Detailed Project Report

BANANA COOKIES (BISCUITS) MANUFACTURING UNIT

Under the Formalization of Micro Food Processing Enterprises Scheme

(Ministry of Food Processing Industries, Government of India)

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1. PROJECT AT A GLANCE

The Project at a Glance

1	Name of the Project	Banana Cookies (Biscuits)
2	Name of the entrepreneur/FPO/SHG/Cooperative	
3	Nature of proposed project	Proprietorship/Company/ Partnership
4	Registered office	
5	Project site/location	
6	Names of Partner (if partnership)	
7	No of share holders (if company/FPC)	
8	Technical advisor	
9	Marketing advisor/partners	
10	Proposed project capacity	150 MT/annum (55, 65,75, 90 & 100% capacity utilization in the 2nd, 3rd and 4th, 5th and 6th years' onwards respectively
11	Raw materials	Raw Banana Fruits
12	Major product outputs	Banana Cookies (Biscuits)
13	Total project cost (Lakhs)	28.44
	Land development, building & civil construction	6.3
	Machinery and equipments	9.9
	Utilities (Power & water facilities)	0.8
	Miscellaneous fixed assets	0.9
	Pre-operative expenses	0.90
	Contingencies	1.20
	Working capital margin	8.44
14	Working capital Management (In Lakhs)	
	Second Year	25.32
	Third Year	29.92
	Fourth Year	40.80
15	Means of Finance	
	Subsidy grant by MoFPI (max 10 lakhs)	9.384679108
	Promoter's contribution (min 20%)	5.687684308
	Term loan (45%)	13.36605812
16	Debt-equity ratio	2.35 : 1
17	Profit after Depreciation, Interest & Tax	
	2nd year	91.17
	3rd year	109.02
	4th year	127.26

18	Average DSCR	2.16
	Benefit Cost Ratio	5.172201186
	Term Loan Payment	7 Years with 1 year grace period
	Pay Back Period for investment	2 Years

2. GENERAL OVERVIEW AND INTRODUCTION

- India is known as the second largest fruits and vegetables producer in the world followed by China.

- India, during 2017-18 has produced about 97358 thousand MT fruits and 184394 thousand MT vegetables in about 6506 Thousand Ha and 10259 Thousand Ha respectively (Horticulture statistics At a glance, 2018, MoA & FW Gol). IN spite of this, the per capita availability of fruit in india is 107 gm/day which is below the recommended 120 gm/day.

- India's share of global exports of fresh fruits and processed fruit products is also quite meager compared to other major fruit producers of the world (Bung, 2012).

- Market Outlook India is the world's largest banana producer with an annual output of 24.8 million tonnes. Banana exports by country totaled US$11.8 billion in 2016. Banana is a globally important fruit crop with 97.5 million tons of production. In India it supports livelihood of millions of people with total annual production of 16.91 million tons from 490.70 thousand ha. With national average of 33.5 T/ha. Banana contributes 37% to total fruit production in India.

- Unfortunately, fruits and vegetables being perishable in nature get wasted to the tune of 20-30 % in the supply chain due to improper handling, transportation and poor post harvest management; and only 2 % of them are processed in to value added products and the rest is consumed fresh.

- Therefore, processing of fruits and vegetables offers immense scope for wastage minimization and value addition; thus can generate significant income and employment in indian agrarian economy. In india Banana is one the important fruit crops cultivated in different areas and has huge potential for value addition and entrepreneurship development.

3. ORIGIN, DISTRIBUTION AND PRODUCTION OF BANANA

- Generally, it is agreed that **bananas originated** in Southeast Asia and the South Pacific around 8000 to 5000 BC. **Bananas** are believed to have been the world's first cultivated fruit. From Southeast Asia, the fruit was brought west by Arab conquerors and then carried to the New World by explorers and missionaries.

- A **banana** is an elongated, edible fruit – botanically a berry – produced by several kinds of large herbaceous flowering plants in the genus *Musa*.

- In some countries, bananas used for cooking may be called "plantains", distinguishing them from **dessert bananas**. The fruit is variable in size, color, and firmness, but is usually elongated and curved, with soft flesh rich in starch covered with a rind, which may be green, yellow, red, purple, or brown when ripe. The fruits grow in clusters hanging from the top of the plant. Almost all modern edible seedless (parthenocarp)

- bananas come from two wild species – *Musa acuminata* and *Musa balbisiana*.
  The scientific names of most cultivated bananas are *Musa acuminata*, *Musa balbisiana*, and *Musa* × *paradisiaca* for the hybrid *Musa acuminata* × *M. balbisiana*, depending on their genomic constitution. The old scientific name for this hybrid, *Musa sapientum*, is no longer used.

- *Musa* species are native to tropical Indomalaya and Australia, and are likely to have been first domesticated in Papua New Guinea.They are grown in 135 countries, primarily for their fruit, and to a lesser extent to make fiber, banana wine, and banana beer and as ornamental plants. The world's largest producers of bananas in 2017 were India and China, which together accounted for approximately 38% of total production.

- Worldwide, there is no sharp distinction between "bananas" and "plantains". Especially in the Americas and Europe, "banana" usually refers to soft, sweet, dessert bananas, particularly those of the Cavendish group, which are the main exports from banana-growing countries.

- Andhra Pradesh, Gujarat, Maharashtra, Tamilnadu, Uttar Pradesh, Karnataka, Madhya Pradesh, Bihar, west Bengal and Kerala are the leaders of Banana Production in India. And the they are in descending order of Production data wise.

4. VARIETIES

Important Banana varieties cultivated in india are Basrai, Singapuri, **Dwarf Cavendish**, **Robusta**, Rasthali, Poovan, Monthan, Elakkibale, Nendran, Red Banana, Yelakki Banana (Elaichi), Lady Finger, Bhim Kol, Karpuravalli, and Malbhog.

