

Project profile of spices

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PROJECT PROFILE

GROUND & PROCESSED SPICES

1. INTRODUCTION

Spices are an integral part of Indian food, with consumption not only in household, restaurants and other eateries but also in food processing industry such as pickles, sauces, instant curry powders, ready to eat food preparation and so on. Hence, a spice grinding unit is recommended.

2. OBJECTIVES

The objective of the profiles is to encourage and assist prospective entrepreneurs in MSME sector in and guiding making them aware of the opportunities of this sector. It is also being developed by the Directorate of the Food Processing Industries, Government of West Bengal to help entrepreneurs with knowledge about raw materials availability, knowledge of market, source of technology and plant and machinery suppliers. M/s ITV Agro & Food Technologies Pvt. Ltd., New Delhi has helped in developing the project profile.

3. RAW MATERIAL AVAILABILITY

The major raw material shall be un-ground turmeric, black pepper and chillies. Considering 5 % process loss, the total quantity required would be 63 tonnes per year for the proposed capacity of 60 tonnes. Spices are widely grown in Meghalaya, Assam and Kerala . Total production of spices in the country is estimated to be 5387092 MT / year out of which production in West Bengal is estimated to be 211128 MT/ year. Hence, availability of raw material round the year will not be a problem. The project would require printed polythene bags of different sizes which would be available locally.

4. MARKET OPPORTUNITIES

Spices are essential ingredients imparting taste and flavour to food preparations. Besides their everyday use in household, they are also used in large quantities in restaurants, hotels, catering services, food processing industries, road side eateries and so on. Spices are fast moving consumable items and have large potential. There has to be a wide-spread network of dealers or retailers backed up by advertisements in local media. Total export of spices from the country during the year 2009-10, 2010-11 and 2011-12 is estimated to be Rs. 55650 lacs, Rs. 684070/- lacs and Rs. 978342/- lacs respectively.

5. PROJECT DESCRIPTION

a) Product & Its uses

Many spices are used all over the country and the unit can go on adding new products. But this note considers only some of them like turmeric powder, black pepper powder and chilli powder. This activity can be started in several states of the country where as this note considers West Bengal as the preferred location.

b) Capacity

The capacity of the unit is to process 60 MT / year of various spices.

c) Manufacturing process

The manufacturing process is very well established and does not involve technicalities. Un-ground spice are cleaned manually to remove impurities like mud stones and are then washed in water. After drying them in sunlight, they are graded and grounded with the help of grinding machine to convert them in powder form. Disintegrator is used in case of solid material like turmeric to obtain uniform mesh size. Spices in powder form are then weighed as per the contemplated packing quantities and packed in printed polythene bags and then these bags are sealed on automatic sealing machine.

6. PROJECT COMPONENTS & COST

a) *Land & Building*

Land measuring around 150 sq. mtrs. is adequate with built -up area of about 75 sq. mtrs. consisting of main production area, packing room and godown . The total cost is expected to be Rs. 4.88 lacs.

b) *Plant & Machinery*

The suggested production capacity is 60 tonnes per year for which the following equipment costing about Rs. 15.00 lacs are envisaged.

Item	Qty.
Disintegrator	1
Spice Grinding Machine	1
Plastic sealing Machine	1
Weighing Scales	2

c) *Miscellaneous Assets*

A provision of Rs. 1,00,000/- is made to take care of other support items like picking tables, storage racks etc.

d) *Utilities*

Power requirement would be 10HP whereas water is required in small quantity to clean ungrounded spices and for potable purposes. The total cost of utilities is estimated at Rs. 1.70 lacs / year.

e) *Prel. & Pre Operative Expenses*

A lumpsum provision of Rs. 50,000 is made to take care of expenses like establishment start-up.

f) Working Capital Assessment

The total requirement of working capital in the first year at 60 % capacity utilization would be Rs. 12.62 lacs comprising bank loan of Rs. 8.97 lacs and margin amount of Rs. 3.65 lacs as worked out hereunder:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of raw and packing material	1 month	30%	4.00	2.80	1.20
Stock of Finished Goods	½ month	25%	2.70	2.03	0.67
Receivable	1 month	30%	5.92	4.14	1.78
Total			12.62	8.97	3.65

g) Project cost & Means of finance

Item	Amount (Rs. in lacs)
Land and Building	5.63
Plant and Machinery	15.0
Miscellaneous Assets	1.00
P & P Expenses	0.50
Contingencies @ 10% on building and plant and machinery	1.66
Working capital margin	3.65
Total	27.44
Means of Finance	
Promoters' contribution	10.98
Term loan from Bank / FI	16.46
Total	27.44
Debt Equity Ratio	1.5:1
Promoter's contribution	40%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

