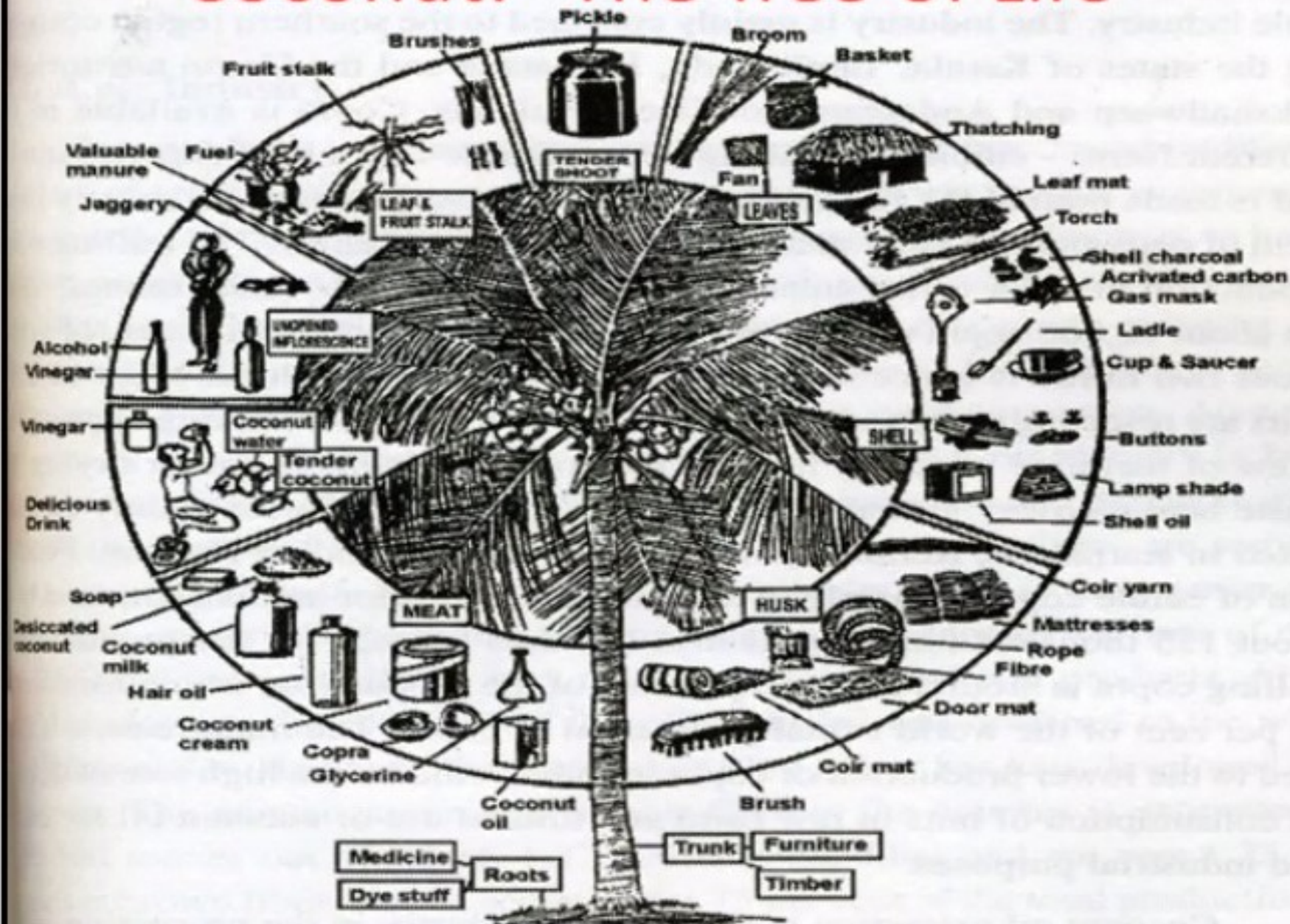
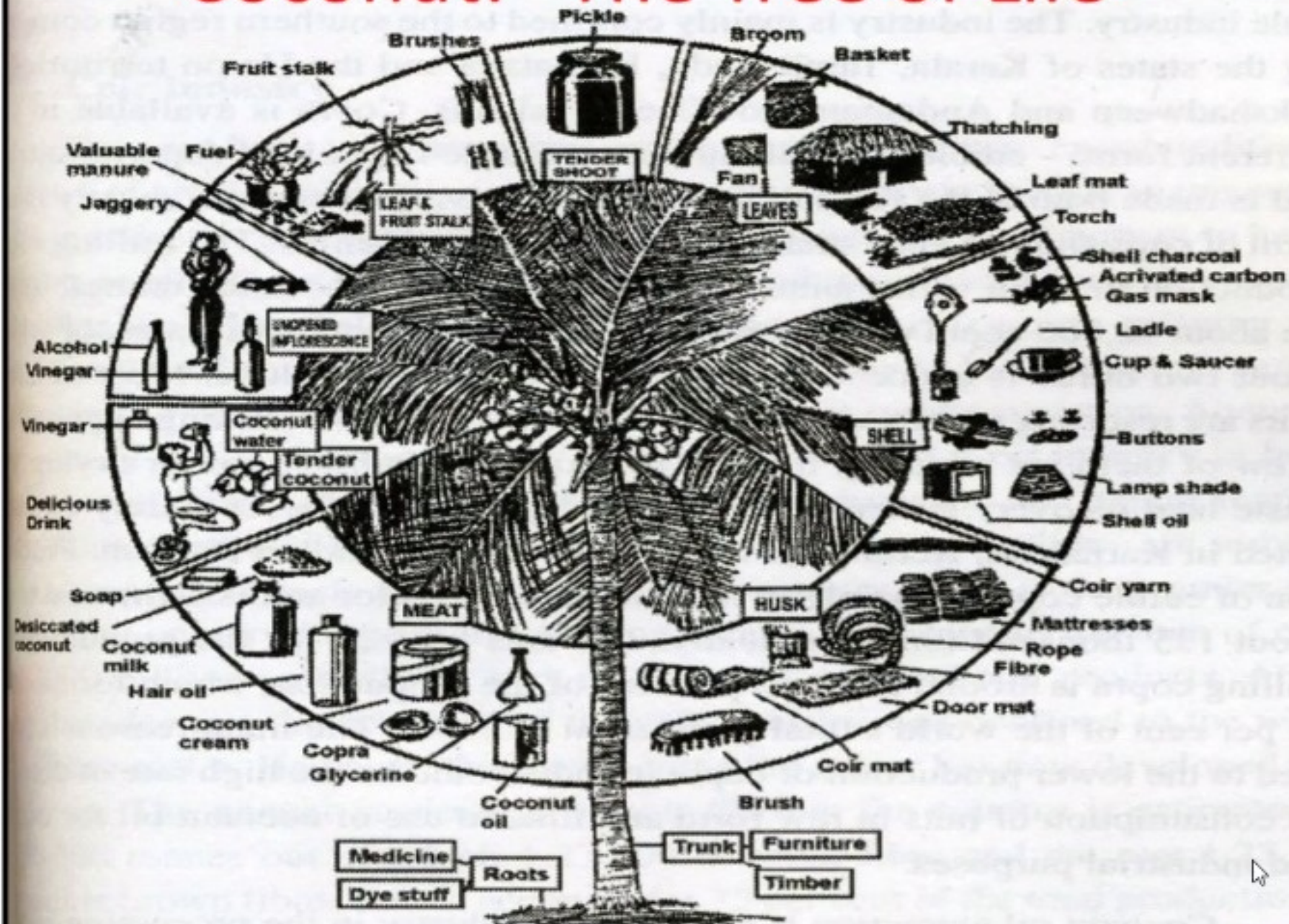