Bold marked are the most favorite amongst farmers & Consumers.

Available details are as under of few species.

Poovan: It is the most important commercial variety in Tamil Nadu, Andhra Pradesh and West Bengal. It is also known as Lal velchi in Maharashtra. It is resistant to Panama wilt,

Dwarf Cavendish or Basarai: It is a dwarf variety. It is resistant to Panama disease. It is a high yielding variety with fruits large and of good quality.

Robusta or Harisal: Fruit colour remains green when ripe. It is best variety for the export purpose.

5. HEALTH BENEFITS AND NUTRITIONAL INFORMATION

1. Each banana has only about 105 calories and consists almost exclusively of water and carbs. Bananas hold very little protein and almost no fat. The carbs in green, unripe bananas consist mostly of starch and resistant starch, but as the banana ripens, the starch turns into sugar (glucose, fructose and sucrose).

2. Bananas are rich in pectin, a type of fiber that gives the flesh its spongy structural form. Unripe bananas contain resistant starch, which acts like soluble fiber and escapes digestion. Both pectin and resistant starch may moderate blood sugar levels after meals and reduce appetite by slowing the emptying of your stomach. Furthermore, bananas also rank low to medium on the glycemic index (GI), This means that bananas should not cause major spikes in blood sugar levels in healthy individuals.

3. Bananas are fairly rich in fiber and resistant starch, which may feed your friendly gut bacteria and safeguard against colon cancer.

4. Bananas may aid weight loss because they're low in calories and high in nutrients and fiber.

5. Bananas are a good dietary source of potassium and magnesium — two nutrients that are essential for heart health.

6. Bananas are high in several antioxidants, which may help reduce damage from free radicals and lower your risk of some diseases.

7. Depending on ripeness, bananas harbor high amounts of resistant starch or pectin. Both may reduce appetite and help keep you full.

8. Eating a banana several times a week may reduce your risk of kidney disease by up to 50%.

9. Bananas may help relieve muscle cramps caused by exercise. They also provide excellent fuel for endurance exercise.

10. Bananas make an excellent snack food, dessert or breakfast. Their versatility makes them easy to add to your diet.

Banana Nutrition :- Values per 100 gm.

Principle	Nutritient Value	% RDA
Energy	86 Kcal	1.5 %
Carbohydrates	23 g	7 %
Protein	1.2 g	0.1 %
Total Fat	0.20 g	1 %
Cholesterol	0 mg	0 %
Dietary Fibre	2.0 g	5 %
Vitamins		
Vitamin B1	0.04 mg	6 %
Vitamin B2	0.06 mg	2.5%
Vitamin B6	0.37 mg	2.5%
Vitamin B11	0.15 µg	3.5 %
Vitamin A	0.01 mg	0.5%
Vitamin C	12 mg	98%
Electrolytes		
Sodium	1 mg	0%
Potassium	400 mg	12 %
Minerals		
Calcium	8.7 mg	2.1%
Iron	1.0 mg	11%

Magnesium	30.0 mg	5 %
Phosphorous	28.0 mg	25 %
Copper	0.13 mg	10 %
Zinc	0.22 mg	2 %

6. CULTIVATION, BEARING & POST HARVEST MANAGEMENT:-

A. **Climate:** Being a tropical crop, banana requires warm, humid and rainy climate. The optimum temperature range is 10 to 40^0C and the relative humidity is 90% or above. It is highly susceptible to frost and cannot tolerate arid conditions. Strong desiccating winds cause considerable reduction in the growth of the plant and yield and quality of fruits.

B. **Soil:** Banana is a heavy feeder crop/. Therefore, fertility of soil is very important. Rich, well drained, fertile, free working, soils with plenty of organic matter are best suited for cultivation. The optimum range of pH of soil should be 6 to 8.

C. **Propagation:** Commercial edible bananas do not produce viable seeds. So, the banana is commonly propagated by suckers and sword suckers with narrow leaves. Rhizomes whole or in bits from fruited and non-fruited plants with atleast one sound bud can be successfully used as propagating material.

D. **Planting:** Planting of banana is done by two methods viz. Pit method and furrow method. Planting is done from February to May whereas in North India, it is done during July-August. In South-India, it can be done any time of year except summer. Tall varieties should be planted at 3x3 m whereas dwarf ones at 2x2 m apart.

E. **Manuring:** Banana is a heavy feeder and responds well to manuring. Banana is a quick growing and short-lived plant. Therefore, it is more beneficial, if quick growing fertilizers are applied. In Tamil Nadu, application of 100 g of N, 30 g of P_2O_5 and 300 g of K_2O per plant to be supplied in three doses during the second, third and fifth months is recommended. In Maharashtra, 100 g N, 40 g P_2O_5 and 100 g K_2O per plant is recommended. Out of these, P_2O_5 and K_2O is applied at the time of planting and N is given is three split doses: third, fourth and fifth month after planting.

F. **After Cares:**

i. **Desuckering:** - Desuckering is an important operation in banana cultivation. In this, the unwanted suckers, which develop near the base of the plant, are removed. Cutting the suckers from ground level and then pouring the kerosene (2-3 drops) to kill the growing point of pseudostem does it.

ii. **Propping:** - It is an essential cultural practice to give proper support to the plants with bamboos. It is done to avoid falling down of plants due to high winds.

iii. **Wrapping:** - to protect the fruits from sunburn, hot wind and dust the bunch is covered. Wrapping is also done to improve the colour of the fruit.

G. **Harvesting and Yield:** Harvesting of banana is done 12 to 15 months after planting in dwarf and 15 to 18 months after planting in tall varieties. Signs of maturity of banana fruits are, fruit becomes plumpy and angles are filled in completely, when tapped gives metallic sound, drying off of top leaves and change in colour of fruits from deep green to light green.

