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PROJECT REPORT

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PROJECT:

Moringa Processing

PROJECT REPORT

OF

MORINGA PROCESSING (SEED POWDER)

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Moringa Processing.

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

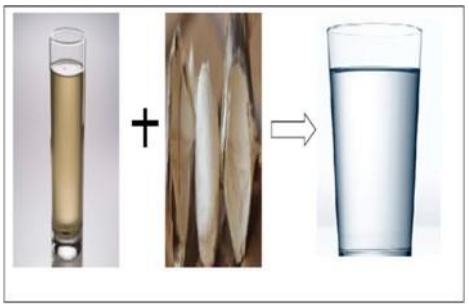
[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

MORINGA PROCESSING (SEED POWDER)

1. INTRODUCTION

Moringa oleifera is a multipurpose, medium or small-sized tree, from regions of northwest India and indigenous to many parts of Asia, Africa, and South America. Its pods have been used to remove organics as an inexpensive and reliable sorbent. It can be used as a coagulant in the treatment of water. It's a pure organic polymer that's non-toxic. According to the World Health Organization, drinking water must be processed to eliminate impurities and bacteria in order to follow quality standards of 5 nephelometric turbidity units (NTU) for drinking water. In most rural communities in many developing countries, the use of surface and groundwater for drinking and domestic purposes has become commonplace. Since this water includes dissolved and suspended solids, it normally needs treatment before use. Coagulation, a water treatment procedure that involves the destabilization of colloidal particles to form flocs that can then be easily extracted, can be used to extract these pollutants from this source of water. The addition of positively charged ions known as coagulants to water containing colloidal particles, which are almost always negatively charged, achieves this destabilization. Chemical coagulants have been used in water treatment for decades to remove suspended solids and reduce turbidity, as well as to kill bacteria and viruses. Aluminum sulfate, ferrous sulfate, and ferric sulfate are the most common chemical coagulants. Chemical coagulants are used in water and wastewater treatment to allow impurities in colloidal forms to bind to each other as they come into contact, forming flocs that can then be easily removed. Chemical coagulants, on the other hand, are not readily accessible in developed countries, can be very costly for people living in remote rural areas in developing countries, and

can have negative public health consequences if not used properly. As a result, the use of natural coagulants by plants is a feasible alternative to chemical coagulants. Extracts from plants like moringa oleifera have been shown to be effective in removing suspended solids, reducing turbidity, softening hard water, and reducing slurry output as compared to chemical coagulants.



2. MARKET POTENTIAL

The moringa ingredients market will rise due to the increasing demand for food supplements as a result of rising nutrition awareness, a growing geriatric population, a hectic lifestyle, and rising disposable income. The industry is expected to expand as people become more aware of the medicinal benefits of moringa-based products. Moringa bulbs, seeds, pods, leaves, gum, and bark have properties that help to alleviate vitamin and mineral deficiencies, maintain normal blood glucose levels, support a healthy cardiovascular system, immune system, neutralize free radicals, and enrich anaemic blood. They can help with malnutrition, lactating mothers, general weakness, depression, menopause, osteoporosis, and arthritis, among other things. The drumstick tree, also known as the miracle tree, the ben oil tree, or the horseradish tree, is *Moringa oleifera*. One of the main factors for the market's growth is a rise in customer perception of the plant's health benefits. It has antifungal, antiviral, antidepressant, and anti-inflammatory properties that help to cure a variety of ailments.

It can also be easily grown at a low cost in tropical and subtropical regions, resulting in the expanded use of the plant in a variety of applications. It's also one of the most effective treatments for malnutrition in children under the age of three. Given all of the above reasons, market demand for these items is growing. In 2018, the global moringa products market was worth USD 5.5 billion, and it is expected to develop at a healthy CAGR over the forecast period. Moringa is a balanced super food that resembles a "vegetable tree" and is rich in minerals and vitamins. It is thought to

have various health and beauty advantages, as well as the ability to help prevent and cure diseases. Moringa is available in a variety of ways, including raw moringa, moringa powder for food supplements, tea, and oil. Several factors are driving the industry, including an increase in the demand for dietary supplements, increased public health awareness, and a change in emphasis toward organic medicine.

