

Dehydrated Fruits and Vegetables Plant



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Contents

Summary	4
1. Introduction	5
2. Dehydrated Products	6
I. Vegetables	6
II. Fruits	6
a. Dehydration of Vegetables	7
b. Dehydration of Fruits	8
3. Significance of Dehydration	10
4. Market Factors	10
a. Demand	10
b. Supply	11
5. Factors Effecting Business	12
a. Strategic Moves	12
b. Key to Success	12
c. Apprehensions	12
d. Risks	13
6. Process Description	14
7. Project Cost	16
8. Human Resource Requirements	16
Table 1 Human Resources	16
9. Equipment's and Machinery Requirements	17
Table 3 Plant Description	18
10. Land & Building	19

11. Project Detail	20
Table 6 Total Project Cost	20
12. Projected Income Statement	21
13. Key Assumptions	22
14. Disclaimer	24

Summary

Pakistan is located at a strategic point where marketing of agriculture products has tremendous potential. Moreover the country is blessed with fertile agriculture land, persistent abundant water supply and four seasons for growing variety of crops. With the advent of time, agriculture land holding is constricting with growing population as per hereditary laws prevailing in the country. As the land holding is on declining trend, farmers are getting smart & efficient and switching from traditional farming to mechanized and innovative farming techniques to increase per acre yield. Consequently the agriculture output is improving.

Dehydrated fruits & vegetables project is a new product of value addition series where the shelf life is increased & space for storage is reduced along with easy transportation. This leads to export avenues in international market especially to UAE, Saudi Arabia, Central Asian Republics where these products are already well known and fetch high price. If dehydrated fruits and vegetables plant is managed efficiently, we can earn good revenue in the form of foreign exchange by exporting dehydrated fruits & vegetables which will indirectly improve the status of farming community.

Although dehydration is an energy intensive process yet fruits and vegetables can be converted into value added products by using the solar energy options and exploiting the remote area labor force. Dehydrated products have potential market nationally and internationally. There is a wide range of agricultural products, which can be dehydrated and marketed locally or internationally. The overall aim of this project introduction in Pakistan is to bring about a change in the traditional farming practices and to diversify the NBP Agriculture products so as to achieve self-sufficiency to enlarge our exports and to build up the economic strength of rural population. The feasibility is a humble effort to establish such processing unit & serving national and international community as well.

The Dehydrated vegetables and fruit processing project of 5,797 kg per day on area of 8 kanal needs a capital investment estimated at **Rs. 25.497** million for construction, purchasing machinery and equipment. In addition to this, a sum of Rs. 2.867 million is required as working capital, which would be used for purchasing of raw material. The total project cost is estimated at Rs. 28.364 million.

1. Introduction

Agriculture being an important sector always plays fundamental role in the economic development of the country. Abundant fertile land, efficient irrigation system and intensive farming has made it dominant sector in the economy which contributes 21% to the GDP and employs approximately 45% of the total workforce; whereas 61% of the rural population is dependent on the sector for its livelihood. Agriculture has also been developed into an important component of country's foreign exchange earnings by exporting different types of fruits, vegetables and floricultures. On the other hand there are many innovative areas in agriculture to be explored for value addition in our produces that can be exploited by using the new techniques.

In recent past agriculture through production of dehydrated fruits and vegetables has captured a good market and became a good source of foreign exchange earnings. Dehydration is a process by which shelf life of the vegetables or fruits can be extended by evaporating water while preserving the taste. Dehydration reduces the weight and spaces required to store and transport the products and remain stable in ordinary storage conditions. Dehydrated products can be used during off season and the fresh produce of far off places can be saved from decomposition due to severe weather conditions and inefficient transport facilities. Through the introduction of these new technologies, the income of people living in remote areas can be increased by using their produces, paying higher prices and providing them with employment opportunities in food industry.

2. Dehydrated Products

Although dehydration is an energy intensive process yet fruits and vegetables can be converted into value added products by using the solar energy options and exploiting the remote area labor force. Dehydrated products have potential market nationally and internationally.

There is wide range of agricultural products which can be dehydrated and marketed locally or internationally. Following are the common dehydrated vegetables and fruits which are consumed in today's world.

