

## COCONUT CHIPS



Of the more than 1500 species in the Palm family of plants (Palmaceae), the Coconut palm is the best known. A unique tree, with no really close relatives (it is the only member of the genus Cocos), it is considered to be one of the most useful trees in the world. A recent study reported 360 contemporary uses for this tree, half of which were for food. Several Philippine proverbs demonstrate the usefulness of this species:

*"If you could count the stars, then you could count all the ways the coconut serves us."*

Coconut meat is the rich white lining that is contained within the shell of a coconut. Coconut meat can be juicy and tender, or slightly thick and crunchy, to tough and fibrous depending on how long the kernel has been stored.

### Coconut Chips

Coconut chips, as any other chips, are a ready to eat snack food. Dehydrated mature coconut kernel slicers are dipped in osmotic medium like sugar syrup is called Coconut Chips. The major characteristics of coconut chips are as follows:

1. It is a ready to eat snack
2. Not fried in oil
3. No preservatives
4. No loss of flavor or nutrient in the kernel

### Nutritional Information

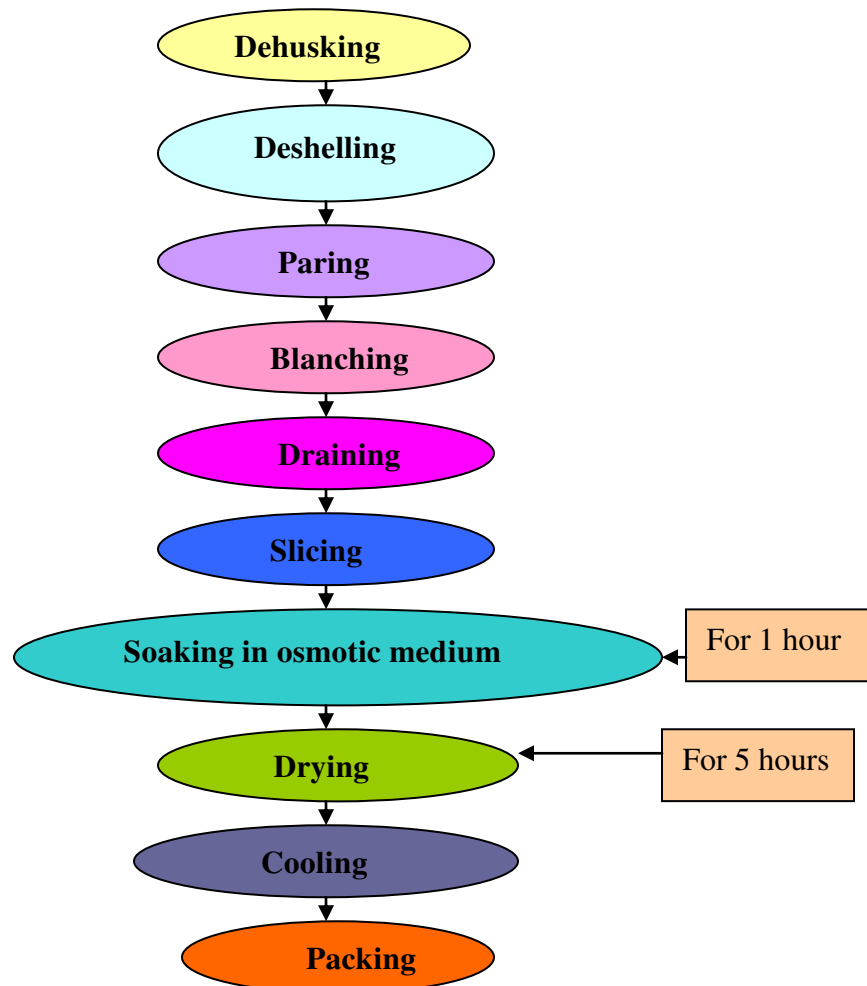
Sl. No	Parameters	per 20 g
1	Fat	9.42g
2	Lauric acid	4.82g
3	Calcium	2.10mg
4	Fiber	1.93g
5	Iron	1.30mg
6	Cholesterol	0.00

### Raw Material required and cost of raw material

Coconuts of the age 8-10 month old with reasonable water inside are selected for the production of Coconut Chips. The cost of raw material is assumed to be Rs.20/kg. At 80% capacity 1,00,800 kg of coconut are required for one year and the cost is estimated to be Rs.20,16,000/-.

### Processing Method

#### Flow Chart



**Dehusking :** Dehusking is done to remove the husk part of the coconut

**Deshelling :** It is done without breaking the kernel.

**Paring:** It is done to remove the brown skin of the kernel with the help of a machine or manually. Care should be taken to remove the testa alone without affecting the kernel.

**Blanching:** Pared coconuts are dipped in boiling water mixed with 0.05% Potassium Meta bisulphate for 15 minutes in a blanching machine.

**Draining:** It can be done with the help of vibratory screener. This will remove the excess water present in the blanched coconuts.

**Slicing:** It is done to reduce the size of coconut kernel into very thin slices. It can be done with the help of a slicer /peeler.

