

Tonga

Genebank

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The Kingdom of Tonga is an archipelago in the South Pacific Ocean comprising 169 islands, 36 of them being inhabited, stretching over a distance of about 800 km (500 miles) in a north-south line. The islands lie south of Samoa, about one-third of the way from New Zealand to Hawaii.

Coconut is an important crop which has supported the livelihoods of the Tongan people for centuries. Lately, Tongan coconut farmers have been suffering from declining productivity and unstable markets of copra and coconut oil, where traditional products are derived from the coconut. Tongan farming systems are basically multi-storied, and agro-forestry based, with root and other crops commonly used as intercrops. The situation in Tonga is dominated by an almost complete disappearance of coconut industry, while coconut remains important in everyday life.

Tonga has a coconut germplasm collection that was started in 1999. Part of the collecting activity was carried out during Phase I of the Asian Development Bank (ADB)-funded project entitled 'Collecting, conserving and characterizing coconut genetic resources in eight Asia Pacific countries'. The accessions collected came mainly from the main island of Tongatapu (Taufatofua and Jayashree 2005). However, there is a need to explore and collect the coconut genetic resources of the other islands, particularly those in the north such as Vava'u, Ha'apai and the Niua Islands. To date, five ecotypes namely Niu Kafa, Niu Vai, Niu 'Utongau, Niu Matakula and Niu Talokave, have been collected and characterized from Vava'u, Utongau and Ha'apai (Osborne 2005). Data collected have been submitted to COGENT and entered into the International Coconut Genetic Resources Database. These varieties have also been planted in the genebank in Vaini Research Station for conservation and further studies.

References

- Osborne T. 2005. Research on coconut genetic resources in the South Pacific. In: Batugal P, Ramanatha Rao V, Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp. 513-523. Available from: URL: <http://www.cogentnetwork.org/index.php?page=books>
- Taufatofua P, Jayashree K. 2005. Status of coconut genetic resources research in Tonga. In: Batugal P, Ramanatha Rao V, Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp. 748-749. Available from: URL: <http://www.cogentnetwork.org/index.php?page=books>

Niu Kafa Tall Tonga (NKF03)

Bourdeix R, Fili LM, Hoponoa TH

Conservation

According to the Coconut Genetic Resources Database, the cultivar Niu Kafa Tall (NKFT) is conserved both in Tonga at Vaini Research Station (population Niu Kafa Tall Tonga NKF03) and in Samoa at the Olomanu Coconut Seed Garden (population Niu Kafa Tall Samoa NKF02). A third population exists in Fiji, Niu Kafa Tall Magi Magi (NKFT04) but is not yet registered in the International Coconut Genetic Resources Database.

History

In Samoa, coconut varietal names have been first registered by Christophersen (1935) who described his 'Specimen No. 3612' as Niu 'afa, large, long, relatively narrow fruits the husk of which is favoured for making sennit ('afa).

Identification

As far as we know, the fruits of the Niu Kafa Tall are the longest recorded in the world. The biggest fruits have been found in Samoa; they are around 45 cm long - even bigger than those of similar varieties that are found in Fiji (maximum 38 cm long) and in Tonga (maximum 35 cm). Fruits are green and angular in shape, large, long and narrow. Polar view of the fruit is pear-shaped and the husk epidermis forms equatorial belt around the fruit when mature. Nut cavity is pointed with thick endosperm. The shell is thick and solid and shows very distinctive thick veins.

The stem is very thick (115 cm girth on average at 150 cm from the ground) but do not have a marked bole at its base (120 cm girth on average at 20 cm from the ground while some Tall varieties reach 175 cm). The stalk of the inflorescence is short (56 cm).

All the Niu Kafa palms bear fruits of the same green colour. The normal types of Tall coconuts that typically grow are of mixed colours: brown, green or intermediate. This probably indicates that the Niu Kafa variety reproduces mainly by selfing or that all the sprouts that are not of green colours (intercrosses) are discarded by people to maintain the variety true-to-type.

Yield and production

Niu Kafa Tall generally starts fruiting at five to seven years after planting. Average number of bunch per palm a year ranges from 10-14 and the number of green drinking nuts per bunch is 5-6 under good growing conditions. The composition of the fruit is as follows: weight of the fruit: 2580g, weight of the large husk: 1230g, nut weight: 1350g, meat weight: 675g and free water weight: 450 g.

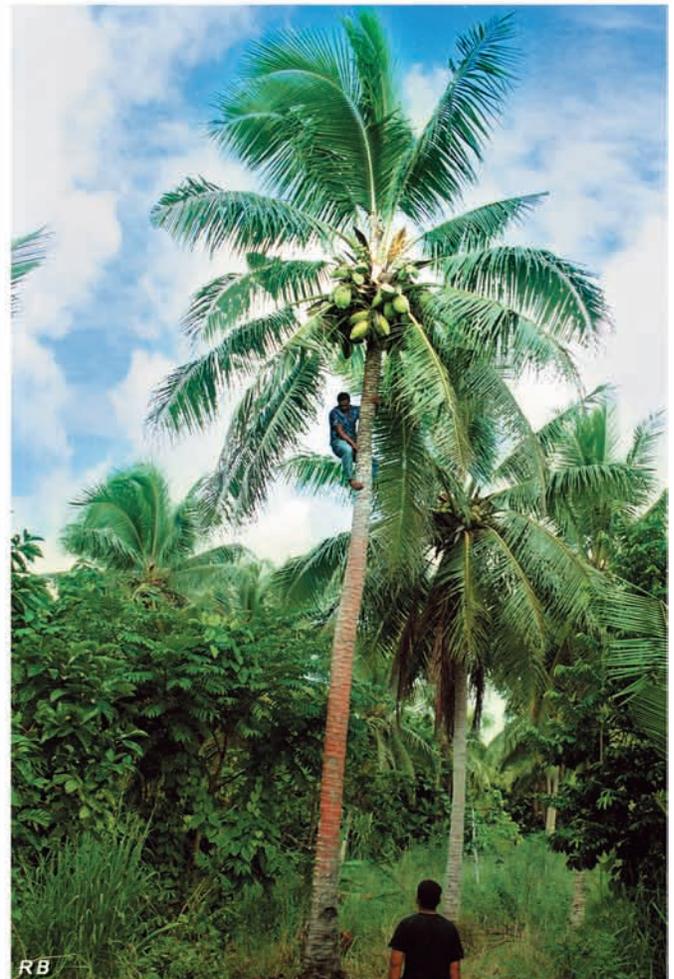
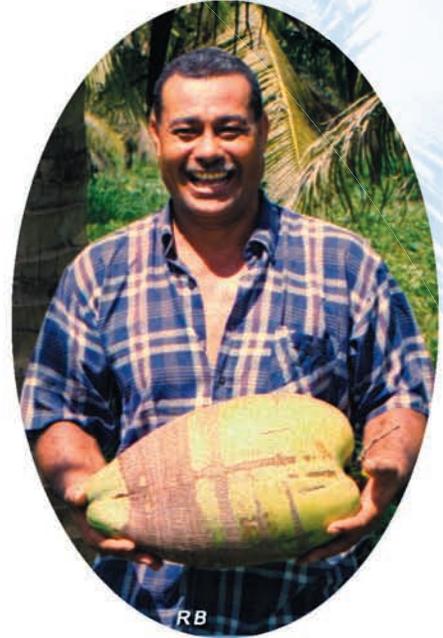
Other information

Niu Kafa palms are found as isolated individual palms located near the houses. People used its husk for making sennit. Now they appreciate tender nuts for drinking and use the meat of mature nuts for food preparation. Coconuts from India and Africa generally have higher husk content than those of Asia and the Pacific; Niu Kafa types are one of the main exceptions. An important theoretical question to solve is the understanding of links between the Indo-African group of coconut varieties and the Pacific and Asiatic varieties showing a high percentage of husk. Molecular biology techniques will help to answer this question. Up to now, only a few samples of Niu Kafa have reached the laboratories in good order. At least 10 to 20 more samples of high-husked cultivars coming from various origins in Asia and the Pacific Ocean should be analyzed. Such a study should make an important contribution in developing collecting strategies and breeding programs.

Reference

Christophersen E. 1935. Flowering Plants of Samoa, Bernice P. Bishop Museum Bulletin.

Niu Kafa Tall Tonga (NKF03)



Tonga Tall (TONT)

Bourdeix R, Fili LM, Hoponoa TH

Conservation

Tonga Tall (TONT) is represented by 6 accessions totalling 366 living palms in the collections of Tonga as well as of Brazil, Côte d'Ivoire, Jamaica and Vanuatu. It was introduced into Africa in 1969, and was sent from Côte d'Ivoire to Brazil 13 years later. Three more populations from Tonga are also conserved in India under the names Tonga Tall Alaki, Kalanga and Veitgo.

History

This cultivar originated from the Kingdom of Tonga, a nation of 171 islands and islets located in the South Pacific just below the Tropic of Capricorn, west of the International Dateline, south of Samoa and southeast of Fiji. The population of a little more than 100,000 is dispersed over 36 islands, while the other islands remain uninhabited.

Identification

The vertical growth of the Tonga Tall variety is not very fast. The internodes, measured at 150 cm from the ground level, vary from 5-7 cm, whereas it exceeds 12 cm in some varieties such as the Solomon Island Tall. On the 11th year, the Tonga Tall measures less than 6 m (from the ground to the first green frond), whilst the Solomon Island Tall easily exceeds 8 m at the same age. The diameter of the stem and bole is intermediate, greater than that of African varieties, but less than that of the large Southeast Asian varieties and the Rennell Island Tall, for example. The fronds, and especially the leaflets, are rather short for a Tall type.

The elongated fruits, which are about a third longer than they are wide, are average in size and vary in shape. They are usually pointed at the distal end, and sometimes pointed at both ends. The asymmetrical husk is thicker on the peduncle side. The inner nut is rather rounded and sometimes has a slightly conical shape on the side of the germination 'eyes'. The fruits weigh 1220g in Côte d'Ivoire and 1250g in Tonga. The inner nut weighs 830-850g. The kernel weighs about 450g and gives 240 to 260g of copra when dried. Fruit germination, which is quite slow, takes a little less than three months on average.

Yield and production

The Tonga Tall is an early yielder. When well planted, it flowers a little before five years on average, six months before the Rotuman Tall, for example. From the 6th to 8th year, annual yields are around 50 fruits per palm. They then increase, reaching 83 fruits in the best years. On average, on the 9th to 18th year, yields reach 65 fruits per palm (2.4 t of copra per ha), a high figure for a Tall type coconut.

Other information

The situation in Tonga is dominated by an almost complete disappearance of the coconut industry even though coconut remains important in everyday life. It should be noted that the level of replanting barely covers the number of palms used in sawmill operations (it probably means that it is much lower than the number of palms felled, since 'only the best palms' are used in the factories). If seednut production and planting is not increased again, the coconut grove will be severely reduced in the next decade. In Vanuatu, TONT has been crossed with the Malayan Red Dwarf, Malayan Yellow Dwarf, Samoa Yellow Dwarf and Niu Leka Dwarf. The yields of MRD x TONT are comparable to those of MRD x RIT.

Reference

Sangare A, Le Saint JP, de Nucé de Lamothe M. 1984. Les cocotiers Grands à Port Bouët (Côte d'Ivoire). III. Grand Cambodge, Grand Tga, Grand Rotuma. *Oléagineux* 39:205-215.

Tonga Tall (TONT)

