



# Marine *Newslink*

FEBRUARY 2022

FEATURE  
ARTICLE

Coconuts

PHOTO(S)  
OF THE  
MONTH

Coconuts and its  
transportation

BACK-  
TO-BASICS

Question of  
the month



Coconuts are the stone fruits of the coconut palm of the palm family, which grow best in tropical coastal regions (salt spray). The native habitat of the coconut palm is not known because coconuts can float for considerable distances in seawater without losing their ability to germinate. As a result, coconuts palms are found on tropical beaches, worldwide.

As many as 50 – 120 fruits can harvest from a single coconut palm. Each fruit may weigh from 01 – 2.5 kg. The coco-de-mer or Seychelles double coconut is the largest coconut and may weigh as much as 20 kg

A coconut is enclosed in a leathery, glossy outer skin (exocarp), which can be any colour from yellow green to yellow-brown and is watertight. Under the exocarp is a spongy, fibrous husk (coir) or mesocarp, which is 4 – 6 cm in thickness. This layer corresponds to the flesh (pulp) of other fruit. To extract the actual fruit, fibrous husk is removed from the hard nut. This fibre can be used further processed to produce carpeting, mats and has now found many households uses as well as industrial uses. Removal of the coir reveals the familiar coconut. The outer layer of the coconut is a brown, very hard endocarp, approx. 0.5 cm thick, usually rounded, triangular stone, the blunt end of which has three „eyes“, i.e., germ pores set in pits.

Moving inwards, the solid endosperm, an oily layer 1 – 2 cm in thickness which is protected by a brown seed coat and once dried, yields copra. The seed coat contains antioxidants which protect the oil-rich seed from atmospheric oxygen so preventing it from becoming rancid (oxidative rancidity).

The kernel is hollow and 95% full of clear coconut milk (liquid endosperm). Coconuts are living organs in which respiration processes predominate, because their supply of new nutrients has been cut off by separation from the parent plant. As ripening continues, the coconut milk solidifies in the fruit to form white kernel or flesh. Once all the milk has solidified, the flesh takes on a soapy flavor, becomes inedible and is worthless.

At 0°C and a relative humidity of 90%, coconuts have a storage life of up to 2 months, but only of approx. 2 weeks at storage temperatures of 5 – 25°C.

## **COPRA**



Copra is produced from the dried coconut flesh. The coconut is de-husked, hard & the brittle shell is exposed, and this can be split open. The coconut water is drained, and the flesh attached to the shell is dried. During the drying process, the flesh shrinks and is easily detached or scooped out from the shell.

The copra quality is influenced by the method and the manner of drying the flesh. Improper drying may result in contamination of the flesh with certain harmful aflatoxin producing moulds, including the dangerous yellow-green mould, *Aspergillus flavus*. Aflatoxin is harmful to both humans and animals. It is therefore extremely important the coconut flesh be properly dried.

The three common methods of drying are sun drying, kiln drying and hot air drying. Small planters typically use sun drying or kiln drying methods. Larger producers may use hot air dryers. During drying, the moisture content of the coconut flesh is reduced from about 50% down to 6%.

In drying copra using kiln dryers, it is important to use a clean source of fuel and minimize the amount of smoke that passes through the drying coconut flesh. The colour of the dried copra will depend on the source of fuel and cleanliness of the smoke. The colour of copra obtained from hot-air dryers is typically whiter than from kiln dryers since the coconut flesh is dried by uncontaminated hot air that passes through the coconut flesh. Since smoke does not come in contact with the flesh, the copra produced from hot-air dryers is clean and white.

The copra can be shipped in 5-ply kraft paper bags with a polythene liner.

### **Self-heating / Spontaneous combustion**

Oil content: 30 – 40%

Due to the high oil content in the copra layer, coconuts tend to self-heating and may behave like a substance from class 4.2 of the IMDG Code.

*Class 4.2 includes: Pyrophoric substances, which are substances, including mixtures and*

*solutions (liquid or solid), which, even in small quantities, ignite within 5 minutes of coming into contact with air. These substances are the most liable to spontaneous combustion & Self-heating substances, which are substances, other than pyrophoric substances, which, in contact with air without energy supply, are liable to self-heating. These substances will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).*

The self-heating of coconuts requires only a small seat of moisture, hence within few hours heating may occur at moist points. Fat decomposition in coconuts leads to the risk of self-heating and, ultimately, to a cargo fire.