3. INDUSTRIAL SCENERIO

The market is segmented by commodity into leaf powder, tea, oil, and seeds. In 2018, leaf powder had the highest market share, accounting for more than 30.0 percent of the total. One of the major factors driving the segment's growth is the rising demand for dietary supplements as part of a daily diet. Leaf powder is used to make useful medicines that aid in the treatment of a number of skin conditions. Veg India Exports, Green India, Ayuritz, and Mother Hubs are some of the major players in this business. Organic India, Botanical Natural Goods, Moringa Connect, MoSagri, and Moringa Malawi are some of the other major players. Due to the limited number of companies and high demand for the product, moderate entry barriers are expected to foster fierce competition among major manufacturers.

The growing demand for dietary supplements and organic-based products that have no negative effects on the skin and body is driving demand for moringa, putting pressure on various players. Several activities are undertaken by the industry's leading producers, such as expansions, mergers, and acquisitions, and product and technological advancement, which help to define the sector. Moringa has been discovered to be capable of producing a form of medication that can postpone diabetes for 10-15 years, according to a recent report. The majority of pharmaceutical companies are conducting comprehensive research to establish different types of moringa-based medicines.

To gain the most market share, leading companies are widening their geographical reach. Plant-based vitamins and herbal cosmetics are more appealing to consumers. Manufacturers are likely to concentrate on new product innovation, appealing specifically to the target market, taking into account all of the above factors.

4. PRODUCT DESCRIPTION

4.1 PRODUCT USES

Moringa tree seeds have unusual water purification properties. Unwanted particulates can be separated from water regimenting impurities by using the seed extract. They may also be used as an antimicrobial treatment, as unprocessed seed powder can filter out over 90% of bacteria from raw water.

Other uses of moringa seed power

- Lowers Blood Pressure
- Acts as a sleep aid
- Boosts energy
- Lowers Blood Sugar level
- High in fiber
- Lowers Cholesterol
- Promotes healthy

4.2 RAW MATERIAL REQUIREMENT

- Moringa dry fruit are required
- Packaging material

4.3 MANUFACTURING PROCESS

Harvesting

When producing seed for planting or for oil extraction, allow the pods to dry and turn brown on the tree. In some cases, it may be necessary to prop up a branch that holds many pods to prevent it from breaking off. Harvest the pods before they split open and seeds fall to the ground.

Drying

Moringa fruit pods are dried to an average moisture content of about 10% to 15% during the process. One of the traditional methods of drying is sun drying after harvesting.

Threshing

Seed are extracted from the pod after proper drying. Moringa seeds are obtained from the pods of the Moring pod threshing.

Storage of seed

After threshing the seed are stored at room temperature for further processing

Hulling of seed

Discolored and diseased seeds are discarded before hulling the seed. Shell seeds (remove seed coat) to obtain clean seed kernels.

Grinding the kernels

Kernels are grinded to make powder farm. Some of the major industries are extract oil before grinding them. After removing the oil, the seed cake can still be used to purify water. Crush the seed cake a fine powder and sift the powder through a screen or small mesh.

Packaging

After grinding the seed the fine powder are packed in appropriate packages and stored in ambient temperature.

Processing to clean water with moringa seeds

- Determine the number of seed kernels needed based on the volume and turbidity of the water; 1 seed kernel treats 1 liter of water.
- To make a paste, combine seed powder with a small amount of clean water.
- To activate the coagulant properties and form a solution, combine the paste with 250 mL of clean water in a bottle and shake for 1 minute.
- Filter this solution (to extract insoluble materials) through a muslin cloth or fine mesh screen and into the water to be cleaned.
- Stir-treated water quickly for at least 1 minute, then slowly for 5-10 minutes (15-20 rotations per minute).

- Allow at least 1-2 hours for the treated water to remain undisturbed.
- When the particles and contaminants have settled to the bottom, the clean water can be carefully poured off.
- This pure water can then be sterilized or filtered to make it perfectly safe to drink.
- 50-150 mg of ground Moringa seed treats one liter of water, depending on how clear the water is.

The theory behind water purification using moringa seed

Moringa oleifera seeds act as a coagulant and an antimicrobial agent, treating water on two levels. Moringa is thought to function as a coagulant because of its positively charged, water-soluble proteins, which combine with negatively charged particles (silt, clay, bacteria, toxins, etc.) and allow the resulting "flocs" to settle to the bottom or be filtered out. The antimicrobial aspects of Moringa continue to be researched. The findings suggest that recombinant proteins can remove microorganisms through coagulation as well as function as direct microorganism growth inhibitors. Although further research into the essence and characteristics of these components is being done, it is widely agreed that treatments with Moringa solutions can eliminate 90-99.9% of impurities in water.