Coconut: "The Tree of Life"

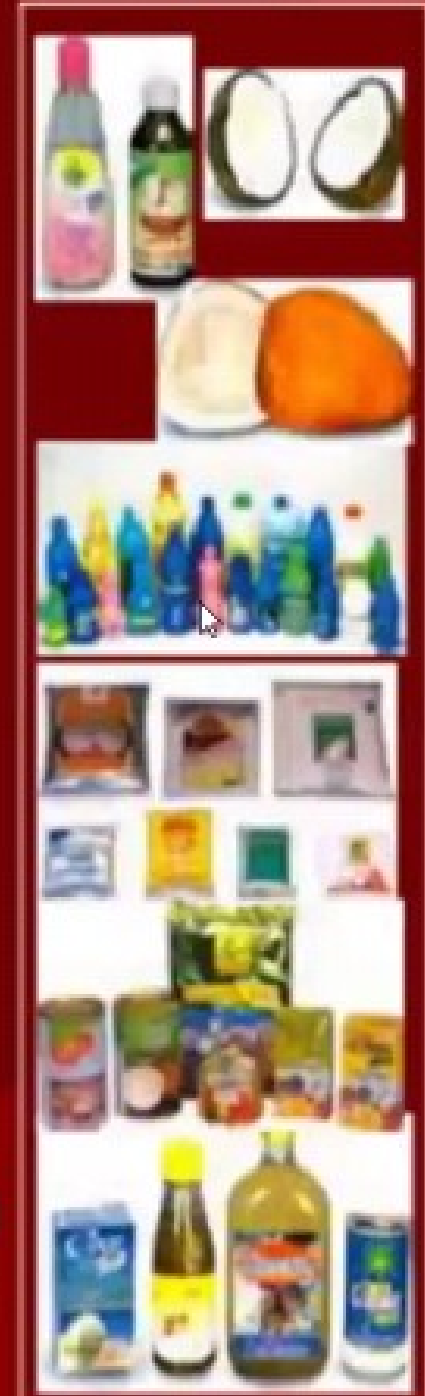


Coconut: "The Tree of Life"



