

## **SPRAY DRIED FOOD F&V POWDERS, FAT POWDERS**

### **1. INTRODUCTION:**

India is the 2<sup>nd</sup> largest producer of vegetables in the world. Processing of fruits and vegetables in India becomes very important as major chunk of them gets exported to various countries. Drying of food is the one oldest technology to preserve them for longer period. Among various known methods, spray drying is one such method which is very useful and important because of its various applications.

### **2. PRODUCT & ITS APPLICATION:**

Post-harvest, there used to be tremendous loss in preserving food. After converting food/vegetables into pulp, they are spray dried to convert them into powder. Spray drying helps maintain the real taste and flavor of the fruit and vegetable along with preventing its nutritive value. Fat powders are micro fine emulsified fats improving the sensory properties like creaminess, mouth feel and the appearance of the product in which added. Fat powders with different fat base & fat levels up to 80% can be achievable with spray drying machines and technology.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

Successful running this project does not require any specific qualification.

### **4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:**

Spray dried food products are widely used in various food industries. They use these for ingredients in their final food products. Various seasoning products are cheese powder, tamarind powder, tomato powder, lime etc. Fruit powders like apple, Amla,

banana, papaya etc. are heavily used in health drinks, nutraceuticals products, ayurvedic products, baby food. Natural fruit powder such as lime, mango, orange, pineapple etc. are used in instant beverage mix, milkshakes, and ice-cream premix.

## 5. RAW MATERIAL REQUIREMENTS:

Raw materials required here are various vegetables and fruits such as, orange, lime, apple, banana, pineapple, tomato, cheese, tamarind etc. To pack dried powders, packing materials of food grade is required and to pack them in bunch, cardboard boxes are required.

## 6. MANUFACTURING PROCESS:

The manufacturing process steps comprise:

- (a) Pretreating fruits for 3 minutes in Hot water 60 °C & blanching.
- (b) Collecting fruit pulp & filtering.
- (c) Addition of water soluble drying aid
- (d) Controlled flow of juice in to the atomizer
- (e) Controlled inlet and outlet air temperature of the spray dryer.
- (f) Collection of powder from the cyclone and bottom outlet

## 7. MANPOWER REQUIREMENT:

The enterprise requires 8 employees as detailed below:

Sr. No.	Designation of Employees	SALARY PER PERSON	Monthly Salary ₹	Number of employees required				
				Year-1	Year-2	Year-3	Year-4	Year-5
1	Operator	₹ 10,000.00	₹ 10,000.00	1	1	1	2	2
2	Un Skilled Workers	₹ 8,000.00	₹ 24,000.00	3	3	3	5	5
3	Accountant	₹ 12,000.00	₹ 12,000.00	1	1	1	1	1
4	Store Keeper	₹ 8,000.00	₹ 8,000.00	1	1	1	1	1
5	Sales Staff	₹ 12,000.00	₹ 24,000.00	2	2	2	3	3
	<b>Total</b>		₹ 78,000.00	8	8	8	12	12

## 8. IMPLEMENTATION SCHEDULE:

The project can be implemented in 7 months' time as detailed below:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	1.00
2	Construction (if applicable)	2.00
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required (some activities shall run concurrently)	7.00

## 9. COST OF PROJECT:

The project shall cost ₹ 44.30 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	3.00
2	Building	2.50
3	Plant & Machinery	13.68
4	Furniture, other Misc. Equipments	0.50
5	Other Assets including Preliminary / Pre-operative expenses	1.37
6	Margin for Working Capital	23.25
	<b>Total</b>	<b>44.30</b>

## 10. MEANS OF FINANCE:

Bank term loans are assumed @ 60% of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	11.07
2	Bank Finance	33.22
	<b>Total</b>	<b>44.30</b>

## 11. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹23.25 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	11.63	0.25	2.91	8.72
2	Receivables	5.81	0.25	1.45	4.36
3	Overheads	5.81	100%	5.81	0.00
4	Creditors	-		0.00	0.00
	<b>Total</b>	23.25		10.17	13.08

## 12. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No.	Particulars	UOM	Qty	Rate (₹ in Lacs)	Value
					(₹ in Lacs)
	<b>Plant &amp; Machinery / equipments</b>				
<b>a)</b>	<b>Main Machinery</b>				
1	Washer	Nos	1	₹ 0.18	₹ 0.18
2	Pulper/Fruit Extractor	Nos	1	₹ 0.45	₹ 0.45
3	Spray Dryer	Nos	1	₹ 12.00	₹ 12.00
4	Packing Machine	Nos	1	₹ 0.70	₹ 0.70
5	Weighing Scale	Nos	1	₹ 0.20	₹ 0.20
6	Misc. Tools	LS		₹ 0.15	₹ 0.15
	<i>sub-total Plant &amp; Machinery</i>				<b>₹ 13.68</b>
	<b>Furniture / Electrical installations</b>				
1	Office furniture and Electrification	LS	1	₹ 0.50	₹ 0.50
	<i>sub total</i>				<b>₹ 0.50</b>
	<b>Other Assets</b>				
1	preliminary and preoperative	LS		1.37	₹ 1.37
	<i>sub-total Other Assets</i>				<b>₹ 1.37</b>
	<b>Total</b>				<b>₹ 15.55</b>

### 13. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	86.40	100.80	115.20	129.60	144.00
3	Raw Materials & Other direct inputs	₹. In Lacs	60.83	70.97	81.10	91.24	101.38
4	Gross Margin	₹. In Lacs	25.57	29.83	34.10	38.36	42.62
5	Overheads except interest	₹. In Lacs	11.49	12.21	13.64	14.07	14.36
6	Interest @ 10 %	₹. In Lacs	3.32	3.32	2.21	1.66	1.33
7	Depreciation @ 30 %	₹. In Lacs	9.58	6.84	4.79	3.42	3.08
8	<b>Net Profit before tax</b>	₹. In Lacs	<b>1.19</b>	<b>7.47</b>	<b>13.45</b>	<b>19.20</b>	<b>23.85</b>

### 14. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 36.81% of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	144.00
2	Variable costs	₹. In Lacs	101.38
3	Fixed costs incl. interest	₹. In Lacs	15.69
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	36.81%