I. Vegetables

Green Chili	Curry Leaves	Carrot Flakes / Bits / Powder
Coriander Leaves / Powder	Cauliflower	Bitter Gourd (Momordica Charantia)
Garlic Powder / Flakes / Granules	Capsicum Slice	Fenugreek Leaves
Red Beet Powder	Potato Fingers / Granules / Powder	Mustard Leaves
Cabbage	Onion Powder / Flakes	Spinach Leaves
Onion Powder / Flakes	Carrot Flakes / Bits / Powder	Mushroom Pieces
Ginger Powder	Tomato Powder	

II. Fruits

Grape Fruit Powder	Orange Powder	Grape Fruit Powder
Mango Powder /Slices	Pineapple Fruit Juice Powder	Banana Powder
Apricot	Peaches	Strawberries
Pineapple Fruit Powder	Lime Powder	

a. Dehydration of Vegetables

Drying time and drying conditions are important factors in dehydration of vegetables. Except onions, peppers and mushrooms all vegetables should be washed, sliced and balanced.

Vegetable	Preparation	Blanching Time (mins.)	Drying Time (hrs.)	Dryness test
Beans, green	Wash. Cut in pieces or strips.	4	8-14	Very dry, brittle
Broccoli	Wash. Trim, cut as for serving. Quarter stalks lengthwise.	4	12-15	Crisp, brittle
Cabbage	Wash. Remove outer leaves, quarter and core. Cut into strips 1/8" thick.	4	10-12	Crisp, brittle
Carrots, parsnips	Use only crisp, tender vegetables. Wash. Cut off roots and tops; peel. Cut in slices or strips 1/8" thick.	4	6-10	Tough to brittle
Cauliflower	Wash. Trim, cut into small pieces.	4-5	12-15	Tough to brittle
Chili peppers, green	Wash. To loosen skins, cut slit in skin, then rotate over flame 6-8 minutes or scald in boiling water. Peel and split pods. Remove seeds and stem. (Wear gloves if necessary.)	None	12-24	Crisp, brittle, medium green
Chili peppers, red	Wash thoroughly. Slice or leave whole if small.	4	12-24	Shrunken, dark red pods, flexible
Mushrooms	Scrub. Discard tough, woody stalks. Slice tender stalks 1/4" thick. Peel large mushrooms, slice. Leave small mushrooms whole. Dip in solution of 1 tsp. citric acid/quart water for 10 minutes. Drain.	None	8-12	Dry and leathery

Onions	Wash, remove outer paper skin. Remove tops and root ends, slice 1/8 to 1/4" thick.	4	6-10	Very brittle
Potatoes	Wash, peel. Cut into 1/4" shoestring strips or 1/8" thick slices.	7	6-10	Brittle
Tomatoes	Steam or dip in boiling water to loosen skins. Chill in cold water. Peel. Slice 1/2" thick or cut in 3/4" sections. Dip in solution of 1 tsp. citric acid/quart water for 10 minutes.	None	6-24	Crisp
Garlic Powder, flakes and salt	Garlic powder and garlic salt are fine in meat rubs, and all these products are useful in pinch, none of them has a great flavor of fresh garlic	4	6-10	dry

b. Dehydration of Fruits

Process used to dehydrate different fruits is as follows

Fruit	Drying Procedure
Apples	Select mature, firm apples. Wash well. Pare and core. Cut in rings or slices 1/8 to 1/4 inch thick or cut in quarters or eighths. Dip in ascorbic acid or other antidarkening/antimicrobial solution for 10 minutes. Remove from solution and drain well. Arrange in single layer on trays, pit side up. Dry until soft, pliable, and leathery; no moist area in center when cut (6-24 hours).
Apricots	Select firm, fully ripe fruit. Wash well. Cut in half and remove stone. Do not peel. Dip in ascorbic acid or other antidarkening/antimicrobial solution for 10 minutes. Remove from solution and drain well. Arrange in single layer on trays, pit side up with cavity popped up to expose more flesh to the air. Dry until soft, pliable, and leathery; no moist area in center when cut (24-36 hours).
Bananas	Select firm, ripe fruit. Peel. Cut in 1/8 inch slices. Dip in citric acid or other antidarkening/antimicrobial solution for 10 minutes. Remove and drain well. Arrange in single layer on trays. Dry until tough and leathery (6-10 hours).
Berries	Select firm ripe fruit. Wash well. Leave whole or cut in half. For berries with firm skins, dip in boiling water 30 seconds to crack skins. For berries with soft skins (strawberries), dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove and drain well. Place on drying trays not more than two berries deep. Dry until hard and berries rattle when shaken on trays (24-

