CENTRAL POOD TECHNOLOGICAL RESEARCH INSTITUTE, MYSORE 570 020

MODERN DHAL MILL

1. Current Status and Future Potential

The production of pulses in India is of the order of 15 million tonnes per year. Generally pulses are consumed in a variety of food preparation after conversion into dhal viz., de-husked split pulse. It is estimated that more than 65% of the pulse produced is converted into dhal in the large scale sector and nearly 15% of pulses are retained in rural areas for processing. Milling of pulses is practiced as a small scale rural operation form ancient times and more recently as a large commercial operation.

2. CFTRI Process

An improved dhal milling technology has been developed at CFTRI to over come the major draw backs in the traditional dhal milling industry and taking into considerations the factors influencing the milling characteristics of different pulses. The process consist in conditioning the cleaned size-graded grains by an incipient heat treatment in specially designed conditioning units to a critical moisture level, at or below which the husk is made loose and brittle and then removing the husk in specially designed de-husking machines preventing excessive losses.

The improved milling process developed as several advantages like, high recovery of dhal, reduced time of processing, independence from climate condition and the process is fully mechanized for round the clock production. It can also process all types of pulses and the processing time is less than 2 days. It gives a de-husking of 98 to 99% with 77 to 80% dhal yield. The process is also free of dust pollution and could be scaled up for increasing the capacity.

3. Description of modern dhal mill plant

The plant consists of cleaner cum grader, de-stoner, specially designed conditioning chamber, blower, horizontal air heater, cylo type perforated bins for tempering heated grains, pearling machine for removing husk, aspiration system, grader for dhal and broken, water/oil mixer, specially designed lump breaker, dhal splitter and elevators. All these are arranged in a steam lined layout for continuous operation and easy working. The number of units, capacity and general specifications are given in the dossier

4. Economics

Capacity: 1 Tonne/ hour (8000 kg/ day)
Working: 250 days per annum

4.2 Capital investment -

A. Fixed	**Rs. in Lakhs**
Land: 600 sq.m. @ Rs.800/ Sq. m of developed plot	4.80
Building: 500 sq.m @ Rs.6000/Sq. m	30.00
Plant and equipment/ Erection, contingency, etc.	31.00

Other assets, expenses, margin, etc	2.50
B. Working capital (1 month or 25 days)	70.00
Total capital investment	**138.30**

6.3 Profitability

a)* 2000 tonnes of pulse @ Rs.35,000/tonne	700.00
b) Packaging (gunny bags @ Rs.20/-)	1.60
c) Utilities electricity 1,41,000 units @ Rs.6/unit + water 600 cu.m	9.00
d) Labour 4 nos. @ 100/ day + 1 no. mechanic @Rs.250/ day + Manager @ Rs.10,000/ month	2.80
e) Overheads	1.60
f) Administrative expenses	2.50
g) Oil Purchase/selling and other expenses	9.00
h) Depreciation Building @ 5% Plant @ 15 %	4.30
i) Interest on Fixed capital @ 14%	19.00
Total Manufacturing Cost	**749.80**

Sales Returns	
Dhal (77%) - 1540 tonnes @ Rs.50,000/T	770.00
Husk & Powder (20%) - 400 tonnes @Rs.8000/T	32.00
Total Returns	**802.00**
Profit Before Taxation	52.5
Commission for marketing (20% of profit)	10.4
Net profit before taxation	42.1 Lakhs
Pay back period	3.3 years