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Cashew Nut Processing

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Processing of cashew nut India pioneered cashew nut processing and was the first country to export cashew kernels to the global market. Raw cashew nuts (RCN) collected from farms are quickly processed to preserve quality. Farmers separate the nut from the cashew apple and sun-dry them before sale. The processing industry then converts raw nuts into kernels through a series of well-defined steps (Anon., 2019).

Drying

Drying is the first step after procurement. Raw cashew nuts are dried to a maximum moisture content of 9% to prevent deterioration during storage. This can be done on clean concrete floors, tarpaulins, or using modern electric drying machines. Well-dried nuts are packed in jute sacks for warehousing and year-round use.

Pre-Treatment

Pre-treatment includes calibration, warehousing, and heat treatment.

- **Calibration**: Nuts are sorted by diameter (18 mm, 20 mm, 22 mm, 24 mm, >24 mm) to ensure uniformity for mechanized shelling, reducing breakage and facilitating grading.
- **Warehousing:** Calibrated nuts are stored in jute bags (80 kg each) on pallets, with proper spacing from walls and roofs to prevent moisture absorption, scorching, and pest infestation. Ventilation and fire safety are essential.
- **Heat Treatment:** Steaming, drum roasting, or oil bath roasting makes shells brittle, easing kernel separation. Steaming also concentrates the corrosive cashew nut shell liquid (CNSL) into a jelly-like form, protecting workers' hands

De-Shelling

De-shelling separates kernels from shells and aims to maximize whole kernels while minimizing breakage. Shells are removed using manual tools or mechanized machines, with manual separation often required due to incomplete machine efficiency. Protective measures include applying vegetable oils or wearing gloves to prevent skin irritation from CNSL. Kernels are categorized into whole, broken, and rejects. Shells and residual CNSL are repurposed as fuel, biofuel, or processed further, enhancing sustainability.

Oven drying and humidification

Kernels undergo thermal shock, alternating drying and humidification, to loosen the testa without damaging the kernel. Special ovens (Borma) or thermal shock chambers combine these steps efficiently, facilitating subsequent peeling.

Peeling

Peeling removes the testa from the kernel using mechanized machines and manual methods. Mechanized peeling uses friction and air pressure but may leave residues, requiring manual finishing. Thermal shock effectiveness and kernel peelability influence peeling efficiency, with mechanized peeling resulting in more broken kernels than manual methods.

Grading

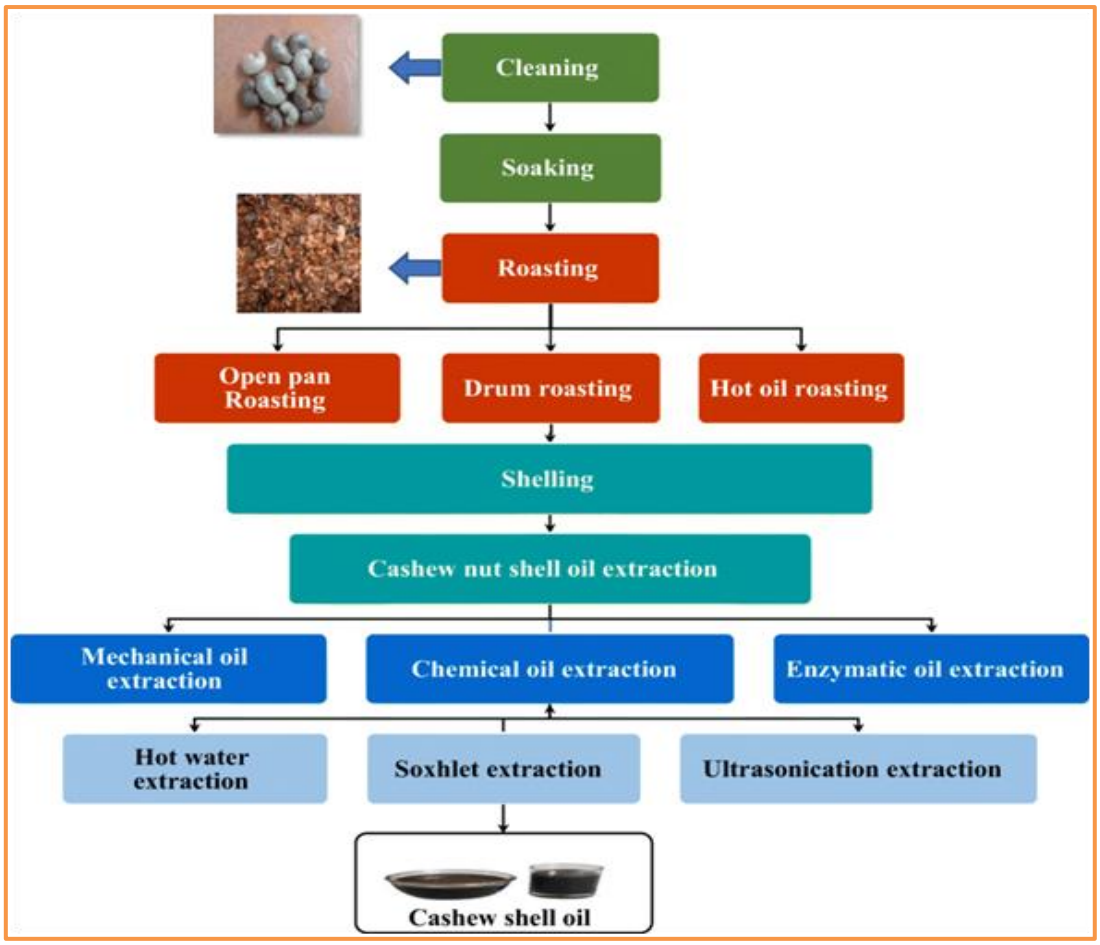
Grading classifies kernels by color, shape, and size. Color categories include white (W), scorched (S), and desert (D), while shape categories include whole (W), butts (B), splits (S), pieces (P), and baby bits (BB). Size is expressed in nuts per pound (180, 210, 240, 320, 450). For example, WW180 refers to a White Whole kernel of size 180.

Classification order

A white colored whole kernel of size 180 will be referred to as WW180, meaning White, Whole, size 180. Another example of a grade is SW240, meaning Scorched, Wholes, size 240

Packaging

After grading, kernels are conditioned to 3.5-4% moisture to prevent breakage or clumping, fumigated to control pests, and packed according to buyer requirements. Vacuum packing with CO_2 and nitrogen extends shelf life, while tin packaging is preferred in Gulf countries. Packaging facilities must comply with international food safety standards to ensure quality and export readiness.



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