	36 hours).
Cherries	Select fully ripe fruit. Wash well. Remove stems and pits. Dip whole cherries in boiling water 30 seconds to crack skins. May also dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove and drain well. Arrange in single layer on trays. Dry until tough, leathery, and slightly sticky (24-36 hours).
Citrus peel	Select thick-skinned oranges without mold or decay. Scrub oranges well with brush under cool running water. Thinly peel outer 1/16 to 1/8 inch of the peel; avoid white bitter part. Dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove from solution and drain well. Arrange in single layers on trays. Dry until crisp (8-12 hours).
Figs	Select fully ripe fruit. Wash or clean well with damp towel. Peel if desired. Leave whole if small or partly dried on tree; cut large figs in halves or slices. If drying whole figs, crack skins by dipping in boiling water for 30 seconds. For cut figs, dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove and drain. Arrange in single layers on trays. Dry until leathery and pliable (12-24 hours).
Grapes and Black Currants	Select seedless varieties. Wash, sort, remove stems. Cut in half or leave whole. If drying whole, crack skins by dipping in boiling water for 30 seconds. If halved, dip in ascorbic acid or other antimicrobial solution for 10 minutes. Drain. Dry until pliable and leathery with no moist center (12-24 hours).
Sweet Melons	Select mature, firm fruits that are heavy for their size. Scrub outer surface well with brush under cool running water. Remove outer skin, any fibrous tissue and seeds. Cut into 1/4- to 1/2-inch thick slices. Dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove and drain. Arrange in single layer on trays. Dry until leathery and pliable with no pockets of moisture (6-10 hours).
Pears	Select ripe, firm fruit. Wash fruit well. Pare, if desired. Cut in half lengthwise and core. Cut in quarters, eighths, or slices 1/8- to 1/4-inch thick. Dip in citric acid or other antidarkening/ antimicrobial solution for 10 minutes. Remove and drain. Arrange in single layer on trays pit side up. Dry until springy and suede-like with no pockets of moisture (6-10 hours for slices; 24-36 hours for halves).
Plums and prunes	Wash well. Leave whole if small; cut large fruit into halves or slices. If left whole, crack skins in boiling water 1 to 2 minutes. If cut in half, dip in ascorbic acid or other antimicrobial solution for 10 minutes. Remove and drain. Arrange in single layer on trays pit side up, cavity popped out. Dry until pliable and leathery (6-10 hours for slices; 24-36 hours for halves).
Peaches	Select ripe, firm fruit. Wash and peel. Cut in half and remove pit. Cut in quarters or slices if desired. Dip in citric acid or other antidarkening/antimicrobial solution for 10 minutes. Remove and drain well. Arrange in single layer on trays pit side up. Turn halves over when visible juice disappears. Dry until leathery and somewhat pliable (6-36 hours).

3. Significance of Dehydration

- a. Dehydrated Vegetables and fruit preserve taste and quality for a longer period of time
- b. Dehydrated fruits and vegetables are available in the market throughout the year.
- c. Dehydrated products are easy to use.
- d. Due to their purified finished form dehydrated products does not contain any wastage.
- e. Comparatively dehydrated product require lesser space and more convenience for storage.
- f. Dehydrated vegetables help in stabilizing the prices of seasonal produce.

4. Market Factors

a. Demand

Dehydrated vegetables and fruits, processed in accordance with the scientific methods and up-to the global quality standards, have great demand in the following spheres. Areas affected by severe weather can also be targeted and their food requirement can be catered through dehydrated fruits and vegetables. Due to increase in global population the demand for such products in international market is rising year to year. Local producers have to be very vigilant over the quality of product as they have to match the global health and quality standards. With the help of economies of scale, proper marketing followed by quality product delivery can enable our producers to compete the severe competition. In recent times change in the local demographic features have resulted in a sizeable rise in demand of dehydrated products. Quality, availability, presentation and price play an integral role in the demand and consumption of the local consumers. Busy life styles and rising trend of working couples have further boosted the demand for dehydrated products.

b. Supply

Agricultural output in Pakistan is largely dependent on climate changes, adequate supply of water and pesticide. A good harvest results in large quantity of agricultural produce in their respective harvest season. The harvest season for different vegetables and fruits are as under