Tall varieties like Poovan yield 15-25 tonnes/ha, while Dwarf Cavenshish yield 25-50 tonnes/ha. It can be stored at temperature slightly above 55^0F and relative humidity of about 85-95% for about three weeks.

H. **Plant Protection:**

Disease : Important diseases of banana are:

- **Panama wilt:** It is caused by the soil bourne fungi *Fusarium oxysporum*.
  Symptoms: Leaves become yellow, Pseudostem splits and breaks.
  Control Measures: Eradication of the infected plants. Growing resistant varieties like Dwarf Cavendish. Soil drenching with Vapam @ 0.85% and mercuric chloride @ 3000 PPM in nursery.

- **Bunchy Top:** It is caused by the virus, which is transmitted by an aphid *Pentalonia nigroneruosa*. Symptoms: Infected plants have short, narrow, erect leaves with short petiole. Plants remain slanted.
  Control Measures: Infected plants should be uprooted and burnt. Spraying of 2-4, D to control weeds.

- **Insect pests:-** Important insect pests are:

Root stock weevil:- Damaging stage is adult and grub.

Symptoms of damage:- Grub bores into stem which is affected by fungi or bacteria.

Control measures: - Use healthy suckers and rhizomes. Before planting treat the pit with 0.65 %. Lindane 60-80 g/pit. Soak the sucker in 0.1% Lindane solution, spray 0.05 % endosulfan.

Post Harvest Management:

- According to the study of Kader (1992), as cited by Irtwange (2006), microbiological, mechanical and physio- logical factors cause most of the losses in perishable crops.

- Other causes of losses, according to the study of Fallik and Aharoni (2004) as cited by Irtwange (2006) may be related to: inadequate harvesting, packaging and handling skills, lack of adequate containers for the trans- port and handling of perishables, storage facilities inadequate to protect the food and transportation inadequate to move the food to market before it spoils.

- Banana fruit is very susceptible to both abrasion and impact injury. The major marketing problem of export bananas is mechanical injury, which shows itself as black sunken areas on the skin after ripening. So during harvesting, care should be taken not to let the bunch fall on the ground and get damaged.

- During transportation the thin plastic liner in export cartons minimize chafing damage to fingers that rub against the side of the carton during handling.

- Latex allowed to dry on the skin oxidizes as brown and black stains and can also lead to downgrading of fruit.

- Other concerns are diseases, particularly crown rot, which may affect the whole carton and promote uneven fruit ripening. Because of weak pedicels, the fingers of some cultivar also fall from the hand during ripening, exposing the pulp (Nakasone and Paull, 1999).

7. PROCESSING & VALUE ADDITION:-

- The fresh fruits have limited shelf life; therefore, it is necessary to process fresh fruits in to different value added products to increase its availability over an extended period and to stabilize the price during the glut season.

- The processed products have good potential for internal as well as external trade. Seasonal losses in surplus banana fruits can be avoided by processing into different value added products that make them more attractive to the buyer and/or more readily usable to the consumer.

- Banana being rich in taste can be used for preparation of natural biscuits (Cookies) . Ripened banana is an excellent raw material for preparation of Banana Chips, Cookies (Biscuits), Wine, Vinegar, Paste, Banana Figs, catsup Banana Pulp, Puree, Concentrate Banana Flour (Powder). In view of changing consumer attitude, demand and emergence of new market, it has become imperative to develop products that have nutritional as well as health benefits.

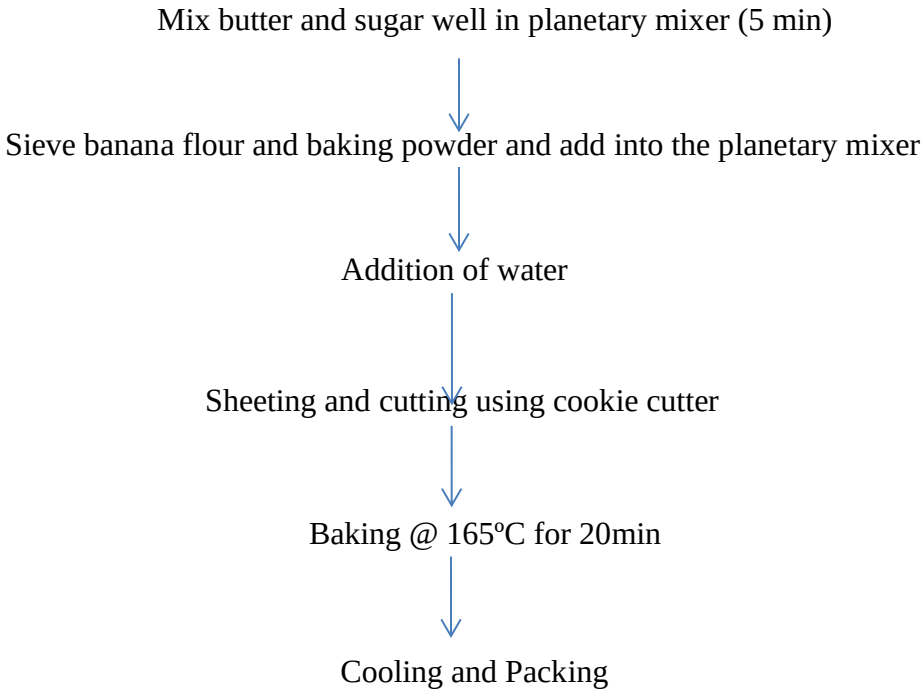
- In this context, banana has excellent digestive and nutritive value, pleasant flavour, high palatability and availability in abundance at very very cheap rates. Banana is a very popular fruit in India and it is available throughout the year except few months. The nutritive value of the fruit is very high and thus it is an ideal crop for processing and value addition.