Coconut - A Versatile Crop

- | | | |
|------------------------------|---|---|
| Used as crop | - | food crop, oilseed, fibre |
| | | medicinal crop & beverage crop |
| Coconut leaves | - | for roof and fencing |
| Coconut shell | - | for industrial products, handicraft items |
| Coconut trunk | - | for building materials, flooring materials and handicrafts |
| Coconut inflorescence | - | yield coconut toddy |
| Coconut fruit | - | inevitable item in cultural and social use |



Addition Health Benefits

- **Powerful Against**
 - Antibacterial
 - Antiviral
 - Antifungal Agents
 - HIV Are Sensitive To Coconut Oil

Excellent Moisturizer For Dry Skin

**Coconut Oil Is Absorbed Quickly And Give
Energy Like Carbohydrate**





Value added coconut products



- Size of the Inland market: Rs 83000 million
- Size of the Export Market: Rs 3000 million (Coconut products) and Rs 6400 million (Coir products)
- CAGR : 8%

Consumption Pattern of Coconut

Mature Nut



50%

**Domestic
90%**

**Industrial
10%**



Tender Nut

10%



Copra

35%

Seed & Others

5%

Coconut Dehusker



Copra Dryer



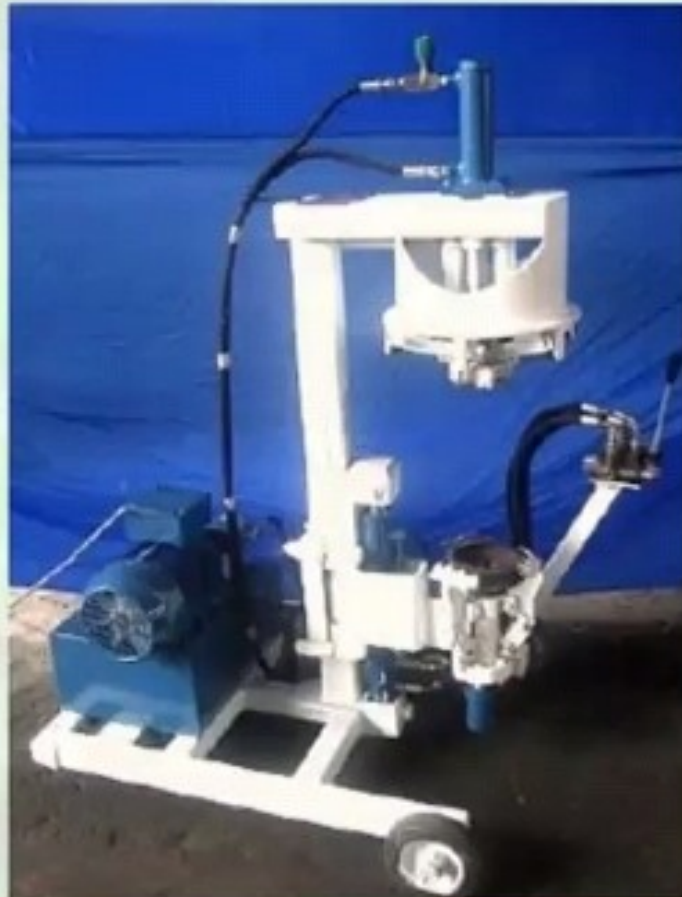
Coconut Processing Processes

- Coconut Milk Extracting
- Virgin Coconut Oil Extracting
- Copra Oil Extracting
- Coconut Coir Processing
- Young Coconut Cutting & Juice Extracting