If the critical water content of coconuts is exceeded, it promotes hydrolytic/enzymatic fat cleavage. Additional action of light and heat may accelerate this process. Free fatty acids sometimes have an unpleasant door and taste. In the event of extended storage or improper cargo care, these cause the cargo to become rancid.

Fresh coconuts with a high water content lead to rapid self-heating and may also ignite. Self-heating of coconuts leads not only to a reduction in the utility value of this product (rancid odour and taste) but also has a qualitative and quantitative effect on oil yield. The colour and bleachability of the oils are also negatively affected. The oil obtained complicates refining of the crude oils in subsequent processing.

Hydrolytic/enzymatic fat cleavage may be limited by low temperatures; however, this may only be affected to a limited degree during transport. It is therefore important to ensure storage stability by complying with the limit values for the water content of the goods.

Food components frequently react with atmospheric oxygen in spoilage processes. It is therefore absolutely essential to store coconuts in the dark and to protect them from oxygen and metal parts, or otherwise they become brown-coloured and develop a rancid odour and taste.

### USES

Fresh coconuts are mainly consumed raw. Further coconut products: sterilized coconut milk for alcoholic drinks (e.g. pina colada), desiccated coconut, coconut fat, coconut oil, coconut fibres, copra.

### PACKAGING



Coconuts are packed in various types of containers, depending on the market destination. Coconuts are packaged in, among other things, bags (coconut fiber netting bags containing 60 - 100 nuts, 50 kg jute polysacks).

Domestically marketed water coconuts may be sold in bulk or packed in large poly or mesh sacks of known fruit count per sack.



In order to ensure safe transport, the bags must be stowed and secured in the means of transport in such a manner that they cannot slip or shift during transport. Attention must also be paid to stowage patterns which may be required as a result of special considerations, such as ventilation measures.



When in bulk, the fruit is usually loaded directly onto the truck and transported to the destination market. However, this requires considerable manual labour to load and unload the truck. In large-scale operations, the fruit in large wooden crates, placed over pallets.

### HANDLING

Coconuts are extremely sensitive to pressure, impact and jolting/vibration. Incorrect handling quickly results in smashed and burst fruit, which are worthless and also give

rise to mold and rot on adjacent, unblemished nuts. There is also a risk that the nuts will burst under excessive stack pressure. No hooks should be used with bagged cargo, so as to prevent damage to the bags and loss of volume.



In damp weather (rain, snow), the cargo must be protected from moisture, since it may lead to mold, spoilage and self-heating as a result of increased respiratory activity.

### **TRANSPORTATION**

Care of the Coconut during transportation must be aimed at keeping decomposition processes at the lowest possible level, so as to keep within limits any losses in quality caused by the emission of CO<sub>2</sub>, heat and water vapor.

In order to ensure ideal transport conditions, coconuts should be treated as refrigerated

cargo. If appropriately equipped means of transport are available, they may also be transported conventionally, provided that a cool (5 – 25°C) and well-ventilated cargo hold is used.



Refrigerated container with fresh air supply. Also, possible (but not ideal): ventilated containers (coffee containers), if protection against solar radiation is ensured (risk of self-heating and spoilage due to bursting).

Coconuts should not be exposed to direct solar radiation or stowed near heat sources, else they would burst, leak and consequently arrive at the port of destination without coconut milk.

If the coconuts are not completely dry, they must be kept away from moisture-sensitive cargoes. Particular care should be exercised to ensure not to stow them close to dry sugar,

nor close to other moisture-sensitive cargoes, because the nuts release water vapor and may self-heat.

Seawater (spray), rain and condensation water (ship or container sweat) promote hydrolytic/enzymatic fat cleavage, which leads to self-heating due to increased respiration and promotes mold growth. If mold penetrates the shell, it will make the fruit inedible.

An excessive intrinsic moisture content of the nuts and the consequent heat result in germination.

If wet damaged in transit, coconut will develop mould and become rancid. Coconut is liable to become yellow and rancid with age, but only after several years.