Name of Vegetable	Harvest Season
Potato	Autumn crop from Punjab & KPK plains November – April February – Mid March peak harvest period
Onion	Lower Sindh November – March Upper Sindh November – March April – May Punjab Mid April – July KPK Mid July – October Balochistan August – November
Garlic	Sindh February – March Balochistan February – March Punjab April – May Northern Areas August – September

Name of Fruit	Harvest Season
Grapes	August – November
Apple	July – November
Mango	May – August
Citrus	November – February
Peach	May - September
Apricot	May - August
Cherry	May - July
Plum	May - June
Lychee	July - August

5. Factors Effecting Business

a. Strategic Moves

Core requirement for dehydration of vegetables & fruits is to achieve technical competency of employed labor, preservation of quality, price competitiveness and cost efficiencies. Following steps can be taken in this regard.

1. Skilled labor should be engaged in production process and implementation of international production and preservation standards.
2. Backward integration is desired for uninterrupted quality supply by contract farming.
3. Competent management with similar track record should be deployed for value addition.
4. Tapping on sale of dehydrated by-products can be helpful to improve revenues & reduce wastage.
5. Promotion campaign articulating benefits of dehydrated products should be launched for increasing the local sales. Exports especially to UAE can also cause considerable rise in sales volume.
6. Extensive marketing of product in international market to earn foreign exchange.
7. Imparting training to labor force responsible for raw material procurement, plant operation & quality control.

b. Key to Success

1. Increased demand of raw food due to ever growing population has resulted in greater requirement of dehydrated products. Sales orders are key to success especially when food prices are sky high.
2. Competitive pricing & packing.
3. Cost efficiency is must in present inflationary environment.
4. Marketing for awareness of retail customers including stalls & promos in corporate stores.
5. Buying quality raw material is key ingredient to success which should not be a problem in our Agriculture based economy.
6. State of the art technological investment is desired for quality output & exports.

c. Apprehensions

1. Shortage of raw material because of floods, earthquakes, natural calamities or shortage of water in long run.
2. Poor quality control can lead to bad name & reduced orders from abroad. Hence local lab for testing of product at per international standard is necessary.

3. Lack of interest by farmers due to market poor pricing, & long term storage constraint can interrupt the final product supply.
4. Crumbling infrastructure due to energy crisis (electricity and gas shortages), & no cold chain can create issue of supply chain management.
5. Strong bonding between processors & exporters is desired to make the project a success.

d. Risks

1. Increase in local as well as international competition especially on cost and supply chain patterns.
2. Adherence of strict quality & environment standards by importing countries resultantly increasing the production cost.
3. Threat of adverse legislation by the Government.
4. Natural calamities may result in lower crop.
5. Market Manipulation by the large producers and big brand names.
6. Bargaining power of suppliers.