Coconut Dehusking

- Coconut dehusking machine



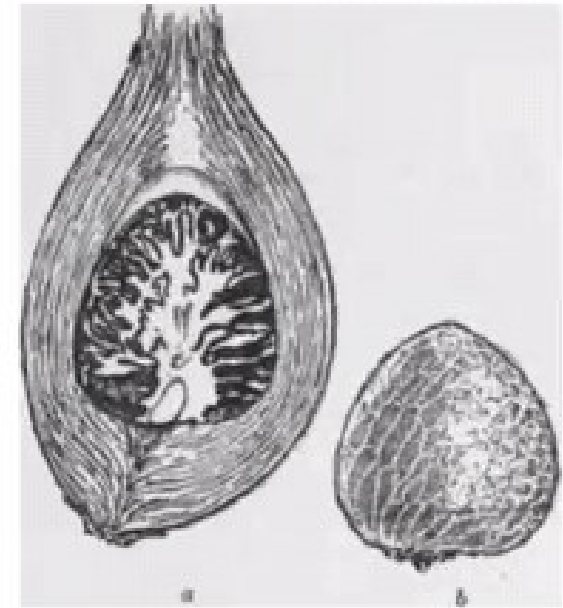


Arecanut



Dried ripe nuts (Kottapak or Chali)

- Ripe nuts harvested
- Dried for 30 to 40 days
- Dehusked
- Grades : Moti, Sriwardhani, Jamnagar, Jini



Immature nuts (Kalipak)

- 6 to 7 months nuts harvested, Dehusked
- Cut, Boiled (thick Pak after boiling)
- Supari given coating of Pak till shiny black colour
- Drying, dark brown, less astringent, crispy

Dried ripe nuts/Chali/Kottapak

- The most popular trade type of arecanut is the dried, whole nut known as chali or kottapak.
- Fully ripe, nine months old fruits having yellow to orange red colour is the best suited for the above purpose.
- Ripe fruits are dried in the sun for 35 to 40 days on dry leveled ground.
- For drying and dehusking, sometimes fruits are cut longitudinally into halves and sun dried for about 10 days, then the kernels is scooped out and given a final drying.



Cireul



Chips One cut



Chips Two Cut



Rough



Mamri



Roasted Cutting



Diamond



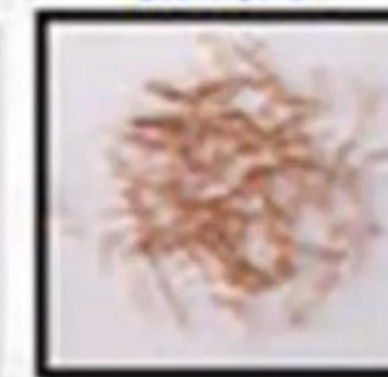
Gutkha



Sadi Cutting



Sali Cutting-1



Sali Cutting-2



Fadcha

PROCESSING OF ARECA NUT (DRY NUT)



Kottapak/chali

• KOTTAPAK/CHALI:-

RIPE FRUITS →

DRY FOR 35-40 DAYS

MARKETED WHEN 12% MOISTURE OBTAINED

FOUND IN:-KERLA,KN,ASSAM,MAHARASTRA.

PAREHA:-

FRUIT CUT LONGITUDINALLY 2 EQUAL HALVES

SUN DRY FOR 10 DAYS →
KERNEL

SCOOP OUT

DRYING OF NUT

FOUND IN:-KERLA AND KERNATAKA.

MECHANICALLY:-7-8 DAYS AT TEMP OF 45-75DEGREE.

Kalipak

- Another form of processing is by making kalipak.
- The nuts of 6 to 7 months maturity with dark green colour are dehusked, cut into pieces and boiled with water of dilute extract from previous boiling;
- a kalli coating is given and dried finally.
- Kali is the concentrated extract obtained from boiling 3 to 4 batches of Kalipak.

- Kali is the concentrated extract obtained after 3-4 batches of boiling.
- The kalipak is known by different names depending on number, shape and size of the cuts.
- Api or unde (without any cuts), batlu (transverse cut into halves), choor (several longitudinal cuts), podi (both longitudinal and transverse cuts) and erazel (transverse thin slices).
- Lylon is another variety made from green nuts which are cut transversely into 5-6 discs and without kali coating.
- During preparation of kalipak, the tannin content is reduced substantially.
- A well-dried product with a dark brown colour, glossy appearance, crisp chewing feel, well-toned astringency and absence of over-mature nuts are rated superior.

KALIPAK (TENDER NUT)



• KALIPAK:-

TENDER NUT



DEHUSKED



CUT IN TO PIECES



BOILED WITH WATER



COATED WITH KALI 3-4 TIMES FOR GLOSSY
APPEARANCE



DRIED IT

Scented supari

- Made from Kalipak or Kotapak
- Spices, aromatic products, oil added



Circular



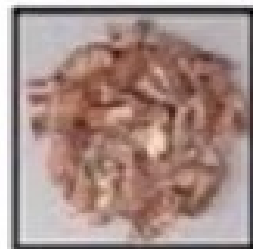
Chips One cut



Chips Two Cut



Rough



Mixed



Roasted Cutting



Diamond



Outline



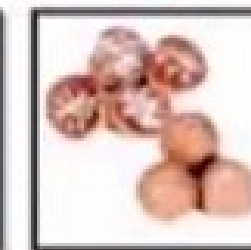
Salt Cutting



Salt Cutting - 1



Salt Cutting - 2



Padcha

SCENTED SUPARI (MADE FROM BOTH CHALI AND KALIPAK)



