

Production of Nui Certified Organic Virgin Coconut Oil

General Background On the production of Coconut Oil

Refined Bleached and Deodorised Coconut Oil

Most orthodox grade coconut oils are made from copra. Copra is basically the commercial name for dried kernel (meat) of the coconut. It is usually be made by smoke drying, sun drying, or kiln drying, or derivatives or a combination of these three. If standard copra is used as a starting material, the unrefined coconut oil extracted from copra is not suitable for consumption and must be purified – that is, refined. This is because the way most copra is dried is very unsanitary. Most of the copra is dried under the sun in the open air, where it is exposed to insects and moulds. The standard end product made from copra is RBD coconut oil. RBD stands for refined, bleached, and deodorized. Both high heat and chemicals (e.g. solvent extractions) are used in this method. The process of refining, removing particles with Fullers Earth, is the least of the problems. The smoke, kiln or even sun drying will cause rancidity and aflatoxin to form in the dried flesh, but furthermore, the oil extracted from this dried copra is usually a dark brown sludge that stinks of smoke. They bleach this colour out of the oil and bring it back to a clear liquid. It is bleached with Caustic Soda, which also brings down the Free Fatty Acids, which are around 3.5%. Finally, to then get rid of the smell, steam is blown through the oil at 220 degrees Celsius, well over the smoke point of coconut oil, which is around 180 degrees. During this process there is an argument that trans-fatty acids may form, given the high temperature, and the free hydrogens in steam.

The Production of Virgin Coconut Oil

There are currently two main processes of manufacturing Virgin Coconut Oil:

1. **Dry-milling:** In the method the focus is on quickly drying of fresh coconut meat to remove the water from the flesh. The oil is then press from the dried flesh via mechanical means, very similar to olive oil. The dried flesh retains most of the remaining moisture as it is hydroscopic, i.e. it attracts water.
2. **Wet-milling:** With this method, the oil is extracted from fresh coconut meat without drying first. "Coconut milk" is expressed first by pressing. The oil must then be initially separated from the water, by either fermentation, heat, or refrigeration. Finally, to reduce the water content to around 0.1%, a process of heat, to boil of the water, or centrifugation is used to drive off the final moisture.

Virgin coconut oil, much like virgin olive oil, is a first-press through a process of natural extraction, resulting in an oil with free fatty acids below 1%. It should also be noted, that the RBD process explained above does not necessarily affect the Certified Organic status of the product. What differentiates virgin coconut oil is the process, reducing the time from opening the nut to extracting the oil. Furthermore, Virgin Coconut Oils retain the aroma and taste of fresh coconuts, whereas the copra-based refined coconut oils have no taste at all, due to the refining process.

Nui Virgin Coconut Oil – The Taste of the Pacific

Nui Virgin Coconut Oil is sourced from Wainiyaku Family Estate, which is located on Taveuni Island, in the north east corner of Fiji. Wainiyaku Family Estate grows traditional tall coconut palms, cultivated by Adrian Tarte CBE and his family over the past 130 years and is certified organic with Australian Certified Organic and USDA. With abundant rainfall, one of the most important ingredients for the coconut palm, and rich volcanic soil, Adrian Tarte has, with his experience, designed a vertically integrated system with the aim of maintaining and securing a healthy future for the traditional Fiji Tall coconut palm and producing the best virgin coconut oil.

Starting with a dedicated nursery for young coconut palms, a careful selection process for planting new and replacing old palms, as well as specialising in the production of traditional virgin coconut oil, Wainiyaku Family Estate has become a living school for sustainability as well as the economic hub for the island's communities. The estate focuses on generating much of its own power requirements by generating its own electricity through a steam turbine using the discarded coconut husk, shell and

timber as a renewable and environmentally neutral source of fuel. Furthermore, Wainiyaku is committed to Nui's "Fair Trade for Fair Go" policy and purchases wild harvested coconuts from surrounding community at the Fair Trade price of FJ\$ 0.08 [US\$0.04] for a unhusked coconut. This is the highest paid price for coconuts in Fiji at a time when the orthodox coconut oil industry in Fiji is suffering. This price now allows the communities around Wainiyaku Estate to earn a good wage through their coconut groves, whereas prior to this their only possibility was to gain a living making copra. The work and commitment shown by Adrian Tarte over the years to the coconut industry over the last 50 years has earned him the respect of his peers and an Award from the Fiji Coconut Board for his long and outstanding contribution. His experience is immense, and the dedication of Adrian and his family, to the 30 staff and their families who live on the estate, the surrounding communities and the environment makes us proud to be associated with Wainiyaku as an exclusive supplier of Nui certified organic Virgin Coconut Oil.