7) PROJECTED PROFITABILITY

a) *Production Capacity*

The rated production capacity of the plant is 60 tons per year whereas actual capacity utilization is expected to be 60% and 75% during 1st year and 2nd year respectively

b) *Sales Revenue at 100%*

Product	Qty (Tons)	Selling Price (Rs. / Ton)	Sales (Rs. in lacs)
Turmeric Powder	35	1,50,000	52.50
Black Pepper powder	10	5,50,000	55.00
Chille powder	15	1,50,000	22.50
		Total	130.00

c) *Raw Material Required at 100%*

Product	Qty (Tons)	Rate (Rs. / Ton)	Value (Rs. in lacs)
Turmeric	36.75	93,000	34.17
Black Pepper	10.50	3,20,000	33.60
Chille	15.75	90,000	14.17
	Total		81.94

d) Profitability statement

(Rs. in lacs)

S. No.	Particulars	1 st year	2 nd year
A.	Installed capacity	60 Tons	
	Capacity Utilisation	60%	75%
	Sales Realisation	78.00	97.50
B.	Cost of Production		
	Raw Materials	49.16	61.44
	Packing Materials	1.80	2.25
	Utilities	1.02	1.27
	Salaries	4.20	4.62
	Stores and Spares	0.60	0.75
	Repairs and Maintenance	0.60	0.75
	Selling Expenses @ 10%	7.13	8.94
	Administrative Expenses	0.60	0.75
	Total	65.11	80.82
C.	Profit before Interest & Depreciation	12.85	16.68
	Interest on Term Loan	1.97	1.97
	Interest on Working Capital	1.25	1.56
	Depreciation.	2.10	1.94
	Net Profit	7.53	11.41
	Income-tax @ 20%	-	1.14
	Profit after tax	7.53	10.27
	Cash Accruals	9.63	12.21
	Repayment of Term Loan	Nil	4.00

e) *Break Even Point Analysis*

S. No.	Particulars	Amount (Rs. in lacs)	
(A)	Sales		97.50
(B)	Variable Costs		
	Raw Material	61.44	
	Packing Material	2.25	
	Utilities(70%)	0.88	
	Salaries (60%)	1.61	
	Stores and Spares	0.75	
	Selling and Distribution Exps (70%)	7.15	
	Admn Expenses (50%)	0.38	
	Interest on WC	1.56	74.46
(C)	Contribution (A) - (B)		23.04
(D)	Fixed Costs		8.25
(E)	Break Even Point		36%

f) *Debt Service Coverage Ratio (DSCR)*

(Rs. in lacs)

Particulars	1 st year	2 nd year	3 rd year
Cash Accruals	9.63	12.21	14.65
Interest on TL	1.97	1.97	1.49
Total (A)	11.60	14.18	16.14
Interest on TL	1.97	1.97	1.49
Repayment of TL	-	4.0	4.0
Total (B)	1.97	5.97	5.49
DSCR (A) / (B)	5.88	2.37	2.93
Average DSCR	3.72		

g) Internal Rate of Return (IRR)

Cost of the project is Rs. 27.44 lacs

(Rs. in lacs)

Year	Cash Accruals	24%	32%
1	9.63	7.70	7.20
2	12.21	9.73	6.95
3	14.65	7.67	6.29
4	14.65	6.15	4.68
5.	14.65	4.98	3.66
	Total	36.23	28.78

The IRR is around 32%.

h) Manpower requirement

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Supervisor	1	8,000	8,000
Skilled Workers	2	7500	15,000
Semi skilled workers	2	6,000	12,000
		Total	35,000/-

8. ASSUMPTIONS

- The plant will work for 300 days in a year. :
- The operating capacity is 60% , 75%, 90 % during 1st year , 2nd year and 3rd year respectively.
- The interest on term loan is taken at 12% per annum and on working capital it is 14% per annum.
- Price of raw material and selling price are taken at prevailing market rate.

9. SOURCES OF TECHNOLOGY

CFTRI, Mysore, has successfully developed the technical know-how for the product. BIS has laid down quality standard. The compliance under FSSAI act is a must.

10. PLANT & MACHINERY SUPPLIERS

1. Avity Agrotech and Industries
No.490-491, c-1 Chandan Complex, G.I.D.C,
Makarpura , Vadodara - 390010 Gujarat
Ph. 0844 7570776
www.avityagrotech.com.
2. Yagnam Pulverier Private Limited
Plot no. R-869. Rabale M.I.D.C., Thane- Belapur Road,
Navi Mumbai - 400701, Maharashtra
Ph. 08447526964
www.lithtechindia.com
3. Best Engineering Technologies
Plot. No. 69-A, No. 5-9-285/13, Rajiv Gandhi Nagar,
Industrial Estate, Kukatpally, Hyderabad - 500037,
Ph. 08447523620
www.bestengineeringtechnologies.com

PROJECT PROFILE

GINGER & GARLIC PASTE

1. INTRODUCTION

Ginger & garlic are important commercial crops cultivated throughout the country with major production in the states of Gujarat, Orissa, Maharashtra, Himachal Pradesh, Kerala, Haryana, Madhya Pradesh & Uttar Pradesh. Garlic is mainly used as a condiment in food preparations and is also used as carminative and gastric stimulant in many medicinal preparations. Processing of ginger is undertaken to dehydrate it and for preparing ginger candy. Ginger & garlic based products have wide applications in food processing as well as many other industries.