SCENTED SUPARI:-

DRY NUT



BROKE IN TO BIT



BLEND WITH SPICE, ESSENTIAL OIL AND
FLAVOURING AGENT



PACKED IN BUTTER PAPER

SWEETENING AGENT:-SACCHARINE

FLAVOURING AGENT:-ROSE ESSENCE AND
METHANOL



Dehusker by DBSKKV, DAPOLI

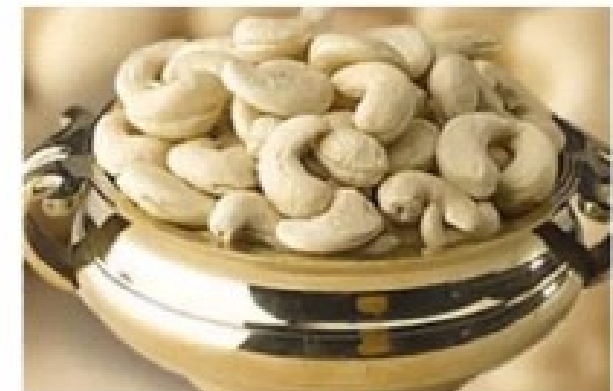
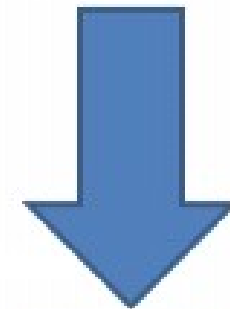
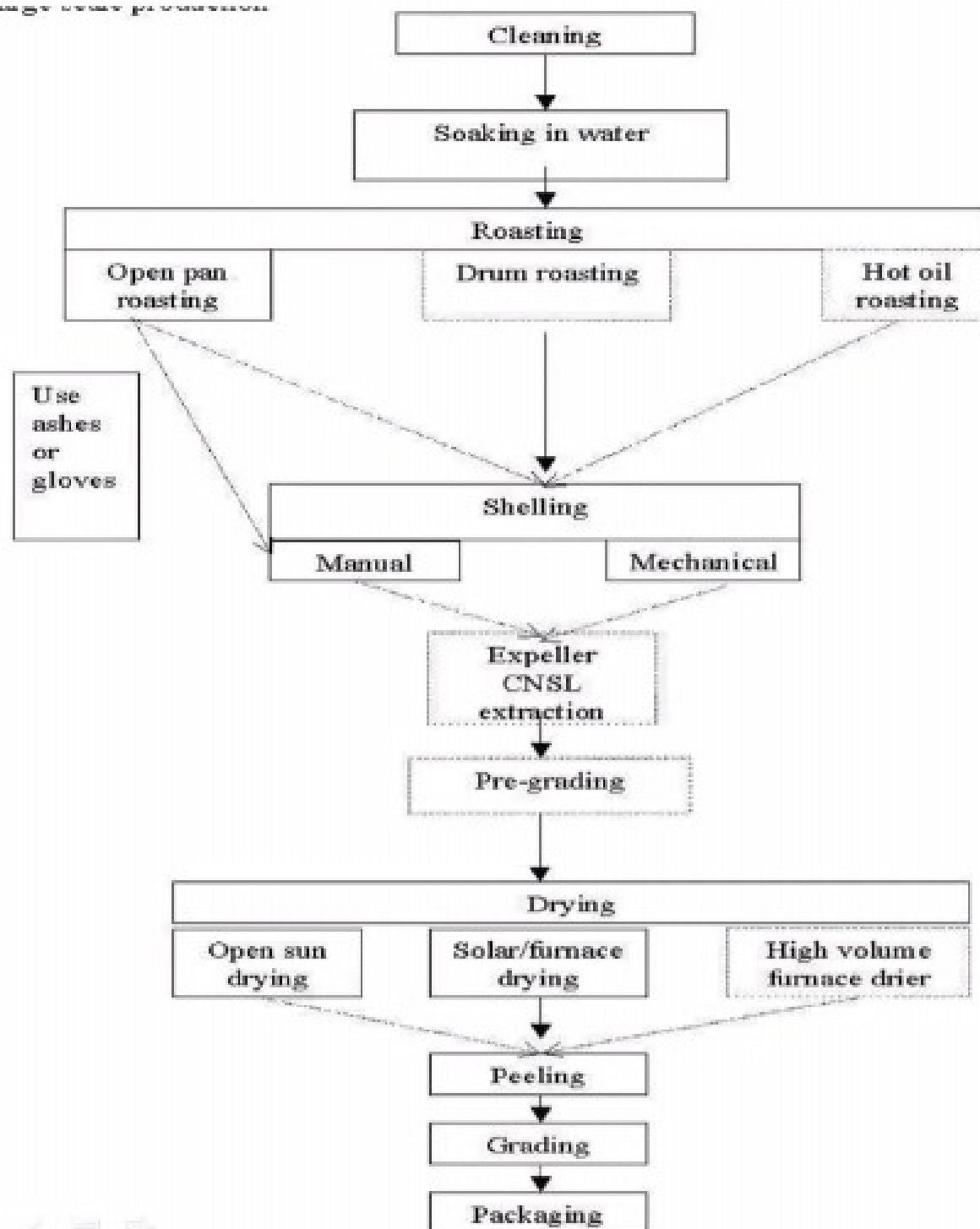




