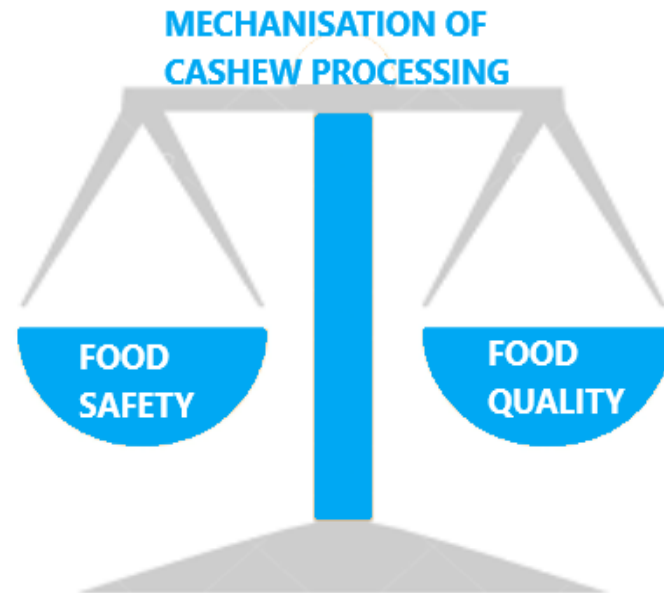


MECHANISATION OF CASHEW PROCESSING : BALANCING QUALITY & FOOD SAFETY EXPECTATIONS



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MECHANISATION



BOON OR BANE ?



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- ▶ Before the advent of mechanisation cashew processing was confined to a few geographical regions where skilled manpower was available.
- ▶ Kollam and Mangaluru were the traditional centres of cashew processing due to availability of skilled manpower.



- ▶ The advent of mechanisation brought in dramatic changes.
- ▶ Cashew processing spread beyond the borders of traditional regions.
- ▶ It spread to many non-traditional regions.



- ▶ Vietnam is the trendsetter in mechanised processing of cashew nuts.
- ▶ Raw cashew nut producing countries in Africa also followed the trend.
- ▶ India slowly switched over to semi-mechanised / fully mechanised processing.



Mechanised processing -Advantages

- ❖ Skill of workers not relevant.
- ❖ Volume of production could be increased manifold.
- ❖ Processing plants could be located anywhere.



- ❖ Unit cost of production considerably reduced.
- ❖ Larger production volume with less number of labour force.



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ISSUES / PROBLEMS IN MECHANISED PROCESSING



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CONTAMINATION FROM CNSL DURING SHELLING

- ❖ **CNSL contamination of kernels is a serious issue and buyers have strong concern about it.**



REMEDIAL ACTION

- Shelling machines to be meticulously maintained.
- Cutting blades monitored at frequent intervals to ensure that shell oil does not contaminate the kernels
- Innovative designs to ensure shelling with perfection avoiding spillage of CNSL on kernels





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WEAR AND TEAR OF METAL PARTS OF THE MACHINES

- ❖ Metal particles may get into the product contaminating it



REMEDIAL ACTION

- Monitoring the condition of cutting blades, peeling blades at the start of work and at the end of each batch of production.
- Checking for breakage of blades at frequent intervals and replacing broken blades.
- Metal detector to be installed at the filling station and efficiency of metal detector to be continuously monitored.





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PRESENCE OF PARTIALLY PEELED, UNPEELED KERNELS

- ❖ Processors often complain about the presence of partially peeled and unpeeled kernels which have to be manually peeled.
- ❖ Accumulation of husk dust in peeling machine leading into insect infestation



REMEDIAL ACTION

- ▶ Improvement of efficiency and effectiveness of the peeling machines
- ▶ Innovative designs of peeling machines required.
- ▶ Husk dust to be removed for every batch of production and machine and surrounding areas scrumptiously cleaned.





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CONTAMINATION FROM LUBRICANTS AND OILS

- This is a matter of serious concern of the domestic as well as export market.
- Even when food grade lubricants are used dripping of lubricants into the product is highly objectionable.



REMEDIAL ACTION

- ▶ Cleaning and lubricating the machines has to be done with meticulous care.
- ▶ SOP has to be displayed at critical points to alert the workers and operators
- ▶ Training of workers at required frequency and evaluating the efficiency of training.