2. OBJECTIVES

The objective of the profiles is to encourage and assist prospective entrepreneurs in MSME sector in and guiding making them aware of the opportunities of this sector. It is also being developed by the Directorate of the Food Processing Industries, Government of West Bengal to help entrepreneurs with knowledge about raw materials availability, knowledge of market, source of technology and plant and machinery suppliers. M/s ITV Agro & Food Technologies Pvt. Ltd., New Delhi has helped in developing the project profile.

3. RAW MATERIAL AVAILABILITY

Total production of spices in the country is estimated to be 5387092 MT / year out of which production in West Bengal is estimated to be 211128 MT/ year. Total production of ginger and garlic in the country is estimated to be 701990 MT and 1072400 MT respectively whereas production of ginger and garlic in West Bengal is estimated to be 94,417 tons and 40,000 ton respectively.

4. MARKET OPPORTUNITIES

Ginger and garlic are important commercial crops with versatile applications. As a condiment, ginger is used for flavouring many food products like tomato sauce or ketchup, salad dressing, meat sausages, gravies, pickles, curry dishes and so on. It is also used in many medicines as it helps digestion and absorption of food and has antiseptic properties. Ginger and garlic-based products have very wide ranging applications in many industries like food processing, pharmaceutical, soft drink, meat canning, confectionary, tobacco processing etc. Total export of ginger and ginger products from India is estimated to be Rs. 20420.00 lacs / annum whereas export of garlic and garlic product is estimated to be Rs. 1415 lacs / annum.

5. PROJECT DESCRIPTION

a) Product & Its uses

Many products can be manufactured from ginger and garlic like dehydrated ginger or garlic, ginger candy, garlic powder, ginger oil and oleoresins and so on. This note considers dehydration of ginger and garlic and manufacture of ginger candy. This activity can be taken up in many parts of the country including the West Bengal. However, this note considers WB as the preferred location in view of good market prospects.

b) Capacity

The proposed capacity of the plant is to process 90 MT / annum of ginger & 60 MT / annum of garlic.

c) Manufacturing process

In case of dehydration of garlic cloves are separated manually and then dehydration is done in a drier at about 55-60° C temperature. As regards ginger, fresh ginger is soaked in water and washed and then outer skin is peeled off in a barrel drum. Skin peeling facilitates removal of moisture. Drying is done in the electrically-heated thermostatic-

controlled drier. Drier is combined with steam heating arrangement. Drying temperature is in the range of 55-60C. Ginger, for producing candy, has to be rich in flavour, juice, fibreless and tender. After washing and peeling, ginger is cut in required sizes and boiled with small quantity of citric acid for about an hour under a pressure of 10 psig or for 6 hours under atmospheric pressure to improve its colour. Then the mixture is boiled with 30% sugar solution content (60 brix) and then small quantity of citric acid is added and the solution is boiled and kept till sugar penetrates in ginger . Finally it is boiled for about 5 minutes and the sugar solution is drained out and pieces of ginger are rolled in ground sugar, dried and packed. The process flow chart is as under:

6. PROJECT COMPONENTS & COST

a) Land & Building

Land measuring around 250 sq. mtrs. with built up area of 200 sq. mtrs. shall be required. Land may cost Rs. 1.25 lacs whereas cost of construction is assumed to be Rs. 10.00lacs.

b) Plant & Machinery

Requirement of machinery would depend upon the proposed production capacity. For dehydration or drying capacity of 90 tons per year of ginger and 60 tons annually, of garlic, following machine shall be needed :

Item	Qty	Price (Rs)
MS drier with thermostatic and arrangement for steam heating with all accessories and electrical	1	9,00,000/-
Skin peeling barrel drum with accessories	1	60,000/-
Baby boiler	1	2,10,000/-
SS steam jacketed kettle	1	1,50,000/-

SS steam jacketed kettle	1	1,80,000/-
SS utensils, weighing scales, aluminium trays, plastic tube, laboratory equipments etc.		15,00,000/-

c) Miscellaneous Assets

Other assets like furniture and fixtures, storage racks, working table, exhaust fans would cost about Rs. 1,80,000/-

d) Utilities

Power requirement shall be 30 HP whereas water requirement shall be 5000 ltrs. The cost of utilities is estimated at Rs. 3.00 lacs / annum.

e) Prel. & Pre Operative Expenses

Pre production expenses like registration, establishment, administrative , and travelling expenses , market survey, trial runs, interest during implementation etc. would cost Rs. 2,40,000/-

f) Working Capital Assessment

The major requirement will be stocks of finished goods and receivables as can be seen from the estimates of first year.

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of Finished Goods	1 month	25%	5.63	4.22	1.41
Receivable	1 month	25%	7.42	5.56	1.86
Working expenses	1 month	100%	1.00	-	-
		Total	14.05	9.78	3.27

g) Project cost & Means of Finance

Item	Amount (Rs. in lacs)
Land and Building	11.25
Plant and Machinery	15.00
Miscellaneous Assets	1.80
P & P Expenses	2.40
Contingencies @ 10% on Building and plant and machinery	2.62
Working capital margin	3.27
Total	36.34
Means of Finance	
Promoters' contribution	14.53
Term loan from Bank / FI	21.81
Total	36.34
Debt Equity Ratio	1.5:1
Promoters contribution	40%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects, subject to certain terms and conditions.