It is consumed in large quantities either fresh or in such prepared foods such as Banana Chips, Cookies (Biscuits), Wine, Vinegar, Paste, Banana Figs, catsup, Banana Pulp, Puree, Banana Flour (Powder).

In current days dried fruits or candied fruits are running fast in the market.

Amongst the aforesaid usages Cookies (Biscuits) is the mostly liked by the people.

8. MANUFACTURING PROCESS OF THE BANANA COOKIES



9. LOCATION OF THE PROPOSED PROJECT AND LAND

- The entrepreneur must provide description of the proposed location, site of the project, distance from the targeted local and distant markets; and the reasons/advantages thereof i.e. in terms of raw materials availability, market accessibility, logistics support, basic infrastructure availability etc.

- The ideal locations for establishment of exclusive Banana Cookies processing unit are in the production clusters of Banana growing states such as Andhra Pradesh, Gujarat, Maharashtra, Tamilnadu, Uttar Pradesh, Karnataka, Madhya Pradesh, Bihar, west Bengal and Kerala where adequate quantities of surplus raw materials can be available for processing.

- However, in other states of India multi fruit based cooking / other products processing unit with banana as one of the raw materials can be established.

10. MARKET DEMAND AND SUPPLY FOR BANANA COOKIES (BISCUITS)

- The Fruit based products such as cookies, snacks are part and parcel of consumption pattern both in rural and urban India.

- The fruit based foods consumption is picking up due to increasing income and changing food habits. Therefore, demand for fruit based products are prevalent across length and breadth of the country throughout the year.

- Therefore, any kind of Ready to Serve (RTS) fruit based foods have huge potential across India. Further, Banana being high in calories and low in fats but rich in vital vitamins (Vitamin – B complex, Vitamin-A) minerals (Potassium, Calcium, Magnesium, Phosphorus), dietary fiber, and antioxidants can play a pivotal role to prevent cancers, aging, infections etc.

- Therefore, banana Cookies if highlighted properly for all these health benefits can occupy significant food market.

11. MARKETING STRATEGY FOR BANANA PRODUCTS

The increasing urbanization and income offers huge scope for marketing of fruit based products. Urban organized platforms such as departmental stores, malls, super markets can be attractive platforms to sell well packaged and branded Banana based products.

12. DETAILED PROJECT ASSUMPTIONS

- This model DPR for banana based cookies unit is basically prepared as a template based on certain assumptions that may vary with capacity, location, raw materials availability etc.

- An entrepreneur can use this model DPR format and modify as per requirement and suitability.

- The assumptions made in preparation of this particular DPR are given in This DPR assumes expansion of existing unit by adding new Banana based cookie process line.

- Herewith in this DPR, we have considered the assumptions as listed below in the tables of different costs, which may vary as per region, seasons and machinery designs and supplier.
  1. Raw banana cost considered @ Rs. 10/- per kg.
  2. Sugar Cost considered @ Rs. 35/- per kg.
  3. Banana yield from raw fruit to processed flour is considered as 25 %, which may vary depand on species & Size of the fruit.
  4. Machinery cost may also vary from vendor to vendor.

- Land and civil infrastructures are assumed as already available with the entrepreneurs.

13. PROJECT START-UP COSTING SHEETS

Detailed Project Assumptions			
Parameter	Assumption		
Capacity of the Banana Cookies Unit	150	MT/annum	
Utilization of capacity	1st Year Implemetation, 70% in second, 80% in third and 90% in fourth year onwards		
Working days per year	300	days	
Working hours per day	10	hours	
Interest on term and working capital loan	12%		
Repayment period	Seven year with one year grace period is considered.		
Average prices of raw material	10		
Average sale prices per Kg	200	Rs/kg	
Pulp extraction	25		
ORANGE RTS	1 Kg Cookies from 2 kg Raw Banana		

Land and Building.

- Land and civil infrastructures are assumed as already available with the entrepreneurs.

Even though we have calculated as 750 Sq. Feet required if not available & Cost seems to be approx. **6.3 Lacs**.

Machinery and Equipment

Sr. No.	Machinery Descriptions	**Power required**	Area Require (Sq. Ft.)	Qtty.	Cost. Rs. (in Lacs)
1	Washer Capacity 40 kg/hr	2HP	25	1	1.6
2	Blanching Cattle - Gas operated	N/A	9	1	0.3

3	Chipping Machine	0.5 HP	6	1	0.2
4	Solar Dryer	N/A	30	1	0.75
5	Pulverizer	0.5 HP	4	1	0.25
6	Planetary Mixer	0.5 HP	4	1	0.2
7	Cookie Cutter	1 HP	24	1	3
8	Baking Oven	1.5 HP	50	1	3
9	Wt. scale		2	1	0.1

Other costs:-

Utilities and Fittings:-

Utilities and Fittings	
1. Water	Rs. 2.2 Lacs total
2. Power	

Other Fixed Assets:-

Other Fixed Assets	
1. Furniture & Fixtures	Rs. 0.9 lac total
2. Plastic tray capacity	
3. Electrical fittings	

Pre-operative expenses

Pre-operative Expenses	
Legal expenses, Start-up expenses, Establishment cost, consultancy fees, trials and others.	0.9 LAC
Total preoperative expenses	0.9 LAC

Contingency cost to be added as approx.1 Lac.

So total start up cost at own land & Premise may be somewhat similar to 13.95 lacs. This is according to survey done at X location india. This may vary on location, situation and design change over.

