

CARDAMOM PROCESSING UNIT

Introduction

Cardamom is a valuable spice that is the seeds of a perennial plant (*Elettaria cardamomum*). India is the main exporter of dried cardamom.

Cardamom must be cleaned, washed, dried, polished, graded before it is stored and sold for market. The crop should be cleaned before processing. The first stage is to remove dust and dirt using a winnowing basket. After winnowing the seeds are washed in clean water. The seeds can be soaked in a solution of sodium bicarbonate (2-5%) for ten minutes to help retain the green colour. Drying is the most important part of the process as it affects the quality of the final product. It is important to dry the cardamom capsules as soon after harvest as possible to prevent the loss of flavour. The drying temperature should not be above 50°C as this affects the colour and delicate flavour of the final product. In most places, cardamom capsules with a good green colour can be sold for a premium price.

The moisture content of a fresh cardamom capsule is about 85%. This needs to be reduced to 10% in the dried product so the cardamom capsules can be stored. If the drying period is too long mould can start to grow on the cardamom

Electric or gas dryer. An electric or gas-fired dryer is an improvement over the use of a wood-fuelled fire and is the best choice for drying large quantities of cardamom, especially in places where there is rainfall during the drying season. It is the most expensive of all options but does produce the highest quality product. It is important that the drying temperature does not exceed 50°C

Polishing & Grading : Cardamom is graded by colour and size. The deeper the green colour and the larger the capsule size, the higher the grade. All grading is done by hand.

Packaging: Cardamom capsules can be packaged in polythene bags of various sizes according to the market demand. The bags should be sealed to prevent moisture entering. Sealing machines can be used to seal the bags.

Storage: Dried cardamom capsules must be stored in moisture-proof containers away from direct sunlight before it is sold to the market.

2. Market

The product finds placement in all, departmental stores and supermarkets, local markets and auction centres.

3. Packaging

Packaging of cardamom is usually carried out in polyethylene pouches in capacities of 250 gms, 500 gm and 1 kg.

4. Production capacity

The plant operates to one shift of eight hours duration.

5. Sales revenue

Rs. 35.00 lakhs per annum

6. Pollution control measures

Not necessary as there are no pollutants or effluents.

7. Energy conservation measures

Common measures will do.

8. Land and construction cost for the proposed unit

The proposed unit is to be taken up on a tin sheeted roofed building. Area is 1500 square feet wide. Details are given below:

| | Description | Sq.feet |
|---|----------------------------|-------------|
| 1 | Processing area | 800 |
| 2 | Raw material store | 200 |
| 3 | Finished goods store room | 200 |
| 4 | Office space | 100 |
| 5 | Toilet space | 100 |
| 6 | Quality control laboratory | 100 |
| | Total | 1500 |

9. Costing of machinery and equipment

| | Description | Rs. lakhs |
|---|--|-----------|
| 1 | Cardamom dryer unit with generator set (2 nos) | 5.500 |
| 2 | Polishing and grading machine | 0.500 |
| 3 | Packing machine & sealing machine | 0.400 |
| 4 | Other equipments & storage trays | 0.250 |
| 5 | Weighing scales | 0.200 |
| | Total | 6.850 |
| 6 | Laboratory equipment | 0.160 |
| | Grand total machinery and equipment | 7.010 |

10. Project cost

| | Description | ₹ lakhs |
|----|-------------------------------------|--------------|
| 1 | Land | owned |
| 2 | Building | 12.00 |
| 3 | Plant machinery | 6.85 |
| 4 | Laboratory equipment | 0.16 |
| 5 | Cost of electrification | 0.50 |
| 6 | Erection and commissioning | 0.30 |
| 7 | Cost of office equipment | 0.50 |
| 8 | Initial advertisement and publicity | 0.30 |
| 9 | Contingencies | 0.20 |
| 10 | Working capital margin money | 0.60 |
| | Total | 21.41 |