7) PROJECTED PROFITABILITY

a) Production Capacity

The rated production capacity of the plant is 150 tons per year whereas actual capacity utilization is expected to be 60% and 75% during 1st year & 2nd year respectively.

b) Sales Revenue at 100%

Product	Qty (Tons)	Selling Price (Rs. / Ton)	Sales (Rs. in lacs)
Dehydrated Ginger	40	1,80,000	72.00
Ginger Candy	15	1,80,000	27.00
Dehydrated Garlic	20	2,50,000	50.00
Total			149.00

c) Raw Material Required at 100%

Product	Qty (Tons)	Rate (Rs. / Ton)	Value (Rs. in lacs)
Green Ginger	90	45,000	40.50
Garlic	60	81,000	48.0
Sugar	15	36,000	05.40
Citric Acid	-	-	0.54
Packing Material	-	-	7.20
		Total	101.64

d) Projected Profitability

(Rs. in lacs)

S. No.	Particulars	1 st year	2 nd year
A.	Installed capacity	150 Tons	
	Capacity Utilisation	60%	75%
	Sales Realisation	89.00	111.75
B.	Cost of Production		
	Raw Materials & Packing material	60.96	76.20
	Utilities	1.80	2.25

	Salaries	3.60	4.50
	Stores and Spares	0.60	0.75
	Repairs and Maintenance	0.60	0.75
	Selling and Administrative Exp. @ 6%	5.34	6.67
	Total	72.90	91.12
	Profit before Interest & Depreciation	16.10	20.63
	Interest on Term Loan	1.57	1.96
	Interest on Working Capital	1.36	1.71
	Depreciation.	2.80	2.52
	Net Profit	10.36	14.44
	Income-tax @ 20%	3.10	4.33
	Profit after tax	7.26	10.11
	Cash Accruals	10.06	12.63
	Repayment of Term Loan	Nil	4.0

e) Break Even Point Analysis

S. No.	Particulars	Amount(Rs. in lacs)	
(A)	Sales		111.75
(B)	Variable Costs		
	Raw material and Packing Material	76.20	
	Utilities	2.25	
	Salaries	4.50	
	Stores and Spares	0.75	
	Selling and admn. Exps (70%)	6.67	
	Interest on WC	1.71	94.08
(C)	Contribution (A) - (B)	17.67	
(D)	Fixed Costs	7.25	
(E)	Break Even Point	41%	

f) Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1 st year	2 nd year	3 rd year
Cash Accruals	10.06	12.63	15.15
Interest on TL	1.57	1.96	1.81
Total (A)	11.63	14.49	16.96
Interest on TL	1.57	1.96	1.81
Repayment of TL	Nil	4.0	4.0
Total (B)	1.57	5.98	5.81
DSCR (A) / (B)	7.40	2.43	2.91
Average DSCR	4.24		

g) Internal Rate of Return (IRR)

Cost of the project is Rs. 36.34 lacs

(Rs. in lacs)

Year	Cash Accruals	18%	20%	24%
1	10.06	8.99	8.37	8.18
2	12.63	9.06	8.76	7.70
3	14.31	8.71	8.28	7.49
4	15.15	7.78	7.30	6.40
5.	15.15	6.57	6.09	5.15
	Total	41.09	38.80	34.92

The IRR is around 22%

h) Manpower requirement

Particulars	Nos.	Salary / month (Rs.)	Total Salary (Rs.)
Skilled Worker	2	7,500	15,000
Semi Skilled Workers	2	6,000	12,000
Helpers	2	5,000	15,000
Salesman	1	8,000	8,000
		Total	50,000

8. ASSUMPTIONS

- The plant will work for 300 days in a year. :
- The operating capacity is 60% , 75%, 90 % during 1st year , 2nd year and 3rd year respectively.
- The interest on term loan is taken at 10% per annum and on working capital it is 12% per annum.
- Price of raw material is taken at Rs. 45,000/ ton of ginger and Rs. 80,000/- ton of garlic.

9. SOURCES OF TECHNOLOGY

CFTRI, Mysore, has successfully developed the technical know-how for the product. BIS has laid down quality standard. The compliance under FSSAI act is a must.

10. PLANT & MACHINERY SUPPLIERS

1. Avity Agrotech and Industries
No.490-491, c-1 Chandan Complex, G.I.D.C,
Makarpura , Vadodara – 390010 Gujarat
Ph. 0844 7570776
www.avityagrotech.com.
2. Yagnam Pulverier Private Limited
Plot no. R-869. Rabale M.I.D.C., Thane- Belapur Road,
Navi Mumbai – 400701, Maharashtra
Ph. 08447526964
www.lithtechindia.com
3. Best Engineering Technologies
Plot. No. 69-A, No. 5-9-285/13, Rajiv Gandhi Nagar,
Industrial Estate, Kukatpally, Hyderabad – 500037,
Ph. 08447523620
www.bestengineeringtechnologies.com.