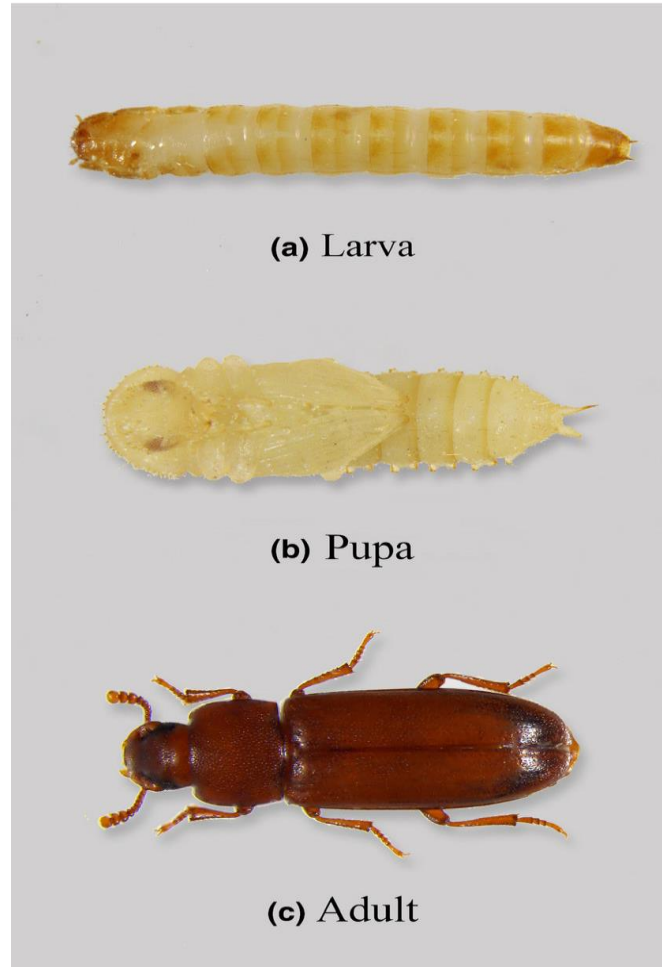


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BREAKAGE OF KERNELS

- ▶ Compared to manual processing more breakage in mechanised processing.
- ▶ New designs of mechanised plants have considerably reduced percentage of broken kernels.
- ▶ There is still scope for further improvement





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VULNERABLE AREAS FOR INSECT HIDE OUT AND BREEDING

- ▶ In a mechanised plant there are areas in and around machines not easily accessible for cleaning.
- ▶ Dead spaces in the machinery often ignored while cleaning.
- ▶ Such areas become the focal points of insect breeding.



REMEDIAL ACTION

- ▶ Schedule of cleaning to be followed meticulously.
- ▶ Monitoring of efficiency of cleaning to be done regularly.
- ▶ Monitoring of presence of insects in vulnerable areas to be done following laid down schedule.





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CHEMICAL CONTAMINANTS

- ▶ Lubricants are essential for smooth and efficient running of machines.
- ▶ Food grade lubricants are mandatory required by food safety regulators.
- ▶ Tendency to use low quality food grade lubricants creates hazards.
- ▶ Lubricants used may have to comply with Kosher and Halal requirements depending upon the country of export





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DUST PROBLEM

- ▶ Mechanised processing generates dust much more than manual processing.
- ▶ Dust would settle on products as well as machines.
- ▶ Critically important to control dust generation through appropriate measures.



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CONTAMINATION FROM PACKING MATERIALS

- ▶ Buyers of international markets are concerned about the presence of aromatic hydrocarbons in foods since they are carcinogenic.
- ▶ Food packaging materials, food containers and food contact surfaces may act as source of migration of aromatic hydrocarbons.
- ▶ Ensure packing materials, containers and food contact surfaces are food grade and no migration of aromatic hydrocarbons takes place.



PREVENTIVE ACTION MONITORING OF MOAH AND MOHA



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MOAH -

Mineral Oils Aromatic Hydrocarbons

MOSH -

Mineral Oils Saturated Hydrocarbons



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- ❑ It is reported that **MOSH / MOAH** have chances of entering the food chain and migrate into foods.
- ❑ There are several path ways which may include jute bags or cardboard boxes.
- ❑ Another path way is fossil fuels.

- ❑ Though it is unlikely that in the cashew processing operations MOSH / MOAH get access to cashew kernels.
- ❑ Monitoring for the presence of MOSH/MOAH to be done as required by EU regulations.
- ❑ It is felt that the processor can declare and certify that the product is in compliance with EU guidelines for MOSH/MOAH.



Monitoring for PHTHALATES



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- ▶ Phthalates are found in plastic food storage containers, detergents nail polish etc.
- ▶ When plastic containers, conveyer belts etc gets heated phthalates are generated.
- ▶ Hence containers/conveyers to be protected from getting heated.



MICROBIOLOGICAL HAZARDS:

PREVENTIVE ACTION ENVIRONMENT MONITORING



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- ▶ Processing plant to be categorised as High Risk Zones and Low Risk Zones
- ▶ Environmental monitoring for pathogens to be done at required frequency.



HIGH RISK ZONE

Zone I

Zone II

LOW RISK ZONE

ZONE III

ZONE IV



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Zone I (Direct food contact surfaces)

- Conveyer belts
- Grading tables
- Filling tables
- Aspirator
- Metal detector
- Primary Packaging Materials (flexi bags)
- Sieves
- Workers Hands
- Crates
- Bins Holding Kernels
- Crates and Receptacles



Zone II (Non product contact surfaces)

- Exterior of processing equipment
- Equipment control panels



Zone III (Non product contact surfaces)

- Hand Carts
- Houses
- Walls
- Floors
- Drains
- Trucks transporting Material



Zone IV- (Areas outside the product processing rooms)

- Workers rest room
- Aprons
- Foot wears
- Cafeteria
- Entry & Exit Passages
- Loading Bays
- Finished product Storage area



In the event of **Positive** results

Corrective **A**ction **P**reventive **A**ction to be carried out.



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NEED FOR INNOVATION IN MECHANISED PROCESSING

- ▶ Mechanised processing is gaining wider acceptance by the processors.
- ▶ There is need for innovation and more efficient design of machines to avoid problems outlined in the discussion.
- ▶ Use of AI (Artificial Intelligence) and Robotics may be waiting in the wings in the cashew processing industry.

