

# RICE MILL



## 1.0 INTRODUCTION

Paddy or rice grain consists of husk and brown rice. Brown rice, in turn, contains bran which comprises the outer layer and the edible portion. Rice milling is removal or separation of husk (dehusking) and bran to obtain the edible portion for consumption. The process has to be accomplished with care to prevent excessive breakage of the kernel and improve recovery of paddy or rice. The extent of recovery during milling depends on many factors like variety of paddy, degree of milling required, the quality of equipments used, the operators, etc. Rice mill is a common activity and can be started in many parts of the country and this note considers Manipur as the prospective location.

## 2.0 PRODUCTS

### 2.1 Applications

What comes out during milling operation are husk, milled rice or edible portion, bran and the broken rice. Depending upon the type of rice mill, the by-products come out in mixed or separated form. Milling is usually done when paddy is dry (around 14% moisture content). Wet soft grains are powdered and very dry brittle grains would break.

### 2.2 Availability of technical know-how and Compliances.

CFTRI, Mysore, has successfully developed the technical know-how. Compliance under the PFA Act is compulsory.

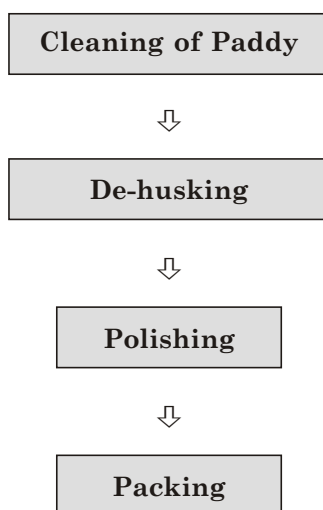
## 3.0 MARKET POTENTIAL

Rice is considered to be staple food diet in most parts of India including the North-East states. Paddy is the most important agricultural commodity in Manipur and the total area under cultivation is estimated to be around 2.25 lac hectares with annual production of close

to 5 lac tons. Apart from every household, there are many bulk buyers like hospitals, caterers, restaurants, hostels, etc. With proper efforts, it is possible to enter into a long term contract with big traders or contractors.

#### 4.0 MANUFACTURING PROCESS

The process is very well standardised. First of all, paddy is cleaned to remove unwanted matters like mud, stones, chaff etc. This cleaned lot is then fed to de-husker where with the help of rubber roller, husk is separated. The brown rice is then taken to huller where polishing is done by mild friction created within the polishing chamber. The resulting polished rice and bran are separated and collected. Recovery of edible rice is around 80%. By-products constitute about 15% whereas balance 5% is waste and process loss. The process flow chart is as under:



#### 5.0 CAPITAL INPUTS

##### 5.1 Land and Building

It is suggested to buy an open plot of around 200 sq.mtrs. which would cost around Rs. 0.60 lac on which the built-up area would be 80 sq.mtrs. costing around Rs. 2.10 lacs.

##### 5.2 Plant and Machinery

The minimum viable capacity has to be processing of 600 tonnes per year on two shift working and around 250 working days. To install this production capacity, following equipments need to be installed: (Rs. in lacs)

Item	Qty. (Nos)	Rate
De-husking Machine with rubber rollers of 10 inches	1	0.90
Polishing Machine	1	0.80
Huller	1	0.35
Others	--	0.25
	<b>Total</b>	<b>2.30</b>

### 5.3 Miscellaneous Assets

A provision of Rs.50,000/- would be required towards furniture and fixtures, storage facilities, electrification, etc.

### 5.4 Utilities

Total power requirement will be 30 HP whereas water requirements are not much. Annual expenditure under this head at 100% activity level could be Rs.60,000/-.

### 5.5 Raw Material

Paddy is the only raw material required. The input-output ratio is 100.80 and to that extent, the quantum of paddy would go up. Thus even at 100% utilisation, the requirement will not be more than 750 tonnes per year. Looking to the total production of paddy in Manipur, supplies should not be a problem. But it is advisable to have long term supply arrangements in place.