Uses of Arecanut Constituents and Byproducts

- **Tannins:** Polyphenols or tannins from the major constituent of the nut. Tender nut contains tannins 30-37 %, while ripe nuts have only 16-22 %. The areca tannins obtained as byproduct from tender nut processing can be utilized for drying clothes, leather, rope, for making black writing ink along with ferrous sulphate, as an adhesive in plywood manufacture and even as food colour.
- **Fat:** The nuts contain 8-12 % fat, which is extractable with organic solvents like hexane or chloroform. The fat is rich in myristic acid and can be a good source of myristic acid and its derivatives. Refining of fat with alkali makes it edible. It can be mixed with cocoa fat for confectionery products and as an extender to cocoa butter for various products. It can be a substitute for vanaspati in preparations of sweets and biscuits.
- **Alkaloids:** Arecanut has 1.5% of alkaloids such as arecoline, arecoline, arecaidine, guvacine, idoguvacine and guvacolidine. Of them, arecoline alone accounts for 0.24 %. They possess anthelmintic property and are effective against tapeworms and roundworms. It is also used as a CNS depressant drug. It has got antibacterial property and inhibits the growth of *Escherichia coli*, *Staphylococcus typhi* and *Staphylococcus aureus*. The blood sugar lowering effect of arecoline is mentioned in Ayurveda.
- **Areca husk:** The husk of arecanut constitutes 60-80% of the total weight of fresh nut. Several processes have been developed for utilization of areca husk for making hard boards, plastic boards and brown wrapping paper. The husk fibre extracted by soaking in water for 3 weeks and beating with a mallet can be used for thick boards, fluffy cushions and non-woven fabrics. It can be a good source of furfural and xylose for industrial applications.
- **Areca stem and leaf sheath:** Arecanut stem is a useful building material. Its timber can be used for making a variety of elegant utility articles like rulers, shelves and waste-paper baskets, due to its hardness. Hollow stem can be used as drainage and irrigation pipes. A process has been developed at CPCRI, Kasaragod, for making plyboards from leaf sheath for tea chest, suitcase and file board manufacture. The CFTRI, Mysore, has developed a machine for making cups and throw-away plates which can substitute the paper plates.