PROJECT PROFILE

ONION PASTE & POWDER

1. INTRODUCTION

Vegetables such as Onion are available during a specific season and they are perishable. Hence, majority of them are not available during off season. To overcome this problem, dehydration technique has been developed by which Onion in dehydrated form are preserved for a longer period and are made available during off-season. With this technology, certain high value and popular vegetables can be profitably sold.

2. OBJECTIVES

The objective of the profiles is to encourage and assist prospective entrepreneurs in MSME sector in and guiding making them aware of the opportunities of this sector. It is also being developed by the Directorate of the Food Processing Industries, Government of West Bengal to help entrepreneurs with knowledge about raw materials availability, knowledge of market, source of technology and plant and machinery suppliers. M/s ITV Agro & Food Technologies Pvt. Ltd., New Delhi has helped in developing the project profile.

3. RAW MATERIAL AVAILABILITY

The all-important raw material will obviously be fresh onion. Hence, the location of the project has to be nearer to onion growing areas. Depending upon the availability of onion during different seasons, the product mix may change. Likewise the prices of raw material would also change depending upon the crop pattern. Average price of onion is taken at Rs. 10000/- per ton. The packing materials will be plastic bags made from suitable grade plastic, corrugated boxes, box strapping, labels etc. Production of onion in West Bengal is estimated to be 3.04 lacs tons /year.

4. MARKET OPPORTUNITIES

a) Demand and Supply

Food habits of Indians are such that most of the house hold prepare vegetable every day. Onion are part of every vegetable made in the kitchen. It is a seasonal vegetable and thus its availability during rest of the months is a major problem. Hence, if is made available during this period then it command premium. Dehydration technique is therefore, preferred so that the product is available throughout the year . Export of dehydrated onion from India during the year 2010-11, 2011-12 and 2012-13 is estimated to be Rs. 28749 lacs , Rs. 38800 lacs and Rs. 45794 lacs respectively.

b) Marketing Strategy

With growing income, changing lifestyles and hectic daily schedule, market for dehydrated vegetables is growing especially in urban areas. Proper placement of products in the departmental stores, super markets, shopping mall etc. backed up by publicity is the key to success . It is also possible to have tie-up with exclusive restaurants, star hotels renowned caterers etc. for regular supplies

5. PROJECT DESCRIPTION

a) Product & Its uses

Dehydration technology is well established and proven. Certain products like onion, green peas, cauliflower, carrots, spinach etc. command good price during lean and off-season. Onion and garlic powder also has good demand round the year but these products are generally available throughout the year. This project can be set up in many parts of the country but this note considers West Bengal as the preferred location.

b) Capacity

The proposed capacity of the plant is to process 600 MT / annum of onion

c) Manufacturing process

The onion for dehydration should be large size bulb (to reduce trimming losses) with high pungency having white flesh and preferably a white skin. Onions are washed in a rotary washer . Roots and tops may be removed before or after peeling. Peeling may be done by a hand-knife or flame treatment. The onions are next sliced into 1/8-1/10 thick slices, at a right angle to the vertical axis. The onion slices may be dried in continuous belt driers. In modern belt dryers, slices are automatically spread on a continuous stainless steel perforated belt. The temperature of the air at the inlet end is about 85 ° C while at the other end it is 55 ° C. The product leaving the drier attains a moisture content of about 6% in about 6 hours of drying.

The dry slices are further dried and finished to less than 4 % moisture in bins having perforated bottom . Air at 50 dig. C and absolute humidity not over 3 gms. Moisture / kg. Dry air is passed through the product. Bin drying takes about 12 to 30 hours.

6. PROJECT COMPONENTS & COST

a) Land & Building

The plot of about 500 sq. mtrs is required. The built up are requirement will be 220 sq. mtrs. Storage of vegetables would require an area of 35 sq. mtrs, whereas packing room and finished good godown will occupy about 60 sq. mtrs. Vegetable washing tanks could be constructed adjacent to the raw material godown with asbestos sheets. Main production hall will be of around 100 sq. mtrs. and balance 25 sq. mtrs could be allotted for office and laboratory. The entire area has to be neat and clean and completely hygienic. Considering price of land @ Rs. 500/- per sq. mtr. the total cost of land would be Rs. 2.50 lacs whereas that of civil work it will be Rs. 13.20 lacs @ Rs. 6000/- per. Sq. mtr. Construction cost is taken on a higher side as flooring, painting etc. of the building has to be of superior quality to maintain hygienic standards.

b) Plant & Machinery

Easy and regular availability of fresh onion during each season and nearby urban markets are the critical aspects for arriving at the installed production capacity for the purpose of this note and with a view to minimizing initial capital investment, the rated capacity is taken at 600 tons / year and 300 working days. For this following machine shall be required.