Extraction, Processing and Good Management Procedures

- Harvesting and use of only correctly identified mature coconuts. *It is argued that all coconuts are grown organically but this is a huge misconception. In many areas there is cross-cultivation of cocoa trees and other crops such as vanilla, which are planted in the same areas, and agents are often used to keep grass and weeds manageable. In this regard, our organic certification is a true reflection of how the coconuts are produced - on a plantation* growing only traditional tall coconut palms.*
- Reducing the time to a minimum between harvesting, opening and drying of the fresh coconut flesh and the extraction of the oil.
- All communities, plantations and processing centres carry current certified organic processing certificates from AQIS and IFOAM accredited Australian Certification Agencies.
- All communities have to comply with stringent hygiene and cleanliness standards.
- Low temperature and pressure mechanical extraction methods.
- Particle extraction through sedimentation processes or low pressure filters.
- All our oils are free from any chemical processes, no trans fatty acids and produced below 60 °C.

In a more detailed outline, the day begins at about 6 in the morning when the nuts are harvested in the field. They are then cut in half and the fresh coconut flesh is cut out of the nut. The fresh meat is taken to the centralised dryer. By 10am the drying process begins and lasts for around 24 hours. The meat is dried using warm clean air generated from the internal bio-mass¹ electricity generator (classically known as a steam engine) that drives a turbine, generating green power for the entire estate.

The next morning the dried coconut flesh is crushed and pressed to extract the oil. When the oil flows from the mill it runs through a sieve to extract the larger particles that may still be found in the oil. After that, the oil is pumped through a cloth filter press to remove most of the fine particles that may be

¹ Agricultural residues are generated after each harvesting cycle of commodity crops. A portion of the remaining stalks and biomass material left on the ground can be collected and used for energy generation purposes. Residues of wheat straw and corn stover²⁰ are included in the biomass supply schedule used in NEMS. Wheat straw and corn stover make up the majority of crop residues.

Energy crops are produced solely or primarily for use as feedstock in energy generation processes. Energy crops includes hybrid poplar,²¹ hybrid willow,²² and switchgrass,²³ grown on cropland acres currently cropped, idled, or in pasture, and in the Conservation Reserve Program (CRP).²⁴

Forestry residues are the biomass material remaining in forests that have been harvested for timber. Timber harvesting operations do not extract all biomass material, because only timber of certain quality is usable in processing facilities. Therefore, the residual material after a timber harvest is potentially available for energy generation purposes. Forestry residues are composed of logging residues, rough rotten salvageable dead wood, and excess small pole trees.

* Urban wood waste/mill residues are waste woods from manufacturing operations that would otherwise be landfilled. The urban wood waste/mill residue category includes primary mill residues and urban wood such as pallets, construction waste, and demolition debris, which are not otherwise used.

found in the virgin oil. Then, it is placed into a settling tank. From there it is filled food grade barrier bags contained in specially designed, recyclable cardboard drums and shipped to us in Australia. Here, in Australia, we have the oil tested for micro (mould, yeast, salmonella, listeria, etc) and proximates such as free fatty acids to make sure the oil meets strict food grade requirements. Finally we use a special filtering process to remove any remaining particles to give the oil its smooth creamy taste and to increase shelf life of the oil. Enjoy and good health to you!

A brief note on heat and technology in the production of virgin coconut oil

In the past year or so, it has come to our attention that the newest marketing ploy being used to sell virgin coconut oil to the public is the use of heat in the production process. This has primarily come about by marketing agencies looking for another way to sell virgin coconut oil, originating in the US from the production in the Philippines and stems predominantly from the sale of more volatile mono-unsaturated oils such as flax seed, safflower and sunflower oil.

It seems strange to me, however, that, on the one hand, we advertise the virtues of coconut oil as the most stable and heat resistant of all tropical oils, and suggest its use for cooking, baking and frying as it has a smoke point of around 180° C. Yet, on the marketing side, some brands try to make the use of heat in the production a major point of sale. Our test has shown that the heat in containers aboard ships carrying cargo from the Tropics, can rise up to more than 70° C. One of the reasons why we use the cardboard drums is that they insulate against the heat in containers. This detail is often overlooked by many producers advertising the use of no heat technology and they ship in steel drums.

For us at Nui, the concept of "... healing traditions" describes one of our aims. To look at what traditions can teach us on how to heal the body and the mind, and how we can learn from traditional cultures that have used this information for centuries. A case in point is the new way of processing coconut oil through the use of centrifuge technology. Once the coconut milk is pressed and frozen to break the emulsion, the oil is spun in a centrifuge at speed creating forces on the oil of around 3G. In our opinion, and as has been shown in research in the past, the "life force" of the oil is lost. We have thus stayed committed to the organic cold pressing method that has been used traditionally all over the world in processing coconut, olive and many other oils.

Nui Certified Organic Coconut Oil is:

- Certified organic by USDA standards
- No refining
- No chemicals added (including hexane)
- No bleaching
- No deodorization
- No hydrogenation
- Made from traditional coconut palms only, no hybrid or genetically modified (GMO) varieties
- Made from fresh coconuts, not dried "copra" used in cheap oils
- Made with low heat processing not reaching temperatures above 60° C
- The taste of the Pacific

Please do not hesitate to contact us should you require any additional information or have any comments on the above.

Thanking you in anticipation,

Kind Regards

andreas bruno lombardozzi
director/founder