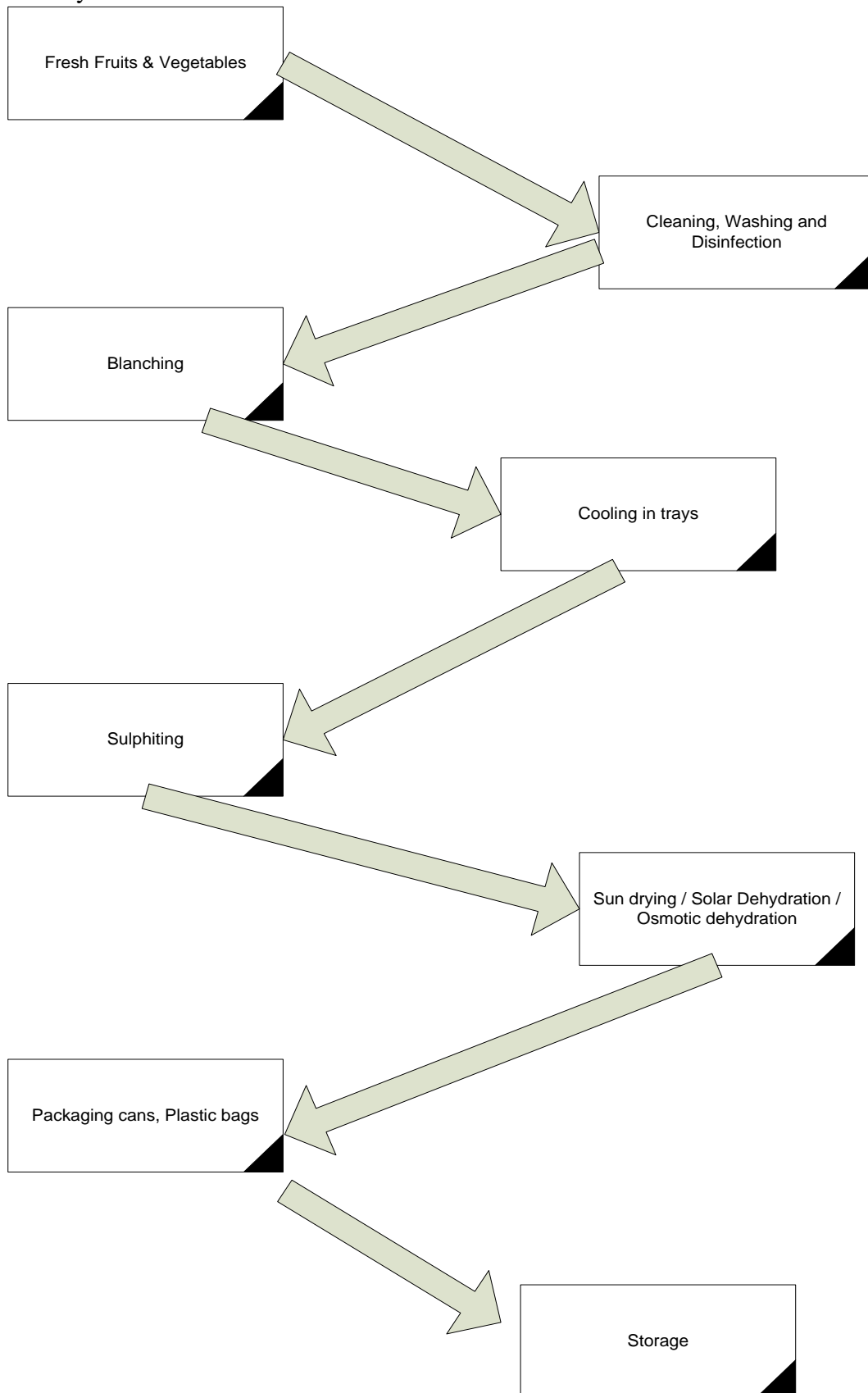
6. Process Description

Fruits & vegetables can be dehydrated through different methods e.g Kiln drier, Solar drying and Sun drying whereas on a larger scale Draught Tunnel is used for commercial production containing long chamber constructed by special bricks through which the trays of vegetables move on trolleys

In order to preserve original taste & quality following process is deployed.

1. Pretreatment of Fresh vegetables / fruits for operation before dehydration.
2. Sorting and blemished / damaged pieces are removed.
3. Sorted vegetables / fruits are washed & peeled and subsequently peeled vegetables / fruits, are washed and sliced mechanically.
4. Sliced vegetables / fruits are spread on trays in single layer and loaded on trolleys,
5. Each trolley contains 50Kg (approx) of pre-treated material to be processed through the balance machine.
6. Twin-Tunnel Dehydrator cycles these trolleys on a regular interval.
7. Humidity and temperature is controlled by deploying counter-current or concurrent arrangement of hot air flow in tunnels eliminating moisture from the material.
8. This Partially dried material still contains 15% to 20% residual moisture which is then arranged in the finishing bin for reducing moisture to 4% to 5%.
9. At finishing stage final product is packed in polythene bags and stored in temperature controlled containers.

Note: few steps shall be eliminated and few can be added dependent on the vegetable / fruit to be hydrated.



7. Project Cost

This project suggests a plant with capacity of processing 2000 tons per annum. This means, that total operational days of plant are calculated as 345 days per annum and a total of 166,667 kg can be processed monthly if the plant runs at single shift per day.