Item	Qty	Price (Rs. in lacs)
Washing tanks with sets of cubers , slicers, etc,	2	1.00
Blanching tank with thermostat control	1	2.50
Stacking trays for onion	1	0.50
Pre-cooling facility	1	2.50
Vibratory shakers	1	1.20
Fluidized bed dryer to dehydrate onion complete with all attachments	1	7.00
Hot water boiler with attachments	1	2.50
Automatic form, fill and seal machines complete with attachments	1	3.75
Pin mill with accessories of 50 kgs /hr. capacity	1	4.25
Testing equipments	1 set	1.25
Electrification		2.00
	Total	28.45

c) Miscellaneous Assets

Other assets like storage racks and bins aluminum top working tables, exhaust fans, furniture and fixtures, electrical, plastic trays/ jars / tubs, office equipment etc. shall be required for which a provision of Rs. 3.25 lacs is made.

d) Utilities

Power requirement shall be 30 HP whereas water required for washing and for potable and sanitary purposes will be 20,000 litrs. / day. Total cost of utilities is estimated to be Rs. 3.75 lacs.

e) Prel. & Pre Operative Expenses

There will be many expenses under this category like registration charges, market survey expenses, scrutiny fee of the financial institution, pre production administrative overheads including salaries, travelling, interest during construction and implementation period, trial run expenses and so on. Hence, a provision of Rs. 3.50 lacs is made.

f) Working Capital Assessment

As against rated capacity of 600 tons per year, capacity utilization of 60% is assumed in the first year. At this activity level, the project would require working capital of Rs. 7.09 lacs as worked out here below:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of raw material & packing materials	½ month	25%	1.61	1.21	0.40
Stock of Finished Goods	½ month	25%	2.48	1.86	0.62
Receivable	½ month	25%	3.00	2.25	0.75
		Total	7.09	5.32	1.77

g) Project cost & Means of finance

Item	Amount (Rs. in lacs)
Land and Building	15.70
Plant and Machinery	28.45
Miscellaneous Assets	3.25
P & P Expenses	3.50
Contingencies @ 10% on building and plant & machinery	4.16
Working capital margin	1.77
Total	56.83
Means of Finance	
Promoters' contribution	22.73
Term loan from Bank / FI	34.10
Total	56.83
Debt Equity Ratio	1.5:1
Promoters contribution	40%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

7) PROJECTED PROFITABILITY

a) Production Capacity

The rated production capacity of the plant is 600 tons per year whereas actual capacity utilization is expected to be 60% and 75% during first year and second year respectively.

b) Sales Revenue at 100%

As explained above, there will not be exact sales mix every month. It will vary according to the availability of onion and its prices and consumer demand or

preferences . A firm tie-up with a large buyer may also change the sales mix. Hence, average price realization is taken at Rs. 220/kg or Rs. 132.00 lacs per year.

c) Raw Material Required at 100%

Product	Qty (Tons)	Rate (Rs./ Ton)	Value (Rs. in lacs)
Onion	600	10,000	60.0
Packing Material			4.80
	Total		64.80

d) Projected profitability

(Rs. in lacs)

S. No.	Particulars	1 st year	2 nd year
A.	Installed capacity	600 Tons	
	Capacity Utilisation	60%	75%
	Sales Realisation	79.20	99.00
B.	Cost of Production		
	Raw material & Packing Materials	38.80	48.60
	Utilities	2.25	2.81
	Salaries	11.16	12.27
	Stores and Spares	0.90	1.12
	Repairs and Maintenance	1.20	1.50
	Selling Expenses @ 15%	3.60	4.50
	Administrative Expenses	1.80	2.25
	Total	59.71	73.05
C.	Profit before Interest & Depreciation	19.49	25.95
	Interest on Term Loan	3.41	2.71
	Interest on Working Capital	0.63	0.79

	Depreciation.	4.16	3.74
	Net Profit	11.25	18.71
	Profit after tax	10.13	16.84
	Cash Accruals	14.29	20.58
	Repayment of Term Loan	Nil	7.00

e) Break Even Point Analysis

S. No.	Particulars	Amount (Rs. in lacs)	
(A)	Sales		99.00
(B)	Variable Costs		
	Raw Material	48.60	
	Utilities(70%)	1.96	
	Salaries (60%)	6.13	
	Stores and Spares	1.12	
	Selling and Distribution Exps (70%)	3.15	
	Admn Expenses (50%)	0.45	
	Interest on WC	0.79	62.20
(C)	Contribution (A) / (B)		36.80
(D)	Fixed Costs		12.98
(E)	Break Even Point		36%

f) Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1 st year	2 nd year	3 rd year
Cash Accruals	14.29	20.58	24.69
Interest on TL	3.45	2.71	2.00
Total (A)	17.74	23.29	26.69
Interest on TL	3.41	2.71	2.00
Repayment of TL	Nil	7.00	7.00

Total (B)	3.41	9.71	9.00
DSCR (A) / (B)	5.20	2.39	2.96
Average DSCR	3.51		

g) Internal Rate of Return (IRR)

Cost of the project is Rs. 56.83 lacs

(Rs. in lacs)

Year	Cash Accruals	24%
1	14.29	11.43
2	20.58	13.36
3	24.69	12.93
4	24.69	10.44
5	24.69	8.40
Total		56.56

The IRR is around 24%.