Working capital requirement. (in Lacs)

Working Capital Requirement (Rs. in Lakh)

		55%	65%	75%
Particulars	Period	Year 2	Year 3	Year 4
Raw material stock	7 days	2.96	3.50	4.78
Work in progress	15 days	5.93	7.01	9.55
Packing material	15 days	0.90	1.06	1.45
Finished goods' stock	15 days	7.69	9.09	12.40
Receivables	30 days	15.39	18.18	24.80
Working expenses	30 days	0.88	1.04	1.42
Total current assets		33.75	39.89	54.40
Trade creditors		0.00	0.00	0.00
Working capital gap		33.75	39.89	54.40
Margin money (25%)		8.44	9.97	13.60
Bank finance		25.32	29.92	40.80

14. INSTALLED CAPACITY OF THE BANANA COOKIES PROCESSING UNIT

The maximum installed capacity of the strawberry crush manufacturing unit in the present model project is proposed as 100 tonns/annum or 350 kg/day raw strawberry. The unit is assumed to operate 300 days/annum @ 8-10 hrs/day. The 1st year is assumed to be construction/expansion period of the project; and in the 2nd year 70 percent capacity, 3rd year 80 percent capacity and 4th year onwards 90 percent capacity utilization is assumed in this model project.

Total Project Cost and Means of Finance (Rs. In Lakhs)

Particulars In Lacs

Project Cost and Means of Finance	
Particulars	
Particulars	Amount in Lakhs
i. Land and building (20 x 32 x 12 ft - LxBxH)	6.3
ii. Plant and machinery	9.9
iii. Utilities & Fittings	0.8
iv. Other Fixed assets	0.9
v. Pre-operative expenses	0.90
vi. Contingencies	1.20
vii. Working capital margin	8.44
Total project cost (i to vii)	28.44
Means Of finance	
i. Subsidy	9.38
ii. Promoters Contribution	5.69
iii. Term Loan (@10%)	13.37

Manpower Requirement

Total Monthly Salary (Rs.)	No	Wages	Total Monthly	Annual Amount
Supervisor (can be the owner)	1	18000	18000	216000
Technician	1	14000	14000	168000
Semi skilled	2	7600	15200	182400
Helper	1	5500	5500	66000
Sales man	1	8000	8000	96000
		Total	**60700**	**728400**

15.EXPENDITURE, REVENUE & PROFITABILITY ANALYSIS.

Expenditure, Revenue and Profitability Analysis

		150	MT				
	Particulars	**1st Year**	**2nd Year**	**3rd Year**	**4 th Year**	**5th year**	**6th year**
A	Total Installed Capacity (MT)	300 MT Banana/Annum	82.5	97.5	112.5	135	150
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%
B	**Expenditure (Rs. in Lakh)**	0					
	Banana (Av. Price @ Rs. 10/Kg)	0.00	7.01	8.29	9.56	11.48	12.75
	Sugar @ Rs. 35/kg	0.00	3.61	4.27	4.92	5.91	6.56
	Other materials (Rs. 150/kg)	0.00	0.01	0.01	0.02	0.02	0.02
	Packaging materials (Rs 12 per Kg)	0.00	9.90	11.70	13.50	16.20	18.00
	Utilities (Electricity, Fuel)	0.00	1.00	1.84	2.12	2.55	2.83
	Salaries (1st yr only manager's salary)	2.16	7.28	7.28	7.28	7.28	7.28
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90
	Insurance	0.30	0.30	0.30	0.30	0.30	0.30
	Miscellaneous expenses	0.50	2.30	2.30	2.30	2.30	2.30
	Total Expenditure	**2.96**	**32.12**	**36.79**	**40.91**	**46.93**	**50.95**
C	**Total Sales Revenue (Rs. in Lakh)**	**0.00**	**165.00**	**195.00**	**225.00**	**270.00**	**300.00**
	Sale of Banana Cookie (Av. Sale Price @ Rs.200/kg)	0.00	165.00	195.00	225.00	270.00	300.00
D	**PBDIT (Total exp.-Total sales rev.) (Rs. in Lakh)/Cash Inflows**	**-2.96**	**132.88**	**158.21**	**184.09**	**223.07**	**249.05**
	Depreciation on civil works @ 5% per annum	0.32	0.30	0.28	0.27	0.26	0.24
	Depreciation on machinery @ 10% per annum	0.99	0.89	0.80	0.72	0.65	0.58
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05
	Interest on term loan @ 12%	1.39	1.34	1.29	1.23	1.16	1.09
	Interest on working capital @ 12%	0.00	3.04	3.04	3.04	3.04	3.04

E	Profit after depreciation and Interest (Rs. in Lakh)	**-5.78**	**130.25**	**155.75**	**181.80**	**220.93**	**247.08**
F	Tax (assumed 30%) (Rs. in Lakh)	**0.00**	**39.07**	**46.72**	**54.54**	**66.28**	**74.12**
G	Profit after depreciation, Interest & Tax (Rs. in Lakh)	**-5.78**	**91.17**	**109.02**	**127.26**	**154.65**	**172.95**
H	Surplus available for repayment (PBDIT-Interest on working capital-Tax) (Rs. in Lakh)	1.39	1.34	1.29	1.23	1.16	1.09
I	Coverage available (Rs. in Lakh)	1.39	1.34	1.29	1.23	1.16	1.09
J	Total Debt Outgo (Rs. in Lakh)	0.46	0.51	0.57	0.62	0.69	0.76
K	Debt Service Coverage Ratio (DSCR)	3.00	2.62	2.28	1.97	1.69	1.44
	Average DSCR	2.16					
L	Cash accruals (PBDIT- Interest-Tax) (Rs. in Lakh)	-4.35	92.47	110.20	128.32	155.62	173.84
M	Payback Period						
	(on Rs. 28.44 Lakhs initial investment)	2 years					

16.REPAYMENT SCHEDULE

Year	Beginning	PMT	Interest	Principal	Ending Balance
1	13.37	1.85	0.00	1.85	11.51
2	11.51	1.85	0.00	1.85	9.66
3	9.66	1.85	0.00	1.85	7.80
4	7.80	1.85	0.00	1.85	5.95
5	5.95	1.85	0.00	1.85	4.10
6	4.10	1.85	0.00	1.85	2.24
7					