11. Working capital requirements per month

a. Salaries and wages

| Sl | Description | No of persons | Total salary / month (₹ lakhs) |
|----|-------------------------------------|---------------|--------------------------------|
| 1 | Production supervisor -cum -chemist | 1 | 0.08 |
| 2 | Skilled workers | 2 | 0.12 |
| 3 | Unskilled workers | 3 | 0.15 |
| 4 | Helper | 1 | 0.04 |
| | Total | 9 | 0.39 |

b. Raw material requirement per cycle

| Sl. No | Description | Qty (kgs) | Rate / kg (₹) | Value (lakhs) |
|--------|---------------------------|-----------|---------------|---------------|
| 1 | Raw cardamom | 300 | 400 | 1.20 |
| 2 | Other items | LS | | 0.05 |
| | Total raw material | | | 1.25 |

c. Packaging material requirement per cycle

| Sl.No | Description | Qty | Rate / unit (₹) | Value (lakhs) |
|-------|--------------------------------------|-----|-----------------|---------------|
| 1 | Primary packaging material & cartons | | | 0.27 |
| | Total | | | 0.27 |

Total raw + packaging material = Rs. 1.520 lakhs

d. Utilities per month

| | Description | ₹ lakhs |
|---|------------------------|-------------|
| 1 | Power | 0.05 |
| 2 | Other utilities | 0.06 |
| | Total utilities | 0.11 |

e. Contingent expenses per month

| l | Description | ₹ lakhs |
|---|---|--------------|
| 1 | Postage and stationery | 0.008 |
| 2 | Telephones, fax etc. | 0.010 |
| 3 | Consumable stores | 0.010 |
| 4 | Repairs and maintenance | 0.050 |
| 5 | Local transports, loading and unloading | 0.075 |
| 6 | Advertisement and publicity | 0.100 |
| 7 | Miscellaneous expenses & tax | 0.050 |
| | Total contingent expenses | 0.303 |

f. **Total working capital requirement per month**

| | Description | ₹ lakhs |
|---|-------------------------------------|--------------|
| 1 | Salaries and wages | 0.390 |
| 2 | Raw material and packaging material | 1.520 |
| 3 | Utilities | 0.110 |
| 4 | Contingent expenses | 0.303 |
| | Total | 2.323 |

12. **Means of finance**

| Sl. No | Description | ₹ lakhs |
|--------|------------------------------|---------|
| 1 | Total Project Cost | 21.410 |
| 2 | Equity | 7.137 |
| 3 | Debt | 14.273 |
| 4 | Working capital margin money | 0.600 |

13. **Financial analysis**

| Sl. No | Description | ₹ lakhs |
|--------|----------------------------------|---------------|
| 1 | Total recurring cost per year | 27.876 |
| 2 | Depreciation on building | 0.600 |
| 3 | Depreciation on machinery | 0.701 |
| 4 | Depreciation on office equipment | 0.050 |
| 5 | Interest on long term loan | 2.008 |
| | Total cost of production | 31.235 |

14. **Turnover per year**

| Sl | Item | Qty | Rate/unit (₹) | Total ₹ lakhs |
|----|-----------------|----------|---------------|---------------|
| 1 | Graded cardamom | 5000 kgs | 700 | 35.000 |

15. **Viability analysis**

| | Description | Value |
|---|--|-------|
| 1 | Net profit before income tax (₹ lakhs) | 3.765 |
| 2 | Net profit ratio | 10.8% |
| 3 | Internal rate of return | 24.8% |
| 4 | Break even percentage | 57% |
| 5 | Debt service coverage ratio | 1.987 |

List of machinery suppliers for cardamom dryer unit

1. Green guard, Anakkara Post, Kumily, Kerala- 685509
Phone. 08042953001
2. Aayush Engineering Works, No.5/521, Amaravathy, Kumily- 685509
Phone. 09643008576
3. Max Heat furnaces, Opp. Balaji Enterprises, Chikkabalanavara, Bengaluru.
4. Phone. 09448174731
5. Vinod Engineering Company, Gonikopal, Kodaku, Mysore- 571213
Phone.08042908604