4.4 YIELD OF PRODUCT/PRODUCTION RATIO

The basis for calculation of production capacity is on single shift basis, with 80-90% efficiency and if 7-8 labours will be working for single shift basis then the total production capacity will be approx. 500 kg seed powder per Shift.

(Note: 20% seed oil also obtain from moringa seed)

5. PROJECT COMPONENTS

5.1 Land /Civil Work

The land require for this manufacturing unit will be approx. around 1000-1200 square feet.

We have not considered the cost of Land purchase & Building Civil work in the project. It is assumed that land & building will be on rent & approx. rental of the same will be Rs. 20,000-25,000 per month.

5.2 Plant & Machinery

Seed shelling machine:

This Sheller machine is used to remove the moringa seed code or separating the kernels.

Oil Extraction Machine: Moringa seed kernels contain about 20% oil, so seed oil is extracted from them to increase income. This machine is used to extract oil from moringa seed kernels. (optional)

Hammer Mill for grinding:

The aim of a hammer mill is to compress aggregate material (seed cake) into smaller pieces using repeated blows from small hammers.

Sifter machine: Sifter is used for screening, sieving of ground powder of moringa seed prior to final packaging.

Packaging machine:

This machine is used for final filling and packaging of fine moringa powder in suitable packages.

Equipment and Tools-

- **Silos:** This Equipment is class of storage Equipment which are specifically designed for dry grain raw material of small granule composition. Usually used to store grains but can also be used to store cement & aggregate.

- **Bucket Elevator:** A bucket lift is also a grain leg and is a device for vertical transport of materials.

- **Belt conveyers:** Belt conveyors are most commonly used in transportation of bulk materials

- **Material handling equipment:** SS Utensils, trolley, bins Hand Gloves etc. Miscellaneous tools are required during processing.

S.N.	Particulars	Quantity/Amount
1	Seed Shelling machine	2,50,000
2	Hammer mill for grinding	4,55,000
3	Sifter machine	1,90,000
4	Packaging machine	2,00,000
5	Other equipment's	50,000
	Sub-total Amount	**11,45,000**
	GST @ 18%	**2,06,100**
	Total	**13,51,100**

Note: This machine is only for the moringa seed powder extraction unit.

5.3 Power Requirement

For whole manufacturing plant requires three phase AC power supply. The machineries and other electrical utilities may require up to 25-30 HP power, for above mentioned capacity.

5.4 Manpower Requirement

Manpower required for this manufacturing unit is depend on the land, type of manufacturing unit etc. For this unit around 7-8 people will be required.

5.5 Other Utilities

General electrical apparatus, Water, telephone etc.

6. LICENSE & APPROVALS

- FSSAI registration certificate.
- MSME Udyam online registration.
- GST Registration
- NOC from fire safety board.
- Trademark (optional)

7. SWOT ANALYSIS

Strengths

- Health benefit of moringa product
- Oil recovery percentages
- Scope for market price increases up to 25-30 % for better quality products.

Weakness-

- Linkages between industry and research and development (R&D)
- Few medium sized millers.
- There is a lack of customized R&D in the proximity of these Industries.

Opportunities-

- Utilization of moringa oil and seed powder
- The potential of this industry is high
- Opportunities to value addition

Threats-

- Higher uncertainty
- Direct competition
- Availability of raw material
- New product in the market

PROJECTED PROFITABILITY STATEMENT					**(in Lacs)**
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation %	**30%**	**35%**	**40%**	**45%**	**50%**
SALES					
MORINGA SEED POWDER	99.18	122.68	144.60	167.59	191.96
Total	**99.18**	**122.68**	**144.60**	**167.59**	**191.96**
COST OF SALES					
Raw material cost	67.50	81.11	95.40	110.70	126.75
Electricity Expenses	4.20	5.04	6.05	7.26	8.71
Depreciation	2.13	1.81	1.54	1.31	1.11
Wages & labour	9.72	10.69	11.76	12.94	14.23
Repair & maintenance	0.50	1.84	2.17	2.51	2.88
Consumables	1.24	1.53	1.81	2.09	2.40
Packaging cost	1.98	2.33	2.89	3.35	3.84
Cost of Production	87.27	104.36	121.62	140.16	159.92
Add: Opening Stock	-	3.31	4.09	4.82	5.59
Less: Closing Stock	3.31	4.09	4.82	5.59	6.40
Cost of Sales	83.96	103.57	120.89	139.40	159.11
GROSS PROFIT	**15.22**	**19.11**	**23.71**	**28.19**	**32.85**
Salary to Staff	6.00	6.60	7.26	7.99	8.78
Interest on Term Loan	1.26	1.11	0.80	0.48	0.17
Interest on working Capital	0.66	0.66	0.66	0.66	0.66
Rent	3.00	3.30	3.63	3.99	4.39
Selling & Administration Expenses	1.74	3.99	5.06	5.87	6.72
TOTAL	**12.66**	**15.66**	**17.41**	**18.99**	**20.73**
NET PROFIT	2.56	3.45	6.30	9.20	12.12
Taxation			0.13	0.59	1.39
PROFIT (After Tax)	2.56	3.45	6.17	8.61	10.74