	2.24	1.85	0.00	1.85	0.39
8	0.39	1.85	0.00	1.85	(1.47)
9	(1.47)	1.85	(0.00)	1.85	(3.32)
10	(3.32)	1.85	(0.00)	1.85	(5.18)
11	(5.18)	1.85	(0.00)	1.85	(7.03)
12	(7.03)	1.85	(0.00)	1.85	(8.88)
13	(8.88)	1.85	(0.00)	1.85	(10.74)
14	(10.74)	1.85	(0.00)	1.85	(12.59)
		25.96	0.00	25.96	(25.96)

17. ASSETS' DEPRECIATION

Assets' Depreciation (Down Value Method)						Amounts in Lakhs		
Particulars	1st Year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year
Civil works	6.30	5.99	5.69	5.40	5.13	4.87	4.63	4.40
Depreciation	0.32	0.30	0.28	0.27	0.26	0.24	0.23	0.22
Depreciated value	5.99	5.69	5.40	5.13	4.87	4.63	4.40	4.18
Plant & Machinery	9.90	8.91	8.02	7.22	6.50	5.85	5.26	4.74
Depreciation	0.99	0.89	0.80	0.72	0.65	0.58	0.53	0.47
Depreciated value	8.91	8.02	7.22	6.50	5.85	5.26	4.74	4.26
Other Fixed Assets	0.80	0.68	0.58	0.49	0.42	0.35	0.30	0.26
Depreciation	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
Depreciated value	0.68	0.58	0.49	0.42	0.35	0.30	0.26	0.22
All Assets	17.00	15.58	14.28	13.11	12.04	11.08	10.19	9.39
Depreciation	1.43	1.29	1.17	1.07	0.97	0.88	0.80	0.73

Depreciated value	15.58	14.28	13.11	12.04	11.08	10.19	9.39	8.66

18.FINANCIAL ASSESSMENT OF THE PROJECT

Financial Assessment of the Project									
Benefit Cost Ratio (BCR) and Net Present Worth (NPW)									
Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year	
Capital cost (Rs. in Lakh)	28.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Recurring cost (Rs. in Lakh)	2.96	32.12	36.79	40.91	46.93	50.95	50.95	50.95	
Total cost (Rs. in Lakh)	31.40	32.12	36.79	40.91	46.93	50.95	50.95	50.95	340.99
Benefit (Rs. in Lakh)	0.00	165.00	195.00	225.00	270.00	300.00	300.00	300.00	
Total Depreciated value of all assets (Rs. in Lakh)								8.66	
Total benefits (Rs. in Lakh)	0.00	165.00	195.00	225.00	270.00	300.00	300.00	308.66	1763.66
Benefit-Cost Ratio (BCR): (Highly Profitable project)	**5.17**								
Net Present Worth (NPW):	1422.67								