h) Manpower requirement

Particulars	Nos.	Monthly salary	Total Monthly Salary (Rs.)
Machine operator	2	8500	17,000
Skilled Worker	2	8500	17,000
Semi Skilled Workers	4	6000	24,000
Helpers	3	5000	15000
Laboratory Technician	1	8000	7000
Salesman	1	8000	8000
Clerk	1	7000	7000
		Total	93,000

8. ASSUMPTIONS

- The plant will work for 300 days in a year. :
- The operating capacity is 60% , 75%, 90 % during 1st year , 2nd year and 3rd year respectively.
- The interest on term loan is taken at 10% per annum and on working capital it is 12% per annum.
- Price of raw material and selling price of finish products is taken at Rs. 10,000 / ton and Rs. 2,20,000 / ton respectively.

9. SOURCES OF TECHNOLOGY

CFTRI, Mysore, has successfully developed the technical know-how for the product. BIS has laid down quality standard. The compliance under FSSAI act is a must.

10. PLANT & MACHINERY SUPPLIERS

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www.bestengineeringtechnologies.com.

PROJECT PROFILE

OLEORESINS & SPICE OIL

1. INTRODUCTION

Oleoresins are the flavour extracts obtained by the solvent extraction of the ground spices. They have aroma of spice and possess the attributes which contribute to the taste such as pungency. All the spices contain essential oils in varying proportions which can be extracted by steam distillation. India is one of the leading producers of spices and instead of exporting raw spices, it is advisable to export value added products.

2. OBJECTIVES

The objective of the profiles is to encourage and assist prospective entrepreneurs in MSME sector in and guiding making them aware of the opportunities of this sector. It is also being developed by the Directorate of the Food Processing Industries, Government of West Bengal to help entrepreneurs with knowledge about raw materials availability, knowledge of market, source of technology and plant and machinery suppliers. M/s ITV Agro & Food Technologies Pvt. Ltd., New Delhi has helped in developing the project profile.

3. RAW MATERIAL AVAILABILITY

Raw spices like black pepper, ginger, turmeric, cinnamon and cardamom seeds shall be the main raw materials. Appropriate solvent needs to be identified. Total production of spices in the country is estimated to be 5387092 MT / year out of which production in the West Bengal is estimated to be 211128 MT/ year.

4. MARKET OPPORTUNITIES

Oleoresins and spice oil have large domestic as well as export markets. They are consumed by a broad spectrum of manufacturers like confectionary, noodles, beverages, sauces, canned meat, soup powders, curries, poultry products and so on. Most of the end use industries are growing steadily and demand is bound to increase. With increasing preference for quality products, use of spices is rapidly replaced with oleoresins and spice oils. Exports of these processed products, instead of raw spices, would also result in considerable value addition. Total Export of spices oil and oleoresins from India during the year 2009-10, 2010-11 and 2011-12 is estimated to be Rs. 70875/-lacs, Rs. 91062/- lacs and Rs. 130438/- lacs respectively.

5. PROJECT DESCRIPTION

a) Product & Its uses

The oleoresins and spice oil are preferred because of their microbiological advantages, uniformity in flavour and pungency, easy to store and transport. They have several applications like in the preparation of beverages, soup powders, confectionary, curries, noodles, sauces & canned meat etc.

b) Capacity

The proposed capacity of the plant is to process 70 MT / annum of various spices.

c) Manufacturing process

To start with, various raw spices are cleaned and then ground to the required mesh size. Then extraction is undertaken with the help of proper solvent. Solvents that can be used are hexane, acetone, ethylene dichloride or alcohol. Extraction is done by percolation of the solvent at room temperature through a bed of ground spice packed in SS percolator. Then the dark viscous extract containing not less than 10% of total soluble solids are drawn off and distilled under reduced pressure to remove the

excess of solvent. The essential oil is obtained by steam distillation. A typical flow chart is as under.

6. PROJECT COMPONENTS & COST

a) Land & Building

A plot of around 300 sq. mtrs. with constructed area of 150 sq. mtrs. would be adequate for the contemplated production capacity. Land may cost Rs. 1.50 lacs whereas the cost of civil work is assumed to be Rs. 9.75 lacs.

b) Plant & Machinery

For the contemplated installed capacity of 1500 kgs. of spice oil and 3000 kgs. of Oleoresins per year with 12 hours working per day and 300 working days every year, following equipments shall be needed.