## 6.0 MANPOWER REQUIREMENTS

Particulars	Nos.	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
Skilled Worker	2	1,800	3,600
Semi-skilled Workers	2	1,500	3,000
Helpers	4	1,200	4,800
		<b>Total</b>	<b>11,400</b>

## 7.0 TENTATIVE IMPLEMENTATION SCHEDULE

Activity	Period (in months)
Application and sanction of loan	2
Site selection and commencement of civil work	1
Completion of civil work and placement of orders for machinery	4
Erection, installation and trial runs	1

## 8.0 DETAILS OF THE PROPOSED PROJECT

### 8.1 Land and Building

Land admeasuring to about 200 sq.mtrs. with built-up area of 80 sq.mtrs. will be adequate. The respective cost would be Rs. 0.60 lac and Rs. 2.10 lacs.

### 8.2 Plant and Machinery

A detailed list is already furnished. The total cost under this head is taken at Rs. 2.30 lacs.

### 8.3 Miscellaneous Assets

A provision of Rs. 50,000/- is adequate.

#### 8.4 Preliminary & Pre-operative Expenses

Expenses like registration and legal fees, administrative and other charges, interest during implementation etc. are taken at Rs. 40,000/-.

#### 8.5 Working Capital Requirement

Capacity utilisation in the first year is assumed to be 60% and at that level, total working capital needs are likely to be Rs. 5.40 lacs comprising of bank loan of Rs.3.80 lacs and margin of Rs. 1.60 lacs as worked out hereunder:

(Rs. in lacs)

Particulars	Period	Margin	Total	Bank	Promoters
Shock of RMs	½ Month	30%	1.00	0.70	0.30
Stock of Finished Goods	½ Month	25%	1.40	1.05	0.35
Receivables	1 Month	25%	2.75	2.05	0.70
Other Expenses	1 Month	100%	0.25	--	0.25
		<b>Total</b>	<b>5.40</b>	<b>3.80</b>	<b>1.60</b>

#### 8.6 Cost of the Project and Means of Financing

(Rs. in lacs)

Item	Amount
Land and Building	2.70
Plant and Machinery	2.30
Miscellaneous Assets	0.50
P&P Expenses	0.40
Contingencies @ 10% on Building and Plant & Machinery	0.50
Working Capital Margin	1.60
<b>Total</b>	<b>8.00</b>
<b>Means of Finance</b>	
Promoters' Contribution	2.40
Loan from Bank/FI	5.60
<b>Total</b>	<b>8.00</b>
Debt Equity Ratio	2.33 : 1
Promoters' Contribution	30%

### 9.0 PROFITABILITY CALCULATIONS

#### 9.1 Production Capacity and Build-up

The processing capacity is taken at 600 tonnes per year on two shift working. As explained earlier, processing of 600 tonnes would, on an average, yield 480 tonnes of edible paddy or rice with 80% recovery. Hence, capacity utilisation in the first year is taken at 60% whereas second year onwards, it is assumed to be 70%.

## 9.2 Sales Revenue at 100%

(Rs. in lacs)

Product	Qty. (Tonnes)	Selling Price/Ton	Sales Value
Rice	480	11,000	52.80
Husk/Bran, etc.	90	3,000	2.70
		<b>Total</b>	<b>55.50</b>

Selling price of rice would vary depending upon the quality of inputs. Product-mix may vary and hence an average selling price of Rs. 11,000/- per ton is assumed. Similarly, price of husk and bran is also taken at Rs. 3,000/- which would fluctuate in line with quality of inputs, processing techniques etc. as explained earlier.

## 9.3 Raw Materials Required at 100%

Different qualities of paddy is grown in the state and the mill would process suitable good paddy from time to time. The annual requirement at 100% capacity shall be 600 tonnes. Considering average price of Rs. 6,750/- per ton, the yearly cost would be Rs. 40.50 lacs.

## 9.4 Utilities

The annual expenditure under this head at 100% activity level is estimated to be Rs. 60,000/-.

## 9.5 Interest

Interest on term loan of Rs. 5.60 lacs is calculated @ 12% assuming repayment in 4 years including a moratorium period of 1 year. Interest on bank assistance for working capital is computed @ 14% per annum.

## 9.6 Depreciation

It is computed on WDV basis and rates assumed are 10% on building and 20% on machinery and miscellaneous assets.