19. BREAK-EVEN ANALYSIS

Break-Even Analysis

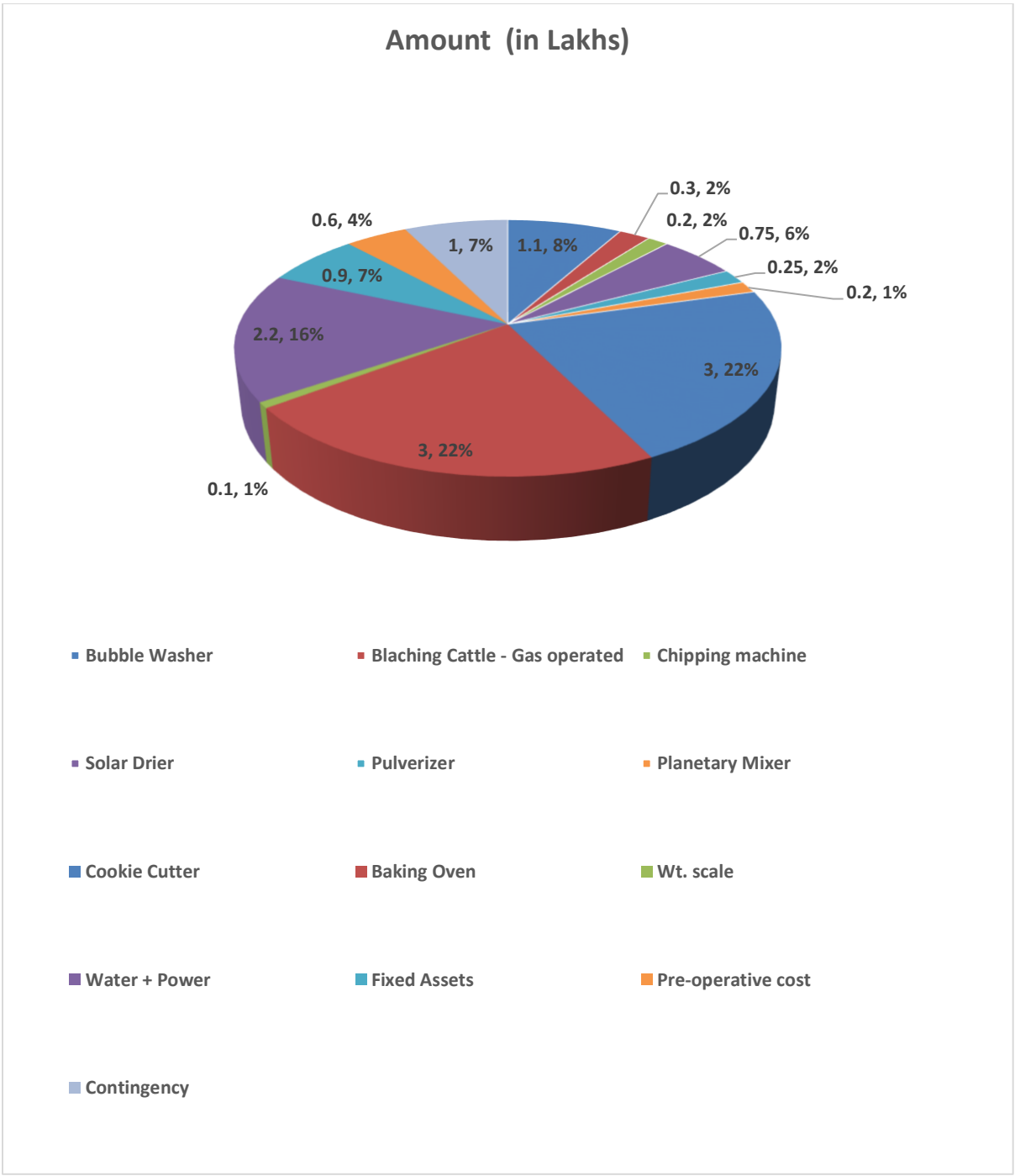
Sr. No.	Particulars	1st Year	2nd year	3 rd year	4th year	5th year	6th year	7th year	8th year
	Capacity utilization (%)	Under Const.	55%	65%	75%	90%	100%	100%	100 %
	Production MT/Annum		82.5	97.5	112.5	135	150	150	150
A	Fixed Cost (Rs. in Lakh)								
	Permanent staff salaries	7.284	7.284	7.284	7.284	7.284	7.284	7.284	7.284
	Depreciation on building @ 5% per annum	0.32	0.30	0.28	0.27	0.26	0.24	0.23	0.22
	Depreciation on machinery @ 10% per annum	0.99	0.89	0.80	0.72	0.65	0.58	0.53	0.47
	Depreciation on other fixed assets @ 15% per annum	0.12	0.10	0.09	0.07	0.06	0.05	0.05	0.04
	Interest on term loan	1.39	1.34	1.29	1.23	1.16	1.09	1.01	0.93
	Insurance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total Fixed Cost (Rs. in Lakh)	**10.40**	**10.22**	**10.05**	**9.88**	**9.72**	**9.56**	**9.40**	**9.24**
B	**Sales Revenue (Rs. in Lakh)**	**0.00**	**165.00**	**195.00**	**225.00**	**270.00**	**300.00**	**300.00**	**300.00**
C	Variable Cost (Rs. in Lakh)								
	Orange (Av. Price @ Rs.13/Kg)	0.00	7.01	8.29	9.56	11.48	12.75	12.75	12.75
	Sugar @ 35 per kg	0.00	3.61	4.27	4.92	5.91	6.56	6.56	6.56
	Other ingredients	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02
	Packaging materials	0.00	9.90	11.70	13.50	16.20	18.00	18.00	18.00
	Casual staff salaries	0.00	5.78	5.78	5.78	5.78	5.78	5.78	5.78
	Utilities (Electricity, Fuel)	0.00	1.00	1.18	1.36	1.63	1.82	1.82	1.82
	Repair & maintenance	0.00	0.70	0.80	0.90	0.90	0.90	0.90	0.90
	Miscellaneous expenses	0.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Interest on working capital @ 12%	0.00	3.04	3.04	3.04	3.04	3.04	3.04	3.04
	Total Variable Cost (Rs. in Lakh)	**0.50**	**33.05**	**37.07**	**41.08**	**46.96**	**50.87**	**50.87**	**50.87**
D	Break Even Point (BEP)								
	as % of sale	-	12.00	10.00	8.00	8.00	7.00	7.00	6.00
	Break Even Point (BEP) in terms of sales value (Rs. in Lakhs)	-	19.80	19.50	18.00	21.60	21.00	21.00	18.00

20 . RAW MATERIAL REQUIREMENTS FOR THE UNIT

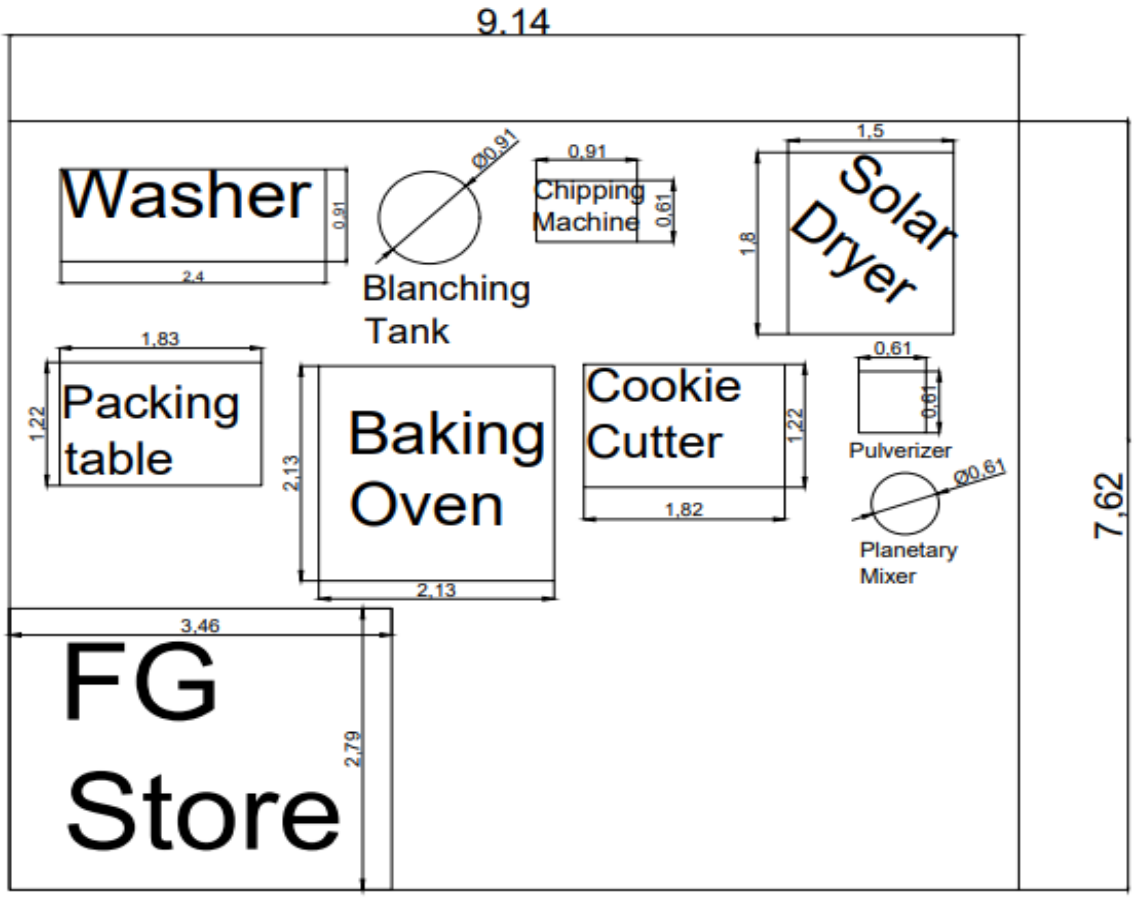
- A sustainable food processing unit must ensure maximum capacity utilization and thus requires an operation of minimum 280-300 days per year to get reasonable profit. Therefore, ensuring uninterrupted raw materials supply requires maintenance of adequate raw material inventory.

