Worker	1	3000	36000
Expenses on salary in the 1st year (Rs)			**165600**

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & Civil works	0.00	1.00%	0.00
Plant & Machinery	0.55	2.00%	0.01
Misc. Fixed assets	0.17	1.50%	0.00
Expenses on repair & maintenance in year 1			**0.01**

6.6 Other Expenses: Other expenses have been assumed at 5% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 5 years including moratorium period of 6 months with equal monthly instalments. The details of calculation are given below.

(Rs. in lacs)

Month	Year	1	2	3	4	5
Month 1	Opening balance	0.75	0.66	0.50	0.33	0.17
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest (8%)	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.65**	**0.48**	**0.32**	**0.15**
Month 2	Opening balance	0.75	0.65	0.48	0.32	0.15
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.64**	**0.47**	**0.30**	**0.14**

Month 3	Opening balance	0.75	0.64	0.47	0.30	0.14
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.62**	**0.46**	**0.29**	**0.12**
Month 4	Opening balance	0.75	0.62	0.46	0.29	0.12
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.61**	**0.44**	**0.28**	**0.11**
Month 5	Opening balance	0.75	0.61	0.44	0.28	0.11
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.60**	**0.43**	**0.26**	**0.10**
Month 6	Opening balance	0.75	0.60	0.43	0.26	0.10
	Repayment	0.00	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.75**	**0.58**	**0.42**	**0.25**	**0.08**
Month 7	Opening balance	0.75	0.58	0.42	0.25	0.08
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.73**	**0.57**	**0.40**	**0.24**	**0.07**
Month 8	Opening balance	0.73	0.57	0.40	0.24	0.07
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.72**	**0.55**	**0.39**	**0.22**	**0.06**
Month 9	Opening balance	0.72	0.55	0.39	0.22	0.06
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.71**	**0.54**	**0.37**	**0.21**	**0.04**
Month 10	Opening balance	0.71	0.54	0.37	0.21	0.04
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.69**	**0.53**	**0.36**	**0.19**	**0.03**
Month 11	Opening balance	0.69	0.53	0.36	0.19	0.03
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.68**	**0.51**	**0.35**	**0.18**	**0.01**
Month 12	Opening balance	0.68	0.51	0.35	0.18	0.01
	Repayment	0.01	0.01	0.01	0.01	0.01
	Interest	0.00	0.00	0.00	0.00	0.00
	Closing balance	**0.66**	**0.50**	**0.33**	**0.17**	**0.00**
Principal Repayment		**0.08**	**0.17**	**0.17**	**0.17**	**0.17**
Interest		**0.06**	**0.05**	**0.03**	**0.02**	**0.01**

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5
Profit After Tax (Net Profit)	0.06	0.36	0.67	0.68	0.68
Depreciation	0.04	0.04	0.04	0.04	0.04
Interest	0.08	0.07	0.06	0.05	0.03
Total	**0.18**	**0.47**	**0.77**	**0.76**	**0.75**
Interest	0.08	0.07	0.06	0.05	0.03
Loan repayment	0.08	0.17	0.17	0.17	0.17
Total	**0.16**	**0.24**	**0.23**	**0.21**	**0.20**
DSCR	**1.08**	**2.00**	**3.41**	**3.58**	**3.77**

Average DSCR = 2.69

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	**3.02**	**3.53**	**4.03**
B. Variable cost			
Raw Materials	0.91	1.06	1.22
Power & Utility	0.14	0.16	0.18
Other expenses	0.15	0.18	0.20
Interest on Working Capital Loan	0.02	0.02	0.03
Total variable cost	**1.22**	**1.42**	**1.63**
C. Contribution (A-B)	**1.80**	**2.10**	**2.41**
D. Fixed & Semi-fixed Costs			
Salary	1.66	1.66	1.67
Repair & maintenance	0.01	0.01	0.01
Interest on Term Loan	0.06	0.05	0.03
Depreciation	0.04	0.04	0.04
Total fixed cost	**1.77**	**1.76**	**1.76**
E. BREAK EVEN POINT	**98.10%**	**83.89%**	**73.16%**
F. BEP at operating capacity	**58.86%**	**58.72%**	**58.53%**
G. Cash BEP	**57.54%**	**57.41%**	**57.22%**