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening Balance		3.16	4.61	8.28	10.89
Add:- Own Capital	2.09				
Add:- Retained Profit	2.56	3.45	6.17	8.61	10.74
Less:- Drawings	1.50	2.00	2.50	6.00	7.00
Closing Balance	3.16	4.61	8.28	10.89	14.62
Term Loan	11.41	8.56	5.70	2.85	-
Working Capital Limit	6.00	6.00	6.00	6.00	6.00
Sundry Creditors	3.38	4.60	5.41	6.27	7.18
Provisions & Other Liabilities	0.40	0.60	0.72	0.86	1.04
TOTAL :	**24.34**	**24.36**	**26.11**	**26.88**	**28.84**
Assets					
Fixed Assets (Gross)	14.26	14.26	14.26	14.26	14.26
Gross Depriciation	2.13	3.94	5.47	6.78	7.90
Net Fixed Assets	**12.13**	**10.33**	**8.79**	**7.48**	**6.36**
Current Assets					
Sundry Debtors	5.29	5.73	6.75	7.82	8.96
Stock in Hand	5.56	6.79	8.00	9.28	10.62
Cash and Bank	0.61	0.51	0.82	0.80	0.90
Loans and advances/other current assets	0.75	1.00	1.75	1.50	2.00
TOTAL :	**24.34**	**24.36**	**26.11**	**26.88**	**28.84**

PROJECTED CASH FLOW STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	2.09				
Net Profit	2.56	3.45	6.30	9.20	12.12
Depriciation & Exp. W/off	2.13	1.81	1.54	1.31	1.11
Increase in Cash Credit	6.00	-	-	-	-
Increase In Term Loan	12.83	-	-	-	-
Increase in Creditors	3.38	1.22	0.81	0.87	0.91
Increase in Provisions & Other liabilities	0.40	0.20	0.12	0.14	0.17
TOTAL :	**29.39**	**6.68**	**8.77**	**11.52**	**14.32**
APPLICATION OF FUND					
Increase in Fixed Assets	14.26				
Increase in Stock	5.56	1.24	1.21	1.28	1.35
Increase in Debtors	5.29	0.44	1.02	1.07	1.14
Increase in loans and advances	0.75	0.25	0.75	- 0.25	0.50
Repayment of Term Loan	1.43	2.85	2.85	2.85	2.85
Drawings	1.50	2.00	2.50	6.00	7.00
Taxation	-	-	0.13	0.59	1.39
TOTAL :	**28.78**	**6.77**	**8.46**	**11.54**	**14.22**
Opening Cash & Bank Balance	-	0.61	0.51	0.82	0.80
Add : Surplus	0.61	-0.09	0.31	-0.02	0.10
Closing Cash & Bank Balance	**0.61**	**0.51**	**0.82**	**0.80**	**0.90**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	4.69	5.26	7.71	9.92	11.85
Interest on Term Loan	1.26	1.11	0.80	0.48	0.17
Total	5.95	6.37	8.51	10.40	12.02
REPAYMENT					
Instalment of Term Loan	1.43	2.85	2.85	2.85	2.85
Interest on Term Loan	1.26	1.11	0.80	0.48	0.17
Total	2.69	3.96	3.65	3.34	3.02
DEBT SERVICE COVERAGE RATIO	**2.21**	**1.61**	**2.33**	**3.12**	**3.98**
AVERAGE D.S.C.R.					**2.65**