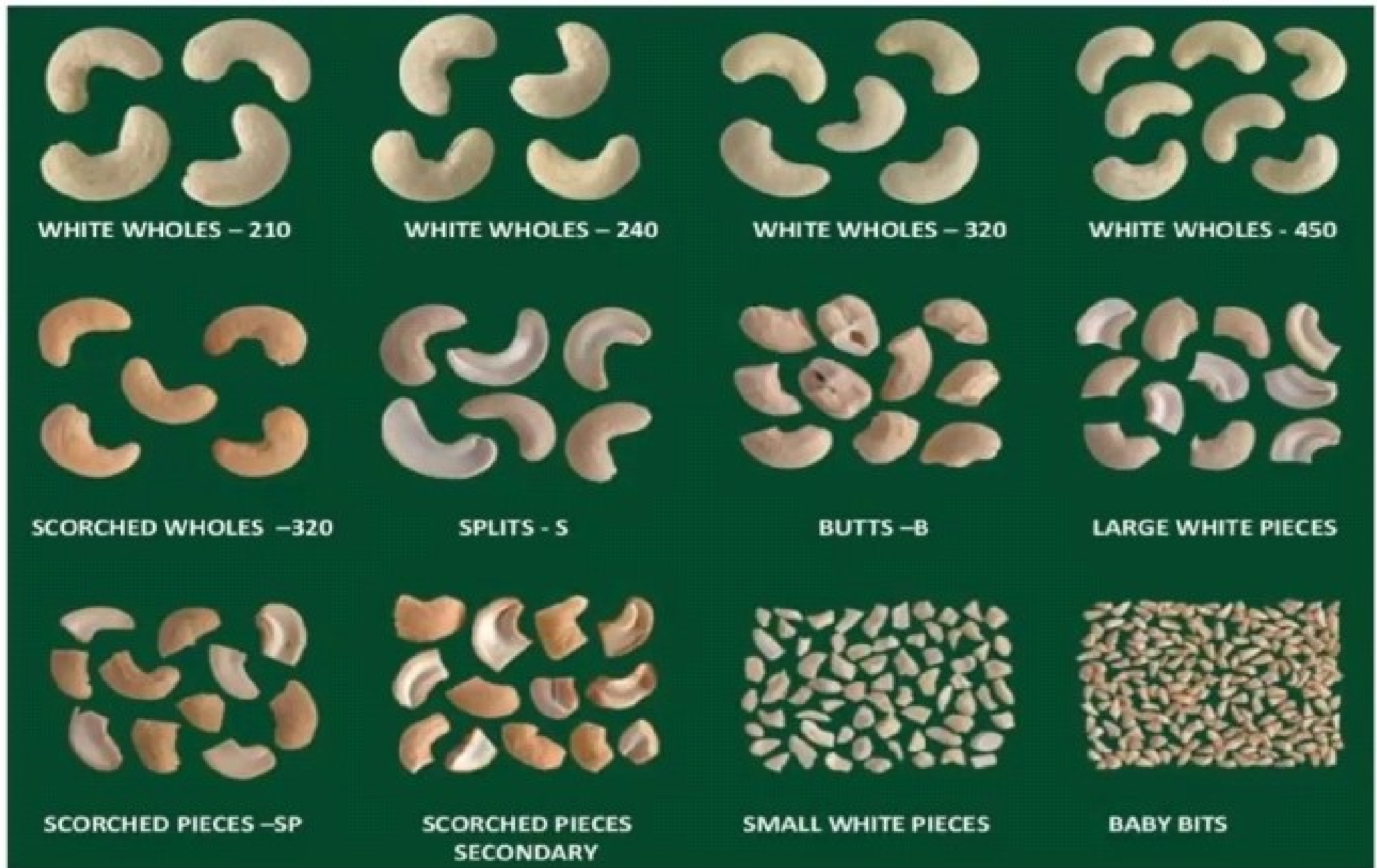
Peeled cashew nuts can be classified into between 11 and 24 grades. These are roughly divided into three groups: white whole, white pieces and scorched grades. The three groups are further broken down as follows

kernels per pound (equivalent to 454 g)

White wholes	
W180 (super large)	Between 120 and 180 kernels per lb (266 to 395 per kg)
W210 (large)	Between 200 and 210 kernels per lb (395 to 465 per kg)
W240	Between 230 and 240 kernels per lb (485 to 530 per kg)
W280	Between 270 and 280 kernels per lb (575 to 620 per kg)
W320	Between 300 and 320 kernels per lb (660 to 706 per kg)
W450	Between 400 and 450 kernels per lb (880 to 990 per kg)
White pieces	

Butts	A kernel broken cleanly across the section of the nut.
Splits	A kernel which has broken down the natural line of cleavage to form a cotyledon.
Pieces	A kernel which has broken across the section but does not qualify for a butt and is above a specific size.
Small pieces	As above but smaller.
Baby bits	Very small pieces of kernel which are white in colour.
Scorched grades	
Wholes	Whole kernels that have been slightly scorched during the process but are otherwise sound. These are not graded according to size.
Butts	Butts that have been scorched.
Splits	Splits that have been scorched.
Pieces	As for pieces, but which have been scorched during processing and contain all but the very small pieces.

- scorched wholes, grade 2: a whole kernel that is discoloured but otherwise sound,
- dessert wholes: a whole kernel with a black spot or comparably more scorched than the above,
- dessert pieces: pieces that are discoloured as above.





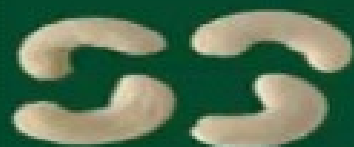
INDIAN CASHEW NUTS GRADE CHART



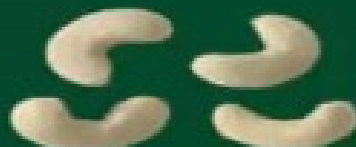
WHITE WHOLE - 180



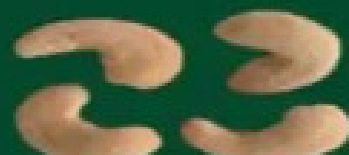
SCORCHED WHOLE (SW) - 180



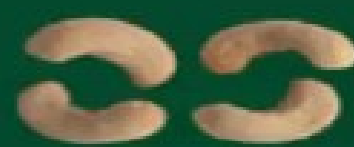
WHITE WHOLE - 210



WHITE WHOLE - 240



SCORCHED WHOLE (SW) - 240



SCORCHED WHOLE (SW) - 210



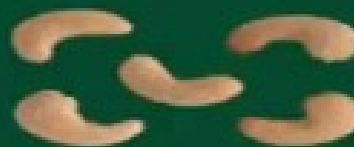
WHITE WHOLE - 320



WHITE WHOLE - 450



SCORCHED WHOLE (SW) - 450



SCORCHED WHOLE (SW) - 320

[in 1005328919.trustpass.alibaba.com](http://1005328919.trustpass.alibaba.com)



SPLITS (S)



SCORCHED WHOLE (SW)



SCORCHED WHOLE SECOND (SSW)



SCORCHED SPLITS (SS)



BUTTS (B)



LARGE WHITE PIECES (LWP)



SCORCHED PIECES (SP)



SCORCHED BUTTS (SB)



SCORCHED PIECES SECOND (SPS)



SMALL WHITE PIECES (SWP)



SCORCHED SMALL PIECES (SSP)



BBY BUTTS (BB)

Harvest

- 3rd year onwards
- Fly picking- Oct- Feb
- Main - December
- Most done by hand
 - Ripe berries only
 - Pick every 8-10 days
 - In Brazil, allow cherries to dry on tree
- Machine harvest in Brazil
 - oscillating fingers
 - 7-9% immature fruit



Yield

Arabica
483 kg /ha

Robusta
491 kg/ha

Coffee Processing

Bean Processing done on the Farm



Wet Method

- **Start on Harvest Day**
 - Separate trash and defective berries by flotation
 - Good berries are depulped same day
- **Fermentation**
 - Only to remove mucilaginous covering
 - Excessive heat destroys flavor

Wet Method

- **Washed**
 - Water under pressure
- **Dried - spread out to dry**
 - Sun
 - Artificial heat
- **Best quality**
 - Gives coffee that is cleaner, brighter, fruitier, better acidity



Dry Method (Natural Method)

(Most traditional and least expensive)

- **Drying** (Indonesia, Ethiopia, Brazil, Yemen)
 - Initial drying done on trees
 - Spread on concrete, tile or matted surface
 - 2" thick and constantly raked
 - 3-15 days until specific moisture
 - Pergamino is dry and crumble



Dry Method

(Most traditional and least expensive)

- Remove pericarp
 - Mortar and pestle or machine
- Chaff removed via winnowing and picking
- Sorted by size, shape, density and color
- Packed in 60 kg bags for processing



Industrial Processing

(Usually by importing company)

- **Grading process**
 - Redry and clean the parchment beans before using
 - Remove testa (hulling and polishing)
 - Sort on size and density
- **Roasting (370°F to 540°F)**
 - Removes moisture
 - Light roast lose 3-5% moisture
 - Dark roast lose 8-14% moisture
 - Time (up to 30 min) determines flavor
 - Decreasing the amount of
 - Chlorogenic acid
 - Trigonelline
- **Grinding**

Industrial Processing

(Usually by importing company)

- **Caffeine Reduction**
 - Add water to beans
 - Extract with
 - Methylene chloride and ethyl acetate
 - Residual solvent removed via low level steam drying
 - Caffeine can be recovered with water extraction of organic solvent

Industrial Processing

(Usually by importing company)

- **Once ground the beans lose flavor rapidly**
- **Grinding**
 - **Coarse to medium (600-1100 μm)**
 - Home percolators
 - **Fine grinds (Automatic percolators)**
 - Europe (400-500 μm)
 - USA (600-700 μm)

Industrial Processing

(Usually by importing company)



- **Instant Coffee**
 - Extract soluble solids, volatile aroma and flavor with water
- **Drying**
 - Drum drying - poor appearance
 - Spray drying - loses flavor volatiles
 - Freeze drying - best product
 - Best retention of flavor
 - Produces granules
 - No evaporation so no loss of flavor
 - Coffee oil for head space aroma





Green
unroasted



Starting
to pale



Early
yellow



Yellow-tan
stage



Light
brown



Brown



1st crack
begins



1st crack
underway



1st crack
finished



City+
roast



Full city
roast



Full city+
roast



Vienna
Light French
roast



Full French
roast



Fully
carbonized



Immanent
fire!

