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Fiji is an island nation in the South Pacific Ocean east of Vanuatu, west of Tonga and south of Tuvalu. The country occupies an archipelago of about 322 islands, of which 106 are permanently inhabited, and 522 islets. The two major islands are Viti Levu and Vanua Levu which account for 87% of the population.

Whilst the first hand pollinations were done in India in 1920, the first hybridization between ecotypes has been attributed to Marechal, who in 1926 crossed the Malayan Red Dwarf with the Niu Leka Dwarf in the Fiji islands. Unfortunately, his work did not survive the 1929 economic crisis and the pedigree of the hybrids was lost.

Although coconut does not belong to the nation's top-ten crops according to FAO 2007 statistics, there are around 50 000 hectares of coconut palms growing in Fiji. Germplasm collecting, conservation and varietal description has been an ongoing collaboration between the Ministry of Agriculture, Sugar and Land Resettlement (MASLR) and COGENT since 1994. Fiji has an established germplasm collection consisting of an initial eight accessions at the Taveuni Coconut Center (Kumar and Kete 2005). These accessions have not been fully characterized. The Taveuni Coconut Center was established in 1987 to look into Fiji's ailing coconut industry. To set up this station, the government purchased 384 ha of land for the construction of infrastructure and establishment of seedgardens and trials. The programme was initiated to address the declining coconut production through production of high yielding hybrids seednuts and seedlings for rehabilitation.

References

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Niu Leka Dwarf (NLAD)

Bourdeix R, Kumar V, Kete T

Conservation

Niu Leka Dwarf (NLAD) is represented by 16 accessions totalling 1175 palms, according to the 2002 Coconut Genetic Resources Database. It is found in the Fiji Islands, its place of origin, and also in India, Côte d'Ivoire, Malaysia, Tanzania, Tonga, Vanuatu and the Solomon Islands, Jamaica and Florida.

History

The island of Taveuni in the Fiji Islands is located in the middle of the Pacific Ocean, not far from the international dateline. Visitors, on seeing the coconut palm known as the Niu Leka for the first time, often ask if it is really a coconut palm. In fact, its particularly bulky appearance suggests that it might be another species of palm. However, the Niu Leka Dwarf can easily be crossed with the other coconut varieties; it therefore belongs to the same species. Its existence was reported more than a hundred years ago. It is also found under the name of Niu Le'a in Tonga and in Samoa.

Identification

NLAD easily stands out from most other coconut palms, be they Dwarfs or Talls (see above). It has a bulky stem, with a very marked bole for a Dwarf, and extremely tightly packed leaf scars. The short, stiff fronds bear broad, dark green leaflets which overlap, allowing little light to pass. It is difficult to see the fruits on a palm from which no fronds have been cut. As vertical growth is very slow, the stem remains masked by the fronds for at least eight years. The inflorescence is compact, with a thick peduncle and numerous short spikelets. The male and female flowers on the same inflorescence do not mature at the same time. Molecular analysis has confirmed that NLAD had much more affinity with the Talls of the region (Cook, Tonga, Fiji and Tahiti) than with the other Dwarfs originating from Southeast Asia. It should be noted that there are Dwarfs in the Polynesian islands of the Cook archipelago whose stature and appearance strongly resemble the Niu Leka type, but which seem to be even more variable. In particular, there are coconut palms displaying the same short fronds with broad leaflets, but which do not have the marked bole typical of NLAD. The fruits, which are voluminous for a Dwarf, are oblong to round in shape, with a fairly large proportion of husk (43%). The colour varies from green to brown depending on the palms, which is why the variety name does not refer to a specific colour.

Yield and production

NLAD starts flowering 5-8 years after planting, whereas most other Dwarfs flower before that age. Production does not exceed 30 nuts per palm per year in Côte d'Ivoire.

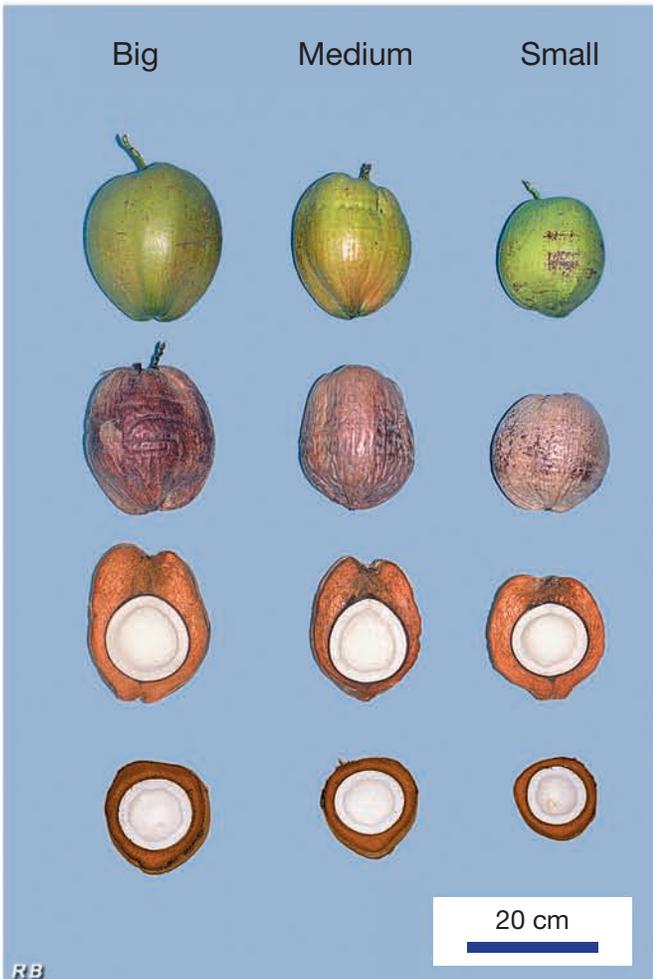
Other information

NLAD has enthralled many researchers. Its short fronds meant that high planting densities could be envisaged; its robust stem and slow growth seemed to be worthwhile for zones subject to cyclones. The first coconut hybrid was created in 1926 by M Marechal, who crossed Niu Leka and Malayan Red Dwarfs. Since then, numerous other Niu Leka hybrids have been created in Côte d'Ivoire, Jamaica and Vanuatu. Most of these hybrids conserve the unfavourable characteristics of NLAD: a late start to production and mediocre yields. However, in the Fiji Islands, a few natural hybrids between the Niu Leka Dwarf and the Rotuma Tall are reported to perform better.

Reference

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Niu Leka Dwarf (NLAD)



Rotuman Tall (RTMT)

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Conservation

According to the 2002 Coconut Genetic Resources Database, 12 accessions of the Rotuman Tall (RTMT), totaling 773 living palms, are conserved in the collections in Brazil, Côte d'Ivoire, Fiji, India, Jamaica, Malaysia, the Solomon Islands, Tanzania and Vanuatu. It was sent from the Solomon Islands to Malaysia in the 1970s. It was sent later from Côte d'Ivoire to Brazil and Tanzania. Marechal (1928) crossed selections of heavy fruited Rotuman Talls and the progenies were planted at Navuso (Viti Levu Island) and started to flower in 1936. Open pollinated seednuts from these progenies were later widely distributed throughout Fiji. In 1987, 5028 seednuts were moved from Rotuma Island to the seed garden at the Taveuni Coconut Centre.

History

Rotuma, a small volcanic island, is populated by people of Polynesian origin, whereas the other islands in the Fiji archipelago are populated by people of Melanesian origin. According to Whitehead (1964), the presence of large-fruited coconuts on some of the more isolated Pacific Islands, such as Rennell, Rotuma and Wallis, may be a result of Polynesian travellers who selected and carried large coconuts as source of water for their journeys.

Identification

The large fruits, with a good composition, have some similarities with those of the Rennell Island Tall, notably the frequent occurrence of a distal nipple. However, they do not display the pear shape often seen in the Rennell Talls. Certain Rotuman Talls produce somewhat more drop shaped fruits, on which the pointed part is at the distal end of the fruit.

Yield and production

Depending on the countries, RTMT produces 18 to 45 fruits per palm per year. It is in Côte d'Ivoire that the yields are the highest. The palms start bearing during the sixth year, with 25 fruits per palm per year. From 8-13 years, yields fluctuate between 40 and 62 fruits. They then increase, giving 85 fruits per palm per year in the best years. The fruits weigh 1340g and 1560g in India and Fiji, respectively. The inner nuts weigh 930-1020g. The 500-550g kernel is heaviest in India and gives 230-300g of copra when dried. In Fiji, the fruit is heavier but contains more husk than in India. The nuts in India, with a kernel of 550g, only give 230g of copra. These surprising figures need further verification.

Other information

Gigantic coconut shells are reportedly shown to visitors by Rotuman people. The islanders say that very large nuts are induced by pruning bunches and leaving only two or three fruits on the whole palm. Two special variants of RTMT were identified (sweet husk and yellow-green striped fruits). They were collected and transferred to the Taveuni Coconut Centre. Pollen from the Rotuman Tall is now used at that centre to produce commercial seednuts of the Malayan Red Dwarf x Rotuman Tall hybrid. RTMT has been crossed in Vanuatu with the Malayan Yellow Dwarf (MYD), Malayan Red Dwarf (MRD), Cameroon Red Dwarf (CRD) and Madang Brown Dwarf (MBD). The hybrid MBD x RTMT gives fruits with very high copra content (336g) compared to MRD x Rennell Island Tall (RIT), with a copra content of 261g.

Reference

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Rotuman Tall (RTMT)