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
ist	Opening Balance	-					
	1st month		12.83	12.83	-	-	12.83
	2nd month	12.83	-	12.83	0.12	-	12.83
	3rd month	12.83	-	12.83	0.12	-	12.83
	4th month	12.83	-	12.83	0.12	-	12.83
	5th month	12.83	-	12.83	0.12	-	12.83
	6th month	12.83	-	12.83	0.12	-	12.83
	7th month	12.83	-	12.83	0.12	0.24	12.60
	8th month	12.60	-	12.60	0.12	0.24	12.36
	9th month	12.36	-	12.36	0.11	0.24	12.12
	10th month	12.12	-	12.12	0.11	0.24	11.88
	11th month	11.88	-	11.88	0.11	0.24	11.65
	12th month	11.65	-	11.65	0.11	0.24	11.41
					1.26	1.43	
2nd	Opening Balance						
	1st month	11.41	-	11.41	0.10	0.24	11.17
		11.17	-	11.17	0.10	0.24	10.93
		10.93	-	10.93	0.10	0.24	10.70
		10.70	-	10.70	0.10	0.24	10.46
		10.46	-	10.46	0.10	0.24	10.22
		10.22	-	10.22	0.09	0.24	9.98
	7th month	9.98	-	9.98	0.09	0.24	9.75
	8th month	9.75	-	9.75	0.09	0.24	9.51
	9th month	9.51	-	9.51	0.09	0.24	9.27
	10th month	9.27	-	9.27	0.08	0.24	9.03
	11th month	9.03	-	9.03	0.08	0.24	8.79
	12th month	8.79	-	8.79	0.08	0.24	8.56
					1.11	**2.85**	
3rd	Opening Balance						
	1st month	8.56	-	8.56	0.08	0.24	8.32
	2nd month	8.32	-	8.32	0.08	0.24	8.08
	3rd month	8.08	-	8.08	0.07	0.24	7.84
	4th month	7.84	-	7.84	0.07	0.24	7.61
	5th month	7.61	-	7.61	0.07	0.24	7.37
	6th month	7.37	-	7.37	0.07	0.24	7.13
	7th month	7.13	-	7.13	0.07	0.24	6.89
	8th month	6.89	-	6.89	0.06	0.24	6.66
	9th month	6.66	-	6.66	0.06	0.24	6.42
	10th month	6.42	-	6.42	0.06	0.24	6.18
	11th month	6.18	-	6.18	0.06	0.24	5.94
	12th month	5.94	-	5.94	0.05	0.24	5.70
					0.80	**2.85**	

4th	Opening Balance						
	1st month	5.70	-	5.70	0.05	0.24	5.47
	2nd month	5.47	-	5.47	0.05	0.24	5.23
	3rd month	5.23	-	5.23	0.05	0.24	4.99
	4th month	4.99	-	4.99	0.05	0.24	4.75
	5th month	4.75	-	4.75	0.04	0.24	4.52
	6th month	4.52	-	4.52	0.04	0.24	4.28
	7th month	4.28	-	4.28	0.04	0.24	4.04
	8th month	4.04	-	4.04	0.04	0.24	3.80
	9th month	3.80	-	3.80	0.03	0.24	3.57
	10th month	3.57	-	3.57	0.03	0.24	3.33
	11th month	3.33	-	3.33	0.03	0.24	3.09
	12th month	3.09	-	3.09	0.03	0.24	2.85
					0.48	**2.85**	
5th	Opening Balance						
	1st month	2.85	-	2.85	0.03	0.24	2.61
	2nd month	2.61	-	2.61	0.02	0.24	2.38
	3rd month	2.38	-	2.38	0.02	0.24	2.14
	4th month	2.14	-	2.14	0.02	0.24	1.90
	5th month	1.90	-	1.90	0.02	0.24	1.66
	6th month	1.66	-	1.66	0.02	0.24	1.43
	7th month	1.43	-	1.43	0.01	0.24	1.19
	8th month	1.19	-	1.19	0.01	0.24	0.95
	9th month	0.95	-	0.95	0.01	0.24	0.71
	10th month	0.71	-	0.71	0.01	0.24	0.48
	11th month	0.48	-	0.48	0.00	0.24	0.24
	12th month	0.24	-	0.24	0.00	0.24	-
					0.17	**2.85**	

DOOR TO DOOR	60	MONTHS
MORATORIUM PERIOD	6	MONTHS
REPAYMENT PERIOD	54	MONTHS

1-CONNECT
UTTAR PRADESH MSME

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