Particulars	Qty	Amount (Rs. in lacs)
Hammer type disintegrators	2	3.00
SS Percolator of 200 kgs. capacity	2	2.40
Vacuum distillation still with 75/ 100 ltrs. capacity with vacuum pump and other accessories	2	31.50
SS storage tanks of 50 kgs. capacity	2	2.10
Can sealer	1	1.20
Baby Boiler	1	2.40
Laboratory equipments	-	1.50
Total		44.10

c) Miscellaneous Assets

Other assets like weighing scales, furniture and fixtures, working tables, storage racks etc. would need around Rs. 3.00 lacs.

d) Utilities

Power requirement shall be 15 HP whereas water requirement will not be more than 2000 ltrs every day. LDO or coal shall be required for boiler. Total cost of utilities is estimated to be Rs. 3.00 lacs / annum.

e) Prel. & Pre Operative Expenses

An amount of Rs. 4.50 lacs would take care of pre-production expenses like establishment and registration charges, travelling, administrative expenses, interest during implementation, trial runs etc.

f) Working Capital Assessment

At 60% capacity utilization in the first year, the working capital needs shall be as under:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Stock of raw material and packing material	1 month	30%	3.60	2.60	1.0
Stock of Finished Goods	½ month	25%	2.58	1.93	0.65
Receivable	1 month	25%	6.30	4.73	1.57
Total			12.48	9.26	3.22

g) Project cost & Means of finance

Item	Amount (Rs. in lacs)
Land and Building	11.25
Plant and Machinery	44.10

Miscellaneous Assets	3.0
P & P Expenses	4.50
Contingencies @ 10% on building and plant & machinery	5.53
Working capital margin	3.22
Total	71.60
Means of Finance	
Promoters' contribution	28.64
Term loan from Bank /FI	42.96
Total	71.60
Debt Equity Ratio	1.5:1
Promoters contribution	40%

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

7) PROJECTED PROFITABILITY

a) *Production Capacity*

As against the rated capacity, actual utilization in the first year is assumed to be 60% and thereafter, it is restricted to 75%

b) *Sales Revenue at 100%*

Product	Qty (Tons)	Selling Price (Rs. / kg.)	Sales (Rs. in lacs)
Spice Oil	15	5000	75.00
Oleoresins	30	2700	81.00
	Total		156.00

c) *Raw Material Required at 100%*

Various raw material required for the unit are given below:

(Rs. in lacs)

Product	Qty (Tons)	Rate (Rs. / Ton)	Value
Spice	70 Tonnes	90,000	63.0
Alcohol / Acetone			7.50
Packing Material @ Rs. 10 / Kg			1.50
TOTAL			72.00

d) *Profitability statement*

(Rs. in lacs)

S. No.	Particulars	1 st year	2 nd year
A.	Installed capacity	70 Tons	
	Capacity Utilisation	60%	75%
	Sales Income	93.60	117.00
B.	Cost of Production		
	Raw material & packing materials	43.20	54.00
	Utilities	1.80	2.25
	Salaries	6.54	7.19
	Stores and Spares	0.60	0.75
	Repairs and Maintenance	0.90	1.12
	Selling Expenses @ 10%	7.56	9.45
	Administrative Expenses	1.50	1.90
	Total	62.10	76.66
C.	Profit before Interest & Depreciation	31.50	40.34
	Interest on Term Loan	5.15	4.19
	Interest on Working Capital	1.29	1.61

	Depreciation.	5.80	5.20
	Profit before Tax	19.33	29.34
	Income-tax @ 30%	1.93	2.93
	Profit after tax	17.40	26.42
	Cash Accruals	23.20	31.62
	Repayment of Term Loan	Nil	8.00

e) Break Even Point Analysis

S. No.	Particulars	Amount (Rs. in lacs)	
(A)	Sales		117.00
(B)	Variable Costs		
	Raw material & Packing Material	54.0	
	Utilities(70%)	2.25	
	Salaries (60%)	7.11	
	Stores and Spares	1.12	
	Selling and Distribution Exps (70%)	9.45	
	Admn Expenses (50%)	1.90	
	Interest on WC	1.61	77.52
(C)	Contribution (A) - (B)		39.46
(D)	Fixed Costs		11.72
(E)	Break Even Point		30%

f) Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

Particulars	1 st year	2 nd year	3 rd year
Cash Accruals	23.20	31.62	37.94
Interest on TL	5.15	4.19	4.19
Total (A)	28.35	35.79	42.13
Interest on TL	5.15	4.19	4.19

Repayment of TL	-	8.0	8.00
Total (B)	5.15	12.19	12.19
DSCR (A) / (B)	5.50	2.93	3.45
Average DSCR	3.96		

g) Internal Rate of Return (IRR)

Cost of the project is Rs. 71.60 lacs

(Rs. in lacs)

Year	Cash Accruals	32%
1	23.20	17.40
2	31.62	18.14
3	37.94	16.50
4	37.94	10.83
5.	37.94	9.48
	Total	72.35

The IRR is around 32%.

h) Manpower requirement

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Worker	1	8,000	8,000
Semi Skilled Workers	2	7,500	15,000
Helpers	4	6,000	24,000
Salesman	1	7,500	7,500
		Total	54,500

8. ASSUMPTIONS

- The plant will work for 300 days in a year. :
- The operating capacity is 60% , 75%, 90 % during 1st year , 2nd year and 3rd year respectively.
- The interest on term loan is taken at 12% per annum and on working capital it is 14% per annum.
- Price of raw material and selling price of finish products is taken at Rs. 90 / kg and Rs. 5,000 / kg respectively.

9. SOURCES OF TECHNOLOGY

CFTRI, Mysore, has successfully developed the technical know-how for the product. BIS has laid down quality standard. The compliance under FSSAI act is a must.

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