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5
CASH OUTFLOW						
Capital Expenditure	0.74	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	0.46	0.04	0.04	0.00	0.00
Total (A)	**0.74**	**0.46**	**0.04**	**0.04**	**0.00**	**0.00**
CASH INFLOW						
Profit After Tax		0.06	0.36	0.67	0.68	0.68
Add: Depreciation		0.04	0.04	0.04	0.04	0.04
Add: Interest		0.06	0.05	0.03	0.02	0.01
Add: Salvage Value						
Total (B)	**0.00**	**0.15**	**0.45**	**0.75**	**0.74**	**0.73**
NET FLOW (B-A)	**-0.74**	**-0.31**	**0.41**	**0.70**	**0.74**	**0.73**

IRR = 43%

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NEDFi's Scheme's at a glance

Sl. No	Name of the scheme	Eligibility	Nature and Extent of Assistance (Max.)	Promoter's Contribution (Min.)	Interest Rate	Upfront Fees
1	PROJECT FINANCE (PF)	Project promoted by Private & Public Ltd. Company/Proprietorship or Partnership firms	Rupee Term Loan (RTL)	35-40% of the project cost	*PLR + 1-3% p.a.	1% of RTL
2	NORTH EAST ENTREPRENEURS DEVELOPMENT SCHEME (NEEDS)	Project promoted by First Generation entrepreneurs. Maximum Project cost upto Rs. 50.00 lakhs	RTL- 75% of Project Cost	25% of the total project cost	8% p.a.	1% of RTL
3	NEDFi OPPURTUNITY SCHEME FOR SMALL ENTERPRISE (NOSSE)	Project promoted by Private & Public Ltd. Company/Proprietorship or Partnership firms. Project Cost from 50.00 lakhs to 200 lakhs with or without working capital	RTL-67% of Project Cost upto a ceiling of Rs. 100 lakhs	Minimum Debt Equity Ratio= 2:1	8% p.a.	1% of RTL
4	EQUIPMENT FINANCE (EF)	Company shall be in operation profitably for last three years and of good track record	70% of the cost of equipment including taxes, transport, insurance etc.	30%	*PLR + 3% p.a.	1% of RTL
5	MICRO FINANCE (MF)	Well managed NGOs/VOs in operation for last three years with good track record	RTL	Depends on the option of the Implementing Agency	*PLR + 0.5% p.a. for served areas and 8% for un-served areas	0.75% for RTL from 10 lacs to 50 lacs & 1% for RTL 50 lacs and above
6	JUTE ENTERPRISE DEVELOPMENT SCHEME (JEDS)	Small enterprises where investment is not more than Rs. 10.00 lakhs and NGOs VOs Co-operatives	RTL- 75% of Project Cost	25% of the total project cost	8% p.a.	1% of RTL
7	WOMEN ENTERPRISE DEVELOPMENT SCHEME (WEDS)	Any viable income generating activity promoted by women within the age group of 18-50 years. Maximum Project Cost upto Rs. 15.00 lakhs	RTL- 75% of Project Cost	25% of the total project cost	8% p.a.	1% of RTL
8	SCHEME FOR NORTH EAST HANDLOOM AND HANDICRAFTS (SNEHH)	For Manufacturers/Designe-rs/Exporters of handloom and handicrafts on proprietorship/partnership/co mpany basis. Maximum project cost upto Rs. 25.00 lakhs	RTL- 75% of Project Cost	25% of the total project cost	8% p.a.	1% of RTL

*PLR- 11.75% p.a. (as on 1/12/2012, subject to change at the discretion of the management)
- NEDFi financed units are given special preference to participate in fairs/exhibitions etc.
- NEDFi extends marketing support to NEDFi financed units wherever possible.
- Provides skill upgradation and trainings time to time.
- Lots of other packages/facilities available for the clients.

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