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8. Human Resource Requirements

Table 1 Human Resource

		Salary/Month	Annual Salary
Positions	Number	(Rs)	(Rs)
Manager	1	45,000	540,000
Food Technologist	1	35,000	420,000
Accounts/Store Clerk	1	20,000	240,000
Warehouse Incharge	1	15,000	180,000
Skilled Labour	11	12,000	1,584,000
Semi-Skilled Labour	15	9,000	1,620,000
Security Guards	2	9,000	216,000
Driver	1	9,000	108,000
Total Payroll Staff	33		4,908,000

9. Equipment's and Machinery Requirements

Table 2: Equipment's and Machinery

Processing Machinery	Price Rs.
Dehydrated Vegetable & Fruit Plant	6,756,500
Transportation cost	150,000
Installation cost	125,000
Generator 10 KV	450,000
Transformer 50 KV	1,250,000
Total Cost of Processing Machinery	9,595,000

Table 3 Plant Description

Description and Specification	Quantity
Sorting Conveyors (18 'X2')	1
Washing Tanks (6'x2-1/2x2-1/2')	2
Rotary Washing Machine-ss 3-16	2
Peeling Machine	2
Chopping Machine-s.s	2
Slicing	1
Dicing Machine	1
Blanching / Sulphiting Tank	1
Steam Blancher, Trolley Load (3' x3' x6')M.S	1
Twin Tunnel Dehydrator	1
Trolley-Dehydrator	24
Drying Trays Aluminium Frame	600
Finishing Bins	
Finishing Chambers (13'x3.5'x7')-Complete	1
Drying Trays-Finishing Bin	40
Trolleys-Finishing Bin-M.S	2
Grinding Mill-S.S	1
Threshing Machine	1
Working Tables S.S (10'x4")	2
Storage Vessels (10x4)	3
Plate form Scale 200 M.T capacity	1
Steam Jacketed Kettles S.S Capacity 100 Kg.	2
Boiler (estimated)	1
Laboratory Equipments etc.	1
Storage Conveyors SS	2
Rotto Sealer Machine	1
Poly Sealer-Paddle	1

10. Land & Building

Table 4: Land Requirement

Land	Total Cost Rs.
8 Kanal @ Rs. 750,000/- per Kanal	6,000,000

Table 5: Building Requirement

	Area (Sq. Ft)	Construction Cost Rs.	Total Cost Rs.
Processing Hall	1,500	1500	2,250,000
Fumigation Rooms	1500	1500	2,250,000
Warehouse	1,250	1400	1,750,000
Store cum Generator Room	100	1000	100,000
Office 3 (14x12)	600	1,800	1,080,000
Wash Rooms	240	1300	312,000
Total Construction Cost of Building			7,742,000

11. Project Detail

Table 6 Total Project Cost

Account Head	Total Cost (Rs)
Land	6,000,000
Building and Civil Works	7,742,000
Plant and Machinery	9,595,000
Furniture/Fixture & Equipment	210,000
Office Vehicle	1,500,000
Pre-operational Expenses	450,000
Total Fixed Cost	25,497,000
Cash	750,000
Raw Material Inventory	1,500,000
Up-Front Insurance Payment (year 1)	617,928
Total Working Capital	2,867,928

Total Investment	28,364,928
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Financing	Rs.
Equity 40%	11,345,971
Debt 60%	17,018,957

12. Projected Income Statement

Rs.