**Osmotic dehydration:** The coconut chips are then immersed in sugar solution of 50° Brix for 1 hour. Essence of flavours can be added at this time. A little of salt is also added to the sugar solution. Agitation of the sugar solution is required during osmotic dehydration.

**Drain:** The coconut chips are then spread over moisture absorbing paper to remove the excess water.

**Drying:** Drained coconut chips are then dried at a temperature of 70-80°C for 4-5 hours. In order to avoid sticking on the pan, turn the coconut chips after one hour of drying. For toasting purpose increase the temperature upto 90°C and dry until chips get toasted flavor. The product will be golden brown in color after toasting.

**Cooling:** Dried coconut chips are allowed to cool to room temperature.

**Packing:** Since the coconut chips are hygroscopic in nature, packing in metallised poly film or aluminium foil laminated with LDPC film are preferably good to maintain the color and flavor of coconut chips upto six months period without affecting nutritional and biochemical changes. In order to avoid breakage of chips during transportation, nitrogen flushing is usually done in pouches.

Different types of chips can be prepared by adding different types of essences and masalas to increase the varieties.

**By products:** The major by products are husk, shell and vinegar.

**Yield of the product:** 420 kg (1000 nuts) of coconut will give 100kg of coconut chips.

**Man power requirement:**

Sl. No	Designation	Number	Salary(in Rs.)
1	Plant manager	1	20,000/-
2	Admin cum Sales Manager	1	20,000/-
3	Plant Supervisor	1	15,000/-
4	Plant labors (per day)	6	500/-

**Draft plan to set up a plant for coconut chips****Basic assumptions:**

1. Capacity of plant = 100 kg of chips per shift
2. No. of working days in a year = 300 days
3. No. of shifts per day = 1
4. Purchase price of dehusked coconut = Rs. 20/kg
5. Selling price of coconut chips = Rs. 13/ 20g pouch

**Capital Investment for the project:**

No	Item	Amount (Rs. in Lakhs)
1	Land (10 cents)	Leased
2	Building (1000 sq.ft @Rs.1000/- per sq.ft )	10.00
2	Other civil works (internal roads, compound wall, water tanks)	2.00
3	Machinery and Equipment	9.40
4	Electrification	1.00
5	Preliminary & Pre-op Expenses	0.75
6	Working Capital margin	2.6
	<b>Total</b>	<b>25.75</b>

**Plant and Machinery:**

No.	Item	Qty	Unit	Unit Cost (Rs. in lakhs)	Amount (in Lakhs)
1	De husker	2	No.	0.7	1.40
2	Deshelling	2	No.	0.6	1.20
3	Paring unit	1	No.	0.55	0.55
4	Blanching vessel	1	No.	0.5	0.50
5	Slicer	1	No.	0.5	0.50
6	Mixing vessel	1	No.	0.75	0.75
7	Hot air oven	1	No.	3	3.00
8	S.S vessels	-	-		-
9	Packing equipment	1	No.	1.5	1.50
10	Miscellaneous	-	-		-
	<b>Total</b>				<b>9.40</b>

**Building area required:**

Particular	Area (sq. feet)
Pre processing area	300
Processing area	300
Finished good storage	200
Office room and utilities	200
<b>Total</b>	<b>1000</b>

**Project at a glance:**

No.	Item	At 80% capacity utilization
1	Sales Realization	156.00
2	Gross Profit	17.02
3	Net Profit after tax	10.54
4	Long Term Debt	6.18
5	Gross Profit on Sales(%)	10.91
6	Net Profit after tax on Sales (%)	6.76
7	Net Worth	36.63
8	Return on Capital Employed	0.38
9	Current Ratio(Current Assets/Current Liabilities)	1.81
10	Debt Equity Ratio	4.95
11	Debt Service Coverage Ratio(DSCR)	3.20
12	Pay Back Period	3.85 years
13	Internal Rate of Return (IRR)	22%
14	Break Even Point (sales)	48.28 %

[Articles on Coconut Chips](#)

**Coconut Chips manufactured outside India**



**Manufacturers of Coconut Chips**

Sl.No	Supplier address	Contact details
1	Chinnuse Products,Muttithadi P.O, Thrissur	0480-2755931
2	Kodungallore Coconut Producer Company, Sachidanandan s/o.krishnankutty kattil house P.O Perinjanam - 680686.	Mob : 9645799279  E-Mail : <a href="mailto:kocoproduct@gmail.com">kocoproduct@gmail.com</a>
3	Phalada Agro Research Foundation Survey No: 92/5, Segehalli Cross Road, Magadi Road, Kannalli, Bengaluru, Karnataka 560091	Phone:080 2853 6762
4	Shobha Engineering Company DP 20/A, Perigandoor (P.O), Athani, Thrissur, Kerala - 680581	suryashobha10@gmail.com Phone: 0487-2208153, 2200675 Mobile: 09447668543 09809404000
5	Kerala Agriculture Value Added Products Research and Development Centre, Nedumeriyil, Kulayattikara , Ernakulam - 682315	<a href="mailto:elaneercruch@gmail.com">elaneercruch@gmail.com</a> Ph: 9747150330