

# **CASHEW PROCESSING, GRADING & PACKING**

## **1. INTRODUCTION**

The cashew tree, native to Brazil, was introduced to Mozambique and then India in the sixteenth century by the Portuguese, as a means of controlling coastal erosion. The cashew kernel is a rich source of fat (46 percent) and protein (18 percent) and is a good source of calcium, phosphorus and iron. It has a high percentage of polyunsaturated fatty acids, in particular, the essential fatty acid linoleic acid. Three main cashew products are traded on the international market: raw nuts, cashew kernels and cashew nut shell liquid (CNSL). A fourth product, the cashew apple is generally processed and consumed locally.

## **2. PRODUCTS AND ITS APPLICATION:**

It is estimated that 60 percent of cashew kernels are consumed in the form of snacks while the remaining 40 percent are included in other food preparations. Cashew kernels are either consumed directly or in roasted, salted or flavoured form. It is used in confectionery and bakery products, for example, finely chopped kernels are used in the production of bakery biscuits, Indian sweets (Kaju Katri), ice-creams, cakes and chocolates, both at home and industrially and as paste to spread on bread. Besides that used in curries, energy food bars, roasted cashew crushed to powder, roasted in ghee to make roasted pak like sukhdhi, dry fruit chikkis and in some drink preparations.

**Product-Mix:** Separation and gradation of cashew kernels from raw cashews.

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

The entrepreneur must be aware of sourcing and marketing of cashew kernels. The import of raw cashew fruit, processing into produce different grades of raw cashew kernels out of it, marketing of raw cashew kernels and value addition to raw cashew kernels by roasting and flavoring skills required by the promoter to sustain the business.

#### **4. INDUSTRY OUTLOOK/ TREND**

The dry fruit processing industry in India is growing at the rate of 4% per annum while cashew nut consumption growth in India is about 3% per year. India is a leading exporter of processed cashew nut based on imported raw cashew nut. International market of cashew nut is also growing with innovative products being introduced in snack foods, bakery items and sweets.

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

India led the production of cashews in 2015/16 with a crop of 172,719 tons (kernel basis), which represented 23 per cent of global production, followed by Ivory Coast (171,111 MT, 23 per cent) and Vietnam (113,095 MT, 15 per cent). Global production of cashews in 2015/16 reached 738,861 tons, an increase of 3 per cent from the previous season," said a latest INC (International Nut and Dried Fruit Council) report. The export of cashew kernels stood at 81,110 MT (provisional) in FY 2016-17, valued at Rs 5,077 crore (US\$ 786.59 million). Export earnings from cashew and allied products during FY 2015-16 stood at US\$ 765 million. India accounts for about 65 per cent of global cashew exports. India is the top consumer of cashew kernels in the world by absorbing over 25 per cent of the supply, industry sources told Business Line. "Cashew nut demand has shot up 53 per cent since 2010, and almost half of the supply is eaten in India and the US," they said. India's share in the world cashew nut market is at 23 per cent, while 58 per cent is now controlled by Vietnam.

#### **6. RAW MATERIAL REQUIREMENTS:**

To produce 250 kg dried cashew kernels of different grades per day about 1000 kg raw cashew fruits are required. The existing price of raw cashews is Rs. 100/kg against Rs. 700/kg of average price of dried cashew kernels.

#### **7. MANUFACTURING PROCESS:**

Cashew processing methods have improved considerably over the years. Difficulties in shelling cashew nuts are due to the irregular shape of the nut, the

tough leathery outer shell and the CNSL (Cashew Nut Shell Liquid) within the shell. The most economic features of processing are the ratio of kernels to whole nuts obtained and the percentage of whole kernels obtained. Kernel yields usually vary between 22 and 24 percent of the total weight of raw material processed. The percentage of whole kernels at the end of processing varies between 55 and 85 percent depending upon the processing method and factory management. In general, 65 percent may be considered a satisfactory result.

The process involve physical cleaning of whole cashew fruit, followed by soaking in water, removal of water, cooking or roasting to brittle the shell, mechanically de-shelling, removal of cashew nut shell liquid, pre-grading, drying, peeling, grading (manually, mainly) and packing.

The cashews are graded according to numbers of kernels per pound, e.g., W210 means 210 numbers of kernels per pound. Please refer following tables for grades and quality of kernels.

| <b>Quality</b> | <b>Classified according to grades / with or without basing on number of kernel per kg.</b> |
|----------------|--|
| First quality  | W210, W240, W320, W450, WB, WS, LWP, SWP   |
| Second quality | LBW210, LBW240, LBW320, LBW, SW210, SW2440, SW320, SW, SB, SS, LP, SP                      |
| Third quality  | DW320, DW350, DW   |
| Fourth quality | DW2, DW3DW2, DW3   |
| Fifth quality  | SW2, SSW2, SW3, DW, DWTW3, DW, DWT   |
| Sixth quality  | CS, SK, SK2, TPN, TPN2, TPB, DW4CS, SK, SK2, TPN, TPN2, TPB, DW4                           |

Thus obtained dried cashew kernels are further processed for producing roasted cashew, salted, flavoured or coated cashew, cashew kernel paste, etc.