Insect infestation generally occurs during storage prior to loading and may cause considerable damage. The flesh of coconuts which have become excessively moist may

also be infected with mold spores before shipment. Mold penetrates the shell making the flesh musty and thus inedible.

Prone to infestation by weevils. Weevils are not inherent in the commodity but penetrate from outside. Infestation may be due to the copra beetle and the sawtooth corn beetle which will attack the coconut if it is in proximity to infested commodities. Infested coconut can usually be screened and fumigated. In order to avoid contamination at source there must be strict cleanliness and prompt closure and sealing of bags after filling. After packing the coconut should be kept clear of any commodity liable to be infested.

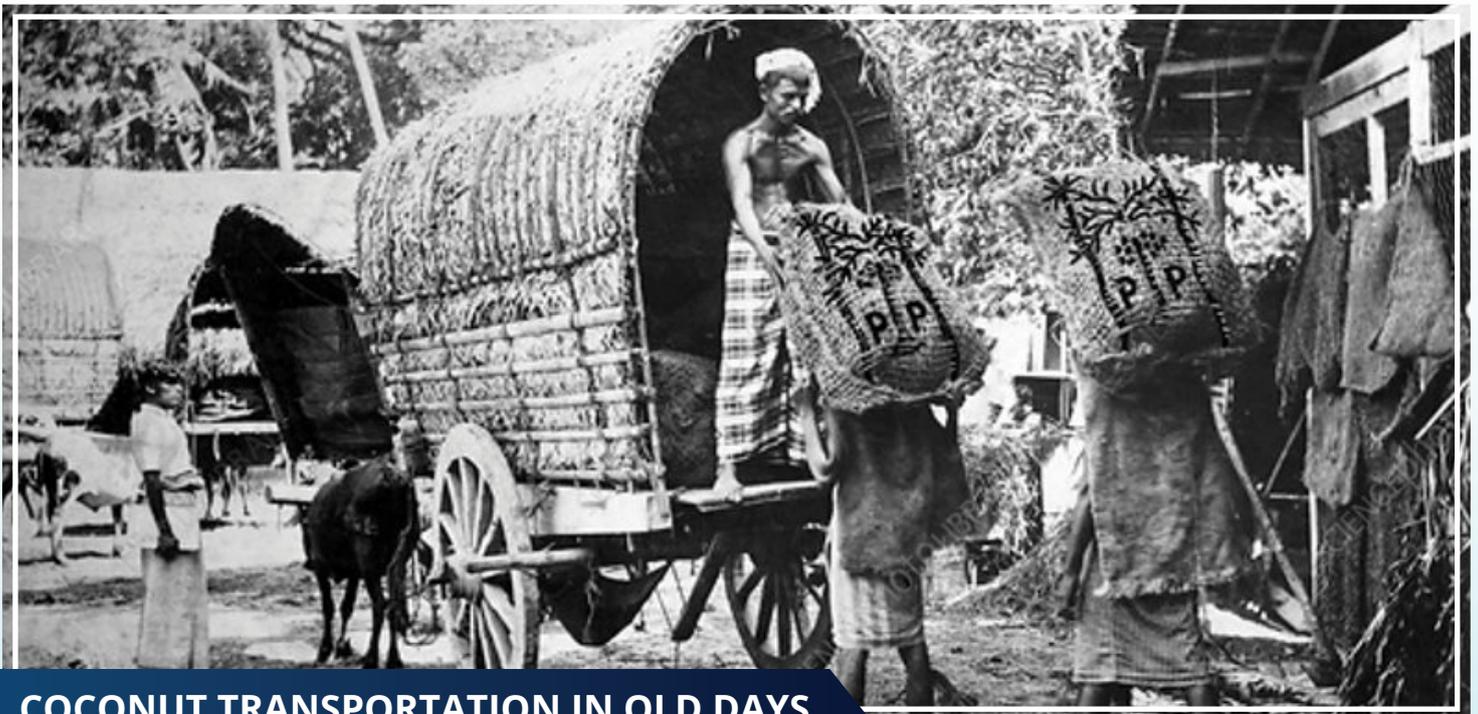
The quarantine regulations of the country of destination must be complied with and a phytosanitary certificate and fumigation certificate may have to be enclosed with the shipping documents. Information may be obtained from the phytosanitary authorities of the countries concerned.



