

Madang Brown Dwarf (MBD) in Papua New Guinea and Vanuatu

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Conservation

Madang Brown Dwarf (MBD) is conserved in the coconut germplasm centres of 5 countries with 11 accessions, totaling 520 palms. It was sent from Papua New Guinea to Côte d'Ivoire in 1977, and then reproduced and sent to Vanuatu, Thailand, Tanzania and Ghana.

History

The MBD was first collected in the city of Madang, northeast of New Guinea Island, a seaport on Astrolabe Bay exporting copra and gold.

Identification

Compared to their green, yellow and red counterparts, brown Dwarfs are less common worldwide. The Madang Brown Dwarf palms are so polymorphic and have a so strange behaviour that it was decided to make two different descriptions, one from Papua New Guinea and Vanuatu, the other from Côte d'Ivoire in Africa. MBD is a small palm, with a slender stem and no bole. On the rich volcanic soils of Papua New Guinea and Vanuatu, MBD produces large, almost round fruits with a thin husk. In Vanuatu, the meat weighs 411g which is 43% of fruit weight without water. The accompanying pictures were taken in Vanuatu and PNG but another plate on following page presents pictures made in Côte d'Ivoire. On fertilized sandy soils in Côte d'Ivoire, MBD produces small elongated fruits with thick husk. Their meat weighs only 152g on average which accounts for 33% of total fruit weight without free water. Under these conditions, it is difficult to identify various brown Dwarf varieties without comparing them in the same experimental plot with a good statistical design. Molecular biology techniques will be useful in distinguishing them. Some other brown Dwarfs from Indonesia, known as 'Ternate' or 'Raja' are closely related and may be identical but this must be confirmed by additional studies.

Yield and production

In Papua New Guinea and Vanuatu, MBD starts bearing 3-4 years after planting, producing 70-100 fruits per palm per year depending on growing conditions and exposure to cyclones.

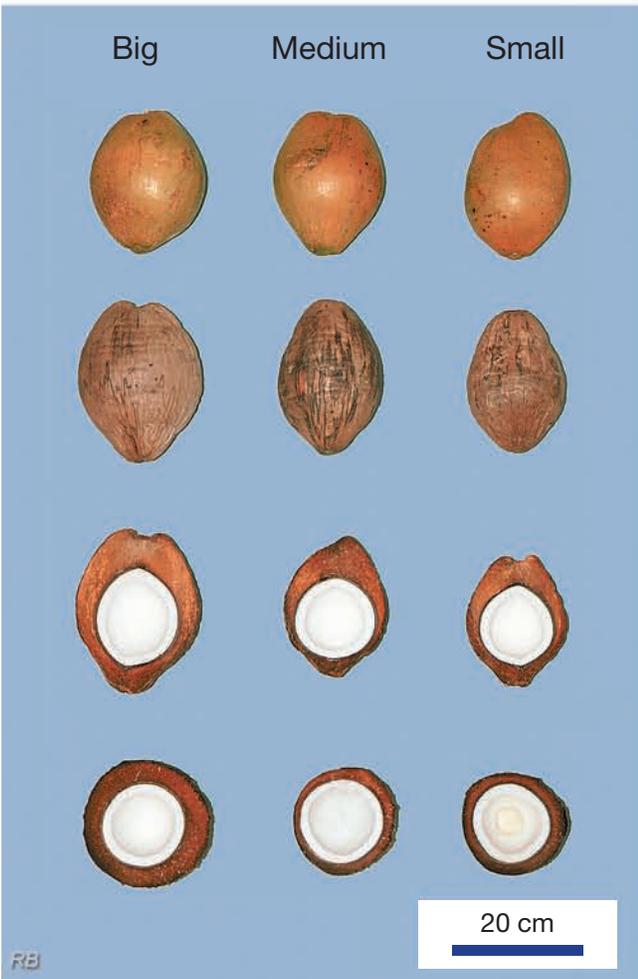
Other information

Although the Madang Brown Dwarf was only introduced quite recently in genetic improvement programmes, it has attracted the attention of many researchers. In Papua New Guinea in the 1990s, MBD was systematically crossed with all the Tall coconuts being tested in the national breeding programme. In Vanuatu, MBD was crossed with Rennell Island Tall, Kiribati Tall, Rotuman Tall, Markham Valley Tall and Gazelle Peninsula Tall. These hybrids are remarkable for their high meat content (570g for MBD x Rennell Island Tall, 612g for MBD x Rotuman Tall and 642g for MBD x Markham Valley Tall). A yield of 4.4 t of copra per ha has been recorded for MBD x Rennell Island Tall six years after planting. MBD is very susceptible to coconut foliar decay, a viral disease which is endemic to Vanuatu. It is also highly susceptible to cyclones.

Reference

Ovasuru T. 1994. Preliminary analysis of coconut (*Cocos nucifera* L.) germplasm in Papua New Guinea. In: Foale MA, Lynch PW, editors. Proceedings of a Workshop on Coconut Improvement in the South Pacific, Taveuni, Fiji. ACIAR Proceedings 53:33-40.

Madang Brown Dwarf (MBD)



Markham Valley Tall (MVT) in Côte d'Ivoire

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Conservation

Markham Valley Tall (MVT) is conserved in 11 accessions totalling 438 living palms in 7 countries: Papua New Guinea, Côte d'Ivoire, India, Jamaica, Malaysia, Philippines and the Solomon Islands.

History

In 1960, the biologist Parham carried out one of the first scientific surveys to collect coconut palms and breadfruit trees. One of the results of his travels was the dissemination of a coconut variety with large fruits, notably the Markham Valley Tall. This variety, which is famous for its enormous round fruits, comes from New Guinea, the largest island in the world after Greenland. The Markham Valley Tall comes from the east of the island, in the province of Morobe in Papua New Guinea.

Identification

The main characteristic of the Markham Valley Tall is its enormous round fruits, considered by some to be the heaviest in the world. Other varieties also give very large fruits, but they often have different shapes. The fruits of the Rennell Island and Rotuma Talls often terminate in a pronounced nipple. The fruits of the 'Niu Kafa' Talls from Tonga and Samoa have a very elongated shape. For the other features, the MVT is quite similar to certain Asian varieties; its fronds are very long and its inflorescences are large. The MVT stem is quite thick, but begins with an average-sized bole