Revenue	Year-1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9	Year-10
	168,000,000	184,800,000	203,280,000	223,608,000	245,968,800	270,565,680	297,622,248	327,384,473	360,122,920	396,135,212
Cost of Goods Sold										
Raw Material Cost	120,250,000	131,072,500	142,869,025	155,727,237	169,742,689	185,019,531	201,671,288	219,821,704	239,605,658	261,170,167
Fumigation Cost	6,012,500	6,553,625	7,143,451	7,786,362	8,487,134	9,250,977	10,083,564	10,991,085	11,980,283	13,058,508
Packing & Transport Cost	12,025,000	13,107,250	14,286,903	15,572,724	16,974,269	18,501,953	20,167,129	21,982,170	23,960,566	26,117,017
Export & Freight Charges	13,227,500	14,417,975	15,715,593	17,129,996	18,671,696	20,352,148	22,183,842	24,180,387	26,356,622	28,728,718
Machine Maintenance	235,000	246,750	259,088	272,042	285,644	299,926	314,922	330,669	347,202	364,562
Energy Cost (Electricity / Gas / Diesel)	3,600,000	3,816,000	4,044,960	4,287,658	4,544,917	4,817,612	5,106,669	5,413,069	5,737,853	6,082,124
Total cost of sales	155,350,000	169,214,100	184,319,019	200,776,018	218,706,349	238,242,147	259,527,415	282,719,085	307,988,184	335,521,097
Gross Profit	12,650,000	15,585,900	18,960,981	22,831,982	27,262,451	32,323,533	38,094,833	44,665,388	52,134,736	60,614,115
Operating Expense										
Payroll (Admin)	4,908,000	5,153,400	5,411,070	5,681,624	5,965,705	6,263,990	6,577,189	6,906,049	7,251,351	7,613,919
Administrative Overheads	1,000,000	1,050,000	1,102,500	1,157,625	1,215,506	1,276,282	1,340,096	1,407,100	1,477,455	1,551,328
Amortization (Pre-operational Expenses)	90,000	90,000	90,000	90,000	90,000		-	-	-	-
Insurance Expense	612,000	595,335	568,417	518,433	499,757	482,333	469,879	450,556	427,315	407,941
Depreciation	1,667,600	1,667,600	1,667,600	1,667,600	1,667,600	1,367,600	1,367,800	1,367,800	1,367,800	1,367,800
Total	8,277,600	8,556,335	8,839,587	9,115,282	9,438,568	9,390,204	9,754,964	10,131,505	10,523,922	10,940,988
Operating Profit	4,372,400	7,029,565	10,121,394	13,716,700	17,823,883	22,933,329	28,339,869	34,533,883	41,610,815	49,673,127
Interest expense on long term debt	2,357,454	1,794,454	1,237,454	677,453	397,453					
Total	2,357,454	1,794,454	1,237,454	677,453	397,453	0	0	0	0	0
Earnings Before Tax	2,014,946	5,235,111	8,883,940	13,039,247	17,426,430	22,933,329	28,339,869	34,533,883	41,610,815	49,673,127
Tax	705,231	1,832,289	3,109,379	4,563,736	6,099,251	8,026,665	9,918,954	12,086,859	14,563,785	17,385,595
PROFIT AFTER TAX	1,309,715	3,402,822	5,774,561	8,475,511	11,327,180	14,906,664	18,420,915	22,447,024	27,047,029	32,287,533

13. Key Assumptions

Table- 7

	Vegetables			Fruits		
	Potato	Onion	Garlic	Apple	Banana	Apricot
Dehydration Ratio	6:1	10:1	4:1	10:1	6:1	5:1
Final Product	16%	10%	25%	10%	16%	20%
Annual Processing Capacity (Kg)	2000000	2000000	2000000	2000000	2000000	2000000
Monthly Processing Capacity (Kg)	166667	166667	166667	166667	166667	166667
Daily Processing Capacity (Kg)	5797	5797	5797	5797	5797	5797
Finished Product per day (Kg)	928	580	1449	580	928	1159
Processing Days	45	75	45	45	90	45
Local Sales	75%	75%	75%	70%	70%	70%
Export Sales	25%	25%	25%	30%	30%	30%
Cost Price Per Kg	23	24	90	110	55	100
Selling Price in Local Market Rupees Per Kg	210	380	515	625	585	530
Selling Price in Exports Rupees Per Kg	335	620	750	775	750	740
Finished Product per Year (Kg)	41760	43500	65205	26100	83520	52155
Raw Material Required (Kg)	250,000	500,000	250,000	250,000	500,000	250,000

Table 8: Growth Related Assumptions

Energy Cost growth rate	6%
Wage growth rate	5%
Fresh Vegetables & Fruit Purchase price growth rate	9%
Machine maintenance growth rate	5%
Sales price growth rate per annum	10%

Table 9: Depreciation Assumption

Depreciation Method	Straight Line Method
Building depreciation rate	5%
Machinery & Equipment depreciation rate	10%
Office Equipment depreciation rate	10%
Office Vehicle	20%

14. Disclaimer

The content of the information memorandum does not bind NBP in any legal or other form as the purpose of this report is to provide a general idea and information to NBP staff to assist them evaluate the feasibility reports submitted by the clients, and for the farmers and organizations interested to establish Dehydrated Vegetables and Fruits Plant. The data and info reported in this document is gathered from various sources and is based on certain assumptions. In spite of taking due diligence in compiling this report, the contained information may vary due to any change in any of the relevant factors e.g. agro-climatic conditions, plant management, market prices, inflation, export policies, energy crisis etc beyond the control of bank, and the actual results may differ substantially from the presented information. NBP does not assume any liability for any financial or other loss resulting from this document in consequence of undertaking this Project.