## 10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

No.	Particulars	1st Year	2nd Year
<b>A</b>	<b>Installed Capacity</b>	--- 600 Tonnes ---	
	Capacity Utilisation	60%	70%
	Sales Realisation	33.30	38.85
<b>B</b>	<b>Cost of Production</b>		
	Raw Materials	24.30	28.35
	Utilities	0.36	0.42
	Salaries	1.37	1.55
	Stores & Spares	0.18	0.21
	Repairs & Maintenance	0.21	0.30
	Selling Expenses @ 10%	3.33	3.88
	Administrative Expenses	0.30	0.39
	<b>Total</b>	<b>30.05</b>	<b>35.10</b>
<b>C</b>	<b>Profit before Interest &amp; Depreciation</b>	<b>3.25</b>	<b>3.75</b>
	Interest on Term Loan	0.60	0.45
	Interest on Working Capital	0.53	0.62
	Depreciation	0.71	0.59
	Net Profit	1.41	2.09
	Income-tax @ 20%	0.28	0.42
	Profit after Tax	1.13	1.67
	Cash Accruals	1.84	2.26
	Repayment of Term Loan	--	1.65

## 11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

No	Particulars	Amount	
[A]	Sales		<b>33.30</b>
[B]	Variable Costs		
	Raw Materials	24.30	
	Utilities (70%)	0.25	
	Salaries (60%)	0.82	
	Stores & Spares	0.18	
	Selling Expenses (80%)	2.66	
	Admn Expenses (50%)	0.15	
	Interest on WC	0.53	<b>28.89</b>
[C]	Contribution [A] - [B]		<b>4.41</b>
[D]	Fixed Cost		<b>2.50</b>
[E]	Break-Even Point [D] ÷ [C]		<b>57%</b>

**12.0 [A] LEVERAGES****Financial Leverage**

$$= \text{EBIT/EBT}$$

$$= 2.54 \div 1.41$$

$$= 1.80$$

**Operating Leverage**

$$= \text{Contribution/EBT}$$

$$= 4.41 \div 1.41$$

$$= 3.13$$

**Degree of Total Leverage**

$$= \text{FL/OL}$$

$$= 1.80 \div 3.13$$

$$= 0.58$$

**[B] Debt Service Coverage Ratio (DSCR)**

(Rs. in lacs)

Particulars	1st Yr	2nd Yr	3rd Yr	4th Yr
Cash Accruals	1.84	2.26	2.45	2.67
Interest on TL	0.60	0.45	0.23	0.11
<b>Total [A]</b>	<b>2.44</b>	<b>2.71</b>	<b>2.68</b>	<b>2.78</b>
Interest on TL	0.60	0.45	0.23	0.11
Repayment of TL	--	1.85	1.85	1.90
<b>Total [B]</b>	<b>0.60</b>	<b>2.30</b>	<b>2.08</b>	<b>2.01</b>
<b>DSCR [A] ÷ [B]</b>	<b>4.07</b>	<b>1.18</b>	<b>1.29</b>	<b>1.39</b>
<b>Average DSCR</b>	----- <b>1.98</b> -----			

**[C] Internal Rate of Return (IRR)**

Cost of the project is Rs. 8.00 lacs.

(Rs. in lacs)

<b>Year</b>	<b>Cash Accruals</b>	<b>16%</b>	<b>18%</b>	<b>20%</b>
1	1.84	1.59	1.56	1.53
2	2.26	1.68	1.62	1.57
3	2.45	1.57	1.49	1.42
4	2.68	1.48	1.38	1.29
5	2.89	1.38	1.26	1.16
6	3.14	1.29	1.16	1.05
	<b>15.26</b>	<b>8.99</b>	<b>8.47</b>	<b>8.02</b>

The IRR is around 20%.

**Some of the machinery suppliers are**

1. Bhullar Rice Machinery Manufacturing Company, 98, Focal Point, Amritsar-143001.  
Tel No. 2585366/2586066
2. Flourtech Engg. Pvt. Ltd. 16/5, Mathura Rd., Faridabad-121002.  
Tel No. 2263017/2291556, Fax: 2291556
3. Fowler Westrup India Pvt. Ltd. 249, Bommasandra Industrial Estate. Bangalore-562159.  
Tel No. 27832991.
4. Indopol Food Processing Machinery Pvt. Ltd., 28, Sector 27-C, Faridabad-121003.  
Tel No. 2276161/62/63, Fax : 2270549