## PHOTOS OF THE MONTH



COCONUT BAZAAR



COCONUT TRANSPORTATION IN OLD DAYS

## BACK-TO-BASICS

### QUESTION OF THE MONTH

Insured had dispatched Motor Grader machine from Mansol Stockyard to Ms. MBD Constructions, Dharma Site by road through a trailer. While crossing the railway height barrier near railway Station, the driver of trailer truck tried to go under the cross-beam of the height barrier. The top portion of the Machine received impact of cross beam, and got damaged badly. As the Cabin top portion pressed/received impact of height barrier (made of steel-rail-section), all plastic/fiber parts including guards of AC Unit also were broken/affected. Other parts like RHS – cabin structure & RR-RH hood, RHS-glass, AC, evaporator & heater Coil including Temperature Sensor were also affected/damaged. Surveyor, as per available details of the dimensions of the cargo, confirmed that it was an over-dimensional cargo for which loading, stowage, lashing (LSL) supervision was conducted at the time of loading on to the trailer. The LSL supervision report which was a warranty under the policy had mention of suggestions to improve the lashing and bolting of cargo on to the trailer which was not followed by the Assured.

The coverage under the policy was as per Inland Transit (Rail/Road/Air) Clause 'A' – (All Risks) 2010 and Strikes Riots and Civil Commotion Clause.

In light of non-adherence of the surveyor's suggestion, will this claim be admissible under the scope of policy?

### LAST MONTH'S QUESTION

An Indian exporter received an order from a European buyer on CIF basis. The Indian exporter had a Sales Turnover policy (STOP) from an Indian insurance company on All Risks basis. The order was not very large in volume hence he had to book container on LCL basis. In this part-load shipment – the Indian exporter's cargo was shipped along with non-compatible cargo in the container. At transshipment port, leaks were observed from container & the container was destuffed and the Indian exporter's cargo was restuffed in a new container, by shipping line. The new container is shipped to destination & but neither the Indian exporter nor his Buyer are aware of the change. After waiting for a couple of months, the Buyer cancels the order, and the Indian exporter is unable to trace their cargo. The

Indian exporter & Buyer then checked with the shipping line & found out about the change of container and it was found that the cargo with new container had reached destination on time but since no one came to claim the cargo, the container had been put in detention. Shipping line alleges that they informed CHA, who in turn failed to inform cargo owners but cannot provide any proof of such communication. Meanwhile shipping line has also levied demurrage charges on occupancy of container as per their standard terms and conditions. The Buyer finally agrees to accept the cargo but wants Indian exporter to bear all additional charges.

Being unable to convince his Buyer to accept the demurrage charges, and also unable to convince the shipping line to withdraw the demurrage charges since they failed to show proof of communication with CHA, the Indian exporter wants to claim under his STOP policy in India. Please share your stand/viewpoint?

## ANSWER

Expenses incurred as detention charges are not payable under ICC A as any loss, damage or expense caused by delay even if the delay be caused by an insured perils is excluded.

Please send your replies/answers ONLY to: [marine.newslink@tataaig.com](mailto:marine.newslink@tataaig.com)

## CORRECT ANSWERS SENT BY: (In order of replies received)

- V Ganesan Marsh India Insurance Brokers Pvt. Ltd., Chennai
- Rohan Lodaya Insurance World, Vadodara
- Sohag Parikh Cadila Healthcare Ltd., Ahmedabad
- Supriya Kumari SBI General Insurance, Patna
- Rohit Singh Beacon Insurance Brokers Pvt. Ltd., Vadodara
- Azad Kumar UIB Insurance Brokers (India) Pvt. Ltd., Mumbai
- Lakshmi Dr. Reddy's Laboratories Ltd., Hyderabad
- Prashant Bhosale Aditya Birla Insurance Brokers Pvt. Ltd., Kolkata
- Bharat Bhushan Optima Insurance Brokers Pvt Ltd., New Delhi
- Punit Pandya The New India Assurance Co. Ltd., Surat

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