## **8. MANPOWER REQUIREMENT:**

| <b>Sr. No.</b> | <b>Designation</b>   | <b>No.</b> | <b>Basic Salary</b> | <b>Annual</b> |
|----------------|----------------------|------------|---------------------|---------------|
| 1              | Manager - Production | 1          | 40,000.00           | 4,80,000      |
| 2              | Shift Chemists       | 1          | 20,000.00           | 2,40,000      |
| 3              | Sales Staff          | 4          | 25,000.00           | 12,00,000     |
| 4              | Administration Staff | 4          | 15,000.00           | 7,20,000      |
| 5              | Foremen              | 1          | 10,000.00           | 1,20,000      |

|   |                                |           |           |                    |
|---|--------------------------------|-----------|-----------|--------------------|
| 6 | Operators                      | 1         | 10,000.00 | 1,20,000           |
| 7 | Workers                        | 80        | 7,000.00  | 67,20,000          |
|   | <b>Total:</b>                  | <b>92</b> |           | <b>96,00,000</b>   |
|   | Welfare & Other Expenses :     |           | 10%       | 9,60,000           |
|   | <b>Total Manpower Expenses</b> |           |           | <b>1,05,60,000</b> |
|   | In Rs. Lakhs                   |           |           | <b>105.60</b>      |

## 8. IMPLEMENTATION SCHEDULE:

| Project Stages            | Months |   |   |   |   |   |   |   |   |    |
|---------------------------|--------|---|---|---|---|---|---|---|---|----|
|                           | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Purchase of Land          | ■      | ■ | ■ |   |   |   |   |   |   |    |
| Completion of Building    |        | ■ | ■ | ■ |   |   |   |   |   |    |
| Ordering of Machinery     |        | ■ | ■ |   |   |   |   |   |   |    |
| Delivery of Machinery     |        |   | ■ | ■ | ■ |   |   |   |   |    |
| Term/ Wkg. Loan           |        | ■ | ■ | ■ |   |   |   |   |   |    |
| Installation of Machinery |        |   |   |   |   | ■ |   |   |   |    |
| Commissioning of Plant    |        |   |   |   |   | ■ |   |   |   |    |
| RM/Inputs Procurement     |        |   |   |   |   | ■ |   |   |   |    |
| Manpower Appointments     |        |   |   |   |   | ■ |   |   |   |    |
| Commercial Production     |        |   |   |   |   | ■ |   |   |   |    |

## 9. COST OF PROJECT:

### Cost Of Project

| Sr. No. | Costing Heads          | Qty.  | Rate/Unit | Rs. Lakh     |
|---------|------------------------|-------|-----------|--------------|
| 1       | Land in Sq. M. + Expn. | 800.0 | 1,000.00  | 8.00         |
| 2       | Building in sq. m.     | 400.0 | 9,000.00  | 36.00        |
| 3       | Plant & Machinery      |       |           | 28.00        |
|         | <b>Total</b>           |       |           | <b>72.00</b> |

## 10. MEANS OF FINANCE:

| Sr. No. | Means Heads       | Rs. Lakhs    |
|---------|-------------------|--------------|
| 1       | Promoters Capital | 18.00        |
| 2       | Term Loan         | 38.00        |
| 3       | MFPI Subsidy      | 16.00        |
|         | <b>Total</b>      | <b>72.00</b> |

## 11. WORKING CAPITAL CALCULATION:

| <b>Particulars</b> | <b>Total Amount</b> | <b>Stock Period Days</b> | <b>Value of Stock Period</b> | <b>Promoter Margin</b> | <b>Promoter Share</b> | <b>Bank Borrowings</b> |
|--------------------|---------------------|--------------------------|------------------------------|------------------------|-----------------------|------------------------|
| Raw Material       | 300.00              | 15                       | 15.00                        | 0.60                   | 9.00                  | 6.00                   |
| Packing Material   | 6.00                | 30                       | 0.60                         | 0.75                   | 0.45                  | 0.15                   |
| Work in Process    | 444.99              | 3                        | 4.45                         | 0.40                   | 1.78                  | 2.67                   |
| FP Stock           | 525.00              | 15                       | 26.25                        | 0.40                   | 10.50                 | 15.75                  |
| Bills Receivable   | 525.00              | 15                       | 26.25                        | 0.40                   | 10.50                 | 15.75                  |
| Working Expense    | 25.00               | 30                       | 2.50                         | 1.00                   | 2.50                  | 0.00                   |
| <b>Total:</b>      | <b>1,825.99</b>     |                          | <b>75.05</b>                 |                        | <b>34.73</b>          | <b>40.32</b>           |

## 12. LIST OF MACHINERY REQUIRED AND THEIR MANUFACTURERS

| <b>Sr. No.</b> | <b>Equipments</b>                              | <b>Qty.</b> |
|----------------|--|-------------|
| 1              | Steam Cooker System                            | 2           |
| 2              | Cashew Dryer - Borma                           | 2           |
| 3              | Cashew Shelling Machine: (Cashew Nut Cutters.) | 40          |
| 4              | Cutter Mounting Table                          | 20          |
| 5              | Grading Table                                  | 10          |
| 6              | Peeling Table With Plywood & Aluminium Top     | 20          |
| 7              | Tin Filling Machine                            | 2           |
| 8              | Dust Collector                                 | 2           |
| 9              | Vita Packing Machine : Co2 / Nitrogen Filling  | 2           |
| 10             | Vibratory Sieve : Piece Separator              | 2           |
| 11             | Miscellaneous Equipments                       | Lot         |

- **BEST ENGINEERING TECHNOLOGIES**

H.No.5-9-285/13,  
Plot No.69/A, Rajiv Gandhi Nagar,  
I.E,Kukatpally,  
Hyderabad - 500 037.  
Andhra Pradesh.

- **Oscar Cashew Tech**

Plot No. 04, Panchjanya Industrial Park,  
Inside Gujarat Vepari Maha Mandal Sardar Patel Ring Road,

Odhav, Kathwada,  
Ahmedabad - 382430,  
Gujarat

### 13. PROFITABILITY CALCULATIONS:

| Sr. No.  | Particulars                | Year 1              | Year 2             | Year 3              | Year 4              | Year 5              |
|----------|----------------------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| <b>A</b> | <b>Gross Sales</b>         | <b>367.5</b>        | <b>420</b>         | <b>472.5</b>        | <b>472.5</b>        | <b>472.5</b>        |
|          | Less:                      |                     |                    |                     |                     |                     |
| 1        | Raw Materials, Rs. 1/lit   | 210                 | 240                | 270                 | 270                 | 270                 |
| 2        | Packing Material           | 4.2                 | 4.8                | 5.4                 | 5.4                 | 5.4                 |
| 3        | Fuel                       | 4.41                | 5.04               | 5.67                | 5.67                | 5.67                |
| 4        | Power                      | 0.336               | 0.384              | 0.432               | 0.432               | 0.432               |
| 5        | Manpower                   | 73.92               | 84.48              | 95.04               | 95.04               | 95.04               |
|          | 8%of the manpower          | 8.448               | 8.448              | 8.448               | 8.448               | 8.448               |
| 6        | Sundry Expenses            | 4.2                 | 4.8                | 5.4                 | 5.4                 | 5.4                 |
| 7        | Interest on Term Loan      | 3.192               | 3.648              | 4.104               | 4.104               | 4.104               |
| 8        | Interest on WC Loan        | 4.235               | 4.84               | 5.445               | 5.445               | 5.445               |
| 9        | Repairs & Maintenance      | 7                   | 8                  | 9                   | 9                   | 9                   |
| <b>B</b> | <b>Production Cost</b>     | <b>319.94<br/>1</b> | <b>364.4<br/>4</b> | <b>408.93<br/>9</b> | <b>408.93<br/>9</b> | <b>408.93<br/>9</b> |
| <b>C</b> | <b>Gross Profit (A-B):</b> | <b>47.559</b>       | <b>55.56</b>       | <b>63.561</b>       | <b>63.561</b>       | <b>63.561</b>       |
|          | Taxes @ 30%                | 14.2677             | 16.668             | 19.0683             | 19.0683             | 19.0683             |
|          | <b>Net Profit</b>          | <b>33.291<br/>3</b> | <b>38.89<br/>2</b> | <b>44.492<br/>7</b> | <b>44.492<br/>7</b> | <b>44.492<br/>7</b> |

The proposed unit will have the production capacity of 250 kg per day of dried cashew nut. The unit cost of power is taken at Rs. 8. The depreciation on building is taken at the rate of 5% whereas for plant and machinery it is at 10%.

The average sales price of cashew nut is taken at the rate of Rs.700 per kg for proposed project.

### 14. BREAKEVEN ANALYSIS:

Break Even Point: Annual Fixed Cost x100/ Annual Fixed Cost + Profit:  
47.73

### 15. STATUTORY/ GOVERNMENT APPROVALS

There is statutory requirement of FSSAI license for setting up of food processing industry. Moreover, MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

## **16. BACKWARD AND FORWARD INTEGRATION**

As forward linkages, entrepreneur can go for roasting, salting and spicing of cashew nuts packed in consumer packs. Moreover, same infrastructure and facility can be used for other dry fruits like almond and pistachio. Moreover, by product CNSL can be further processed to make resin for automobile break lining, water proofing compound, paint and varnishes.

## **17. TRAINING CENTERS/COURSES**

For food processing industry training and short term courses are available at Indian Institute of Food Processing Technology, Thanjavur, Tamil Nadu and Central Food Technological Institute, Mysore, Karnataka and The Cashew Export Promotion Council of India Cashew Bhavan, Mundakkal West, Kollam 691001, Kerala . Udyamimitra portal ( link : [www.udyamimitra.in](http://www.udyamimitra.in) ) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

### **Disclaimer:**

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi