

## 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

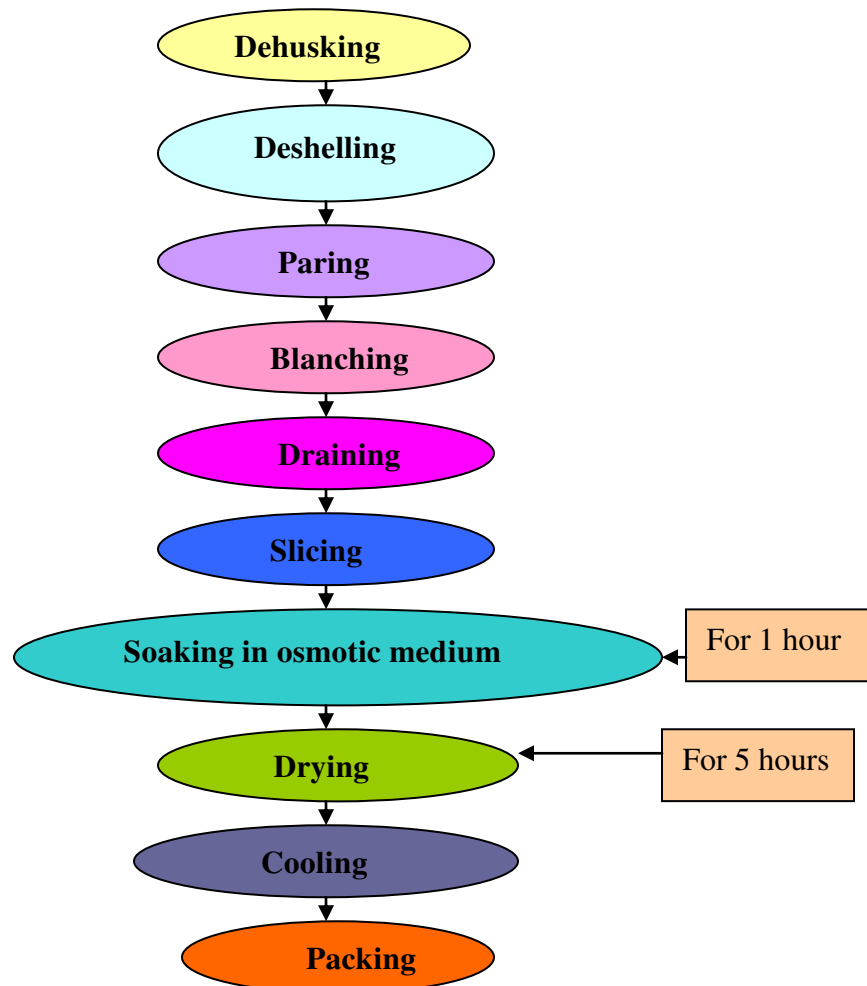
Sl. No	Parameters	per 20 g
1	Fat	9.42g
2	Lauric acid	4.82g
3	Calcium	2.10mg
4	Fiber	1.93g
5	Iron	1.30mg
6	Cholesterol	0.00

### 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

**Annexure 1****Machinery manufactures list\*****Dehusking machine**

<b>S.No</b>	<b>Supplier address</b>	<b>Contact details</b>
1	Pilotsmith India Pvt Ltd. Kalletumkara, Trichur - 680683	04802881908 mech@pilotsmithindia.com
2	Kovai classic Industries, No.1, Iyer Hospital road, Singanallur post, Coimbatore- 641005	08373904516
3	New Tech Industries, Durga complex, Near R.K township road, Yarandhahalli, Hennagara post, Bangalore-562106	09643008291
4	Sri Balaji Industries, No.622-1, Elgi Industrial area, Trichy road, Singanallure, Coimbatore- 641005	0860637095
5	Om Engineering, No 242, Pushkar Industrial Estate, Phase 1, GIDC, Vatva, Near torrent tower, Ahmedabad-380016	0995355936
6	Pro B Products, No. 342 B, 9th Cross, 4th Phase, Peenya, Industrial Estate, Bengaluru-560058	08373904152
7	Jagans Innova café company, /82, Malaiveppan Kuttai P.O. Namakkal District, - 637404, Tamil Nadu	08048411253
8	Gem Allied Industries Private Limited, 10/c, Middleton Row, 3rd floor, west Bengal-700071	07053118452
9	Saraa Engineering works, No. 22/10, Kollan Thottam, Nallampalayam, Ganapathy Coimbatore - 641006	07598509504
10	Lakshmi Industrial Equipments No. 22/10, Kollan Thottam, Nallampalayam, Ganapathy Coimbatore - 641006, Tamil Nadu, India	07053120328
11	Mosons Engineering Industrial Estate, Palayad, Thalassery, Kannur (Dist.), Kerala, India	Phone:0490 234 7990 Mobile:+91 9567 867 998 Email: engineering@moson sgroup.in

12	H & G H & G Technomark Inc, <b>Cherukunnam Asamanoor ,Perumbavoor, Ernakulam, Kerala ( East ) - 683542</b>	0484-2659565
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**De shelling**

1	Sri Bannariamman Industries S. R. Marimuthu (Proprietor) A-11, Private Industrial Estate, Sidco, Coimbatore - 641021	9843266843 9843163037
2	Jagans Innova café company, /82, Malaiveppan Kuttai P.O. Namakkal District, - 637404, Tamil Nadu	08048411253
3	Skyknit Equipment Company P.a. Sangeeta (Proprietor) No. 475- A, Kamarajar Road, Ramanuja Nagar Coimbatore - 641015	9442144440 9442155554
4	Saraa Engineering works, No. 22/10, Kollan Thottam, Nallampalayam, Ganapathy Coimbatore - 641006	07598509504
5	Lakshmi Industrial Equipments No. 22/10, Kollan Thottam, Nallampalayam, Ganapathy Coimbatore - 641006, Tamil Nadu, India	07053120328
6	Om Engineering, No 242, Pushkar Industrial Estate, Phase 1, GIDC, Vatva, Near torrent tower, Ahmedabhad-380016	0995355936
7	Mosons Engineering Industrial Estate, Palayad, Thalassery, Kannur (Dist.), Kerala, India	Phone:0490 234 7990 Mobile:+91 9567 867 998 Email: engineering@moso nsgroup.in
8	Marshall Fowler Engineers India (p) Ltd. Sachin Amanna (CEO) No. 69/ 1, A.V.G. Layout, SIDCO Industrial Estate Post Coimbatore - 641021, Tamil Nadu, India	09953356043
9	H & G H & G Technomark Inc, Cherukunnam Asamanoor ,Perumbavoor, Ernakulam, Kerala (	0484-2659565



	East ) - 683542	
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**Skin peeling machine**

1	Newtech Industries, Durga Complex, Near R. K. Township Road, Yarandhalli, Hennagara Post, Anekal Taluk, Bengaluru-562106,	09643008291
2	Jagans Innova café company, /82, Malaiveppan Kuttai P.O. Namakkal District, - 637404, Tamil Nadu	08048411253
3	Skykmit Equipment Company P.a. Sangeeta (Proprietor) No. 475- A, Kamarajar Road, Ramanuja Nagar Coimbatore - 641015	9442144440 9442155554
4	Sri Bannariamman Industries S. R. Marimuthu (Proprietor) A-11, Private Industrial Estate, Sidco, Coimbatore - 641021	9843266843 9843163037
5	Saraa Engineering works, No. 22/10, Kollan Thottam, Nallampalayam, Ganapathy Coimbatore - 641006	07598509504
6	Mosons Engineering Industrial Estate, Palayad, Thalassery, Kannur (Dist.), Kerala, India	Phone:0490 234 7990 Mobile:+91 9567 867 998 Email: engineering@moso nsgroup.in
7	Pilotsmith India Pvt Ltd. Kalletumkara, Trichur - 680683	04802881908 mech@pilotsmithindia.co m
8	H & G Technomark Inc, Cherukunnam Asamanoor ,Perumbavoor, Ernakulam, Kerala ( East ) - 683542	0484-2659565

**Blanching machine**

1	Rudra Engineers Gat No. 1074/1, Markal, MIDC, Taluka Khed Pune - 412105 Maharashtra, India	Phone: 09623191989
2	Excel Plants & Equipment Pvt Ltd	Phone :

	Gat No. 611, Mouje Kuruli, Chakan M. I. D. C., Tal- Khed Pune (India) - 410501	+(91) - 9145524545 +(91) – 9822094773
3	Shiva Engineers Arun Kulkarni (CEO) T- Block, Plot No. S 33, MIDC, Bhosari, Near Pavana Industrial Complex Pune - 411026, Maharashtra, India	Phone : +(91)-9822499586 +(91)-9011021839
4	Sujay Industries Shed No. A267, 6th Main, 2nd Stage Peenya Industrial Estate, Bangalore - 560058 Karnataka, India	ayaram : 9845195720 Sudhir : 9845201201 info@sujayindustries.com
5	Suan Scientific Instruments and Equipments, P- 814, Ground Floor, Block-A, Laketown, Kolkata - 700089, West Bengal, India	+917210130249
6	Santosh Engineering & Fabricators, A-33, BHANDUP INDL. ESTATE, LBS MARG, BHANDUP (W), Mumbai - 400078	+919867360172

**Mixing vessels**

1	Madhav Engineersc Naresh Bhai (Proprietor) Survey No. 130, Hissa No. A/2, Bhoidapada, Rajivali Road, Vasai East Palghar - 401210, India	Mobile: +(91)-9371709427 +(91)-9673777215
2	Hexamide Agrotech Incorporation Ajay Jadhav (Director) Mr. Ajay Jadhav Patil Plot No. 11, Aditya Industrial Estate, At Post Kumbiwali, Khalapur Navi Mumbai - 410210	Mobile: +(91)-9920407709 +(91)-9920407727
3	Shree Shakti Pharma Equipment Manik Panchal (CEO) Plot No. 406, Road No. 28, Ramnagar, Ramwadi, Near Spearige Company Thane - 400604	Mobile: +(91)-9892809768 +(91)-8452800237
4	Amson Engineering  No. 44/359, Motilal Nagar No. 1, Road No. 10, Near M. N. English High School, Goregaon West, Opposite B E S T Colony, Mumbai - 40010	8048079041
5	Adhisakthi Projects Private Limited	Mobile:

	Senthil Kannan (CEO) RS.No. 40/9, Earikarai Road Pondicherry- 605102, India	+ (91)-9443203221 + (91)-9442223221
6	Reshama Refrigeration Sachin Howal (Proprietor) Sagar Industrial Estate, A-1, Gala No. 8, Dhumal Nagar, Valiv, Vasai East Mumbai - 401208, Maharashtra, India	Mobile: + (91)-8080353330 + (91)-9320222230
7	Pilotsmith India Pvt Ltd. Kalletumkara, Trichur - 680683	04802881908  mech@pilotsmithindia.com

**Hot air oven**

1	Indo - Heat Engineering Sathyapal D. (Proprietor) No. 23/B-5, 2nd Stage, Near Saravana Steels Industrial Suburb, Yeshwanthpur Bengaluru - 560022	Mobile: + (91)-9886578876 + (91)-7676156677
2	Krithish Scientific Company NSK Nagarajan (Proprietor) No. 15, Pugazhendi Street Extension, Sanjay Gandhi Colony, Choolai Pallam, M. G. R. Nagar, Near Ashok Pillar, KK Nagar Chennai - 600078	Mobile: + (91)-9677281660 + (91)-9841324391
3	Vibrant Thermal Engineering S. Venkatraman (Proprietor) No. 220 / F, Kundrathoor Main Road, Chikkayapuram Chennai - 600069	Mobile: + (91)-9444063455 + (91)-9444492000
4	Universe Surgical Equipment Co Vinoth Kumar D. (Partner) No. 86, Old No. 21, Nyniappa Naicken Street, Park Town, Near Kandaswamy Temple Chennai - 600003	Mobile: + (91)-9840745230 + (91)-9043040607
5	Global Scientific Company Nithyanandhan B. (Business Development Manager) 13/187, 5th Street, Kambar Nagar, Kolathur Chennai - 600082	Mobile: + (91)-9176165145 + (91)-9790766267
6	Southern Scientific Lab Instruments P. Manikandan (Marketing Director) No. 7, Sai Nivas, First Floor, Brindhavan Nagar, Near Ashok Nandhavanam, Noombal	Mobile: + (91)-9003028826 Telephone: + (91)-(44)-64550656

	Chennai – 600077	+(91)-(44)-26791793
7	Reliable Enterprises India Ravi Singh (Managing Director) 1188, Bengali Mohalla, Ambala Cantt Ambala – 133001	Mobile: +(91)-8295058814 +(91)-9996120208
8	Patel Scientific Instrument Sanjay Patel (Owner) S - 13, Vivekanand Industrial Estate, , Opposite Vijay Petrol Pump, Rakhial Cross Road Ahmedabad – 380023	Mobile: +(91)-9327538698 Telephone: +(91)-(79)-22730759
9	TEMPSSEN DEVICES T. Ajitha (Manager) S. Ramesh Plot No. 2 & 3, Balaji Nagar, 4th Street, Mettukuppam, Thoraipakkam, CHENNAI Chennai - 600097, Tamil Nadu	Mobile: +(91)-9841201758 +(91)-9444060776
10	Texcare Instruments, Delhi Archana Sachan (Business Head) 107/1 Pocket D, Near Pradhan Ji Ka Bagh, Hastsal Industrial Area, Uttam Nagar Delhi- 110059	Mobile: +(91)-9899309879 +(91)-9310108901 Telephone: +(91)-(11)-65659697 +(91)-(11)-25351525

**Packing machine**

1	Ashvani Packaging Sanjay Saroj (Proprietor) Gala No. 14, Shiv Shakti Society, Opposite D'souza Compound, 90 Feet Road, Sakinaka, Andheri East Mumbai - 400072, Maharashtra	Mobile: +(91)-8080669990 +(91)-9987372609
2	Royal Inks & Equipment Pvt. Ltd. Dhiraj Vadnere (CEO) Satish No. 3/4, No. 2, Varun Apartment, Ashar Estate, Upnagar, Nashik Road Nashik – 422101	Mobile: +(91)-9922969755 +(91)-9922969758 Telephone: +(91)-(253)-2417270 +(91)-(253)-2415102
3	Aman Engineering Works, Maharashtra Z. A. Siddiqui (Proprietor) Ashfaque Estate, Gala No. 2, Opp. Star Plus Building, Near Metro Station, Marolnaka, Andheri East	Mobile: +(91)-9820731622 Telephone: +(91)-(22)-28508239

	Mumbai – 400059	
4	Vishal Packaging Rajesh Rajput (Owner) Plot No. 385C, Bhatia Colony, Near Budho Devi Hospital, Sector- 2, Ballabgarh Faridabad – 121004	Mobile: +(91)-9810364918 +(91)-9540376949
5	Aarzo Engineering Works Parvez Alam (Proprietor) C-319, Sector-10 Noida – 201301	Mobile: +(91)-9810546591 +(91)-9211977522
6	Global Pack Machinery Santosh Mishra (Proprietor) Shop No. 10, Vishal Niwas, Tilak Nagar, 90 Feet Road, Near Tilak Nagar Gate, Sakinaka Mumbai – 400072	Mobile: +(91)-9930719675 +(91)-9820682574 Telephone: +(91)-(22)-69555522
7	Maharani Machines & Textiles Pradeep Bhora (Director) B- 5 & 6, Windsor Plaza, Sansar Chandra Road Jaipur – 302001	Mobile: +(91)-9785398359 +(91)-9694021453 Telephone: +(91)-(141)-2365291 +(91)-(141)-4025292
8	Sevana Electrical Appliances Pvt. Ltd, PB# 2, Kizhakkambalam PO Ernakulam Dist, Kochi Zip/Pin-683 562 Kerala	+91- 484 – 2680780
9	SAMPAK SREE AMBAL MARKETING SAMPAK INDIA PVT.LTD (CHENNAI) SELMAN CHAMBERS A.L.JACOB ROAD COCHIN-682035	+91 484 2382211, 4030212
10	Supertech Packaging Plot No. 79, Jeevan Nagar Wazirpur Road, Nehar Par, Near Sikka Gas Agency, Old Faridabad, Haryana. Zip: 121002	<b>Mob:</b> +91-989 740 0513, +91-987 399 3184  <b>E-Mail:</b> <a href="mailto:supertech.packing@gmail.com">supertech.packing@gmail.com</a>

**\* The above list of machinery manufacturers is indicative and for references. Entrepreneur has to ensure the quality and price of the equipment independently and Coconut Development Board is not responsible in this regard.**