- The processor must have linkage with producer organizations preferably FPCs through legal contract to get adequate quantity and quality of raw materials which otherwise get spoiled.
- In the strawberry crush manufacturing project, the unit requires 233 kg/day, 266 kg/day and 300 kg/day raw ripened strawberry at 70, 80 and 90 percent capacity utilization, respectively.
- If there are shortages in supply, then the entrepreneur can use pulp of other seasonal fruits for same purpose to achieve maximum capacity utilization for higher economic efficiency.
- The strawberry must be plucked from plant at red or pinkish red and mature stage; and then stored below 6°C temperature.

a. Pie chart for better understanding of each head expense.


Amount (in Lakhs)
0.3, 2%
0.2, 2%
0.75, 6%
0.25, 2%
0.2, 1%
0.6, 4%
1, 7%
1.1, 8%
0.9, 7%
2.2, 16%
3, 22%
3, 22%
0.1, 1%
Bubble Washer
Blaching Cattle - Gas operated
Chipping machine
Solar Drier
Pulverizer
Planetary Mixer
Cookie Cutter
Baking Oven
Wt. scale
Water + Power
Fixed Assets
Pre-operative cost
Contingency

21. TYPICAL BANANA COOKIE MANUFACTURING UNIT LAYOUT



22. MACHINERY SUPPLIERS

There are many machinery suppliers available within India for fruits based beverage processing machineries and equipments. Some of the suppliers are:

1. Bajaj Processpack Limited, Noida, India
2. Shriyan Enterprises. Mumbai, India
3. Hind chef Machineries.

23. LIMITATIONS OF THE DPR

i. This DPR has provided only the basic standard components and methodology to be adopted by an entrepreneur while submitting a proposal under the Formalization of Micro Food Processing Enterprises Scheme of MoFPI.

ii. This DPR is made to provide general methodological structure not for specific entrepreneur/crops/location. Therefore, information on the entrepreneur, forms and structure (proprietorship/partnership/cooperative/ FPC/joint stock company) of business, background of proposed project, location, raw material base/contract sourcing, entrepreneur's own SWOT analysis, market research, rationale of the project for specific location, community advantage/benefit, employment generation etc are not given in detail.

iii. The present DPR is based on certain assumptions on crop output of current year, cost, interest, capacity utilization, output recovery rate and so on. However, these assumptions in reality may vary across places, markets and situations; thus the resultant calculations will also change accordingly.

24. GUIDELINES FOR THE ENTREPRENEURS

i. The success of any prospective food processing project depends on how closer the assumptions made in the initial stage are with the reality of the targeted market/place/situation. Therefore, the entrepreneurs must do its homework as realistic as possible on the assumed parameters.

ii. This model DPR must be made more comprehensive by the entrepreneur by including information on the entrepreneur, forms and structure (proprietorship/partnership/ cooperative/ FPC/joint stock company) of entrepreneur's business, project location, raw material costing base/contract sourcing, detailed market research, comprehensive dehydrated product mix based on demand, rationale of the project for specific location, community advantage/benefit from the project, employment generation, production/availability of the raw materials/crops in the targeted area/clusters and many more relevant aspects for acceptance and approval of the competent authority.

iii. The entrepreneur must be efficient in managing the strategic, financial, operational, material and marketing aspects of a business. In spite of the assumed parameter being closely realistic, a project may become unsustainable if the entrepreneur does not possess the required efficiency in managing different aspects of the business and respond effectively in changing situations.

iv. The machineries should be purchased after thorough market research and satisfactory demonstration.

v. The entrepreneur must ensure uninterrupted quality raw materials' supply and maintain optimum inventory levels for smooth operations management.

vi. The entrepreneur must possess a strategic look to steer the business in upward trajectory.

vii. The entrepreneur must maintain optimum (not more or less) inventory, current assets. Selecting optimum source of finance, not too high debt-equity ratio, proper capital budgeting and judicious utilization of surplus profit for expansion is must.

viii. The entrepreneur must explore prospective markets through extensive research, find innovative marketing strategy, and maintain quality, adjust product mix to demand.

ix. The entrepreneur must provide required documents on land, financial transaction, balance sheet, further project analysis as required by the competent authority for approval.

x. The entrepreneur must be hopeful and remain positive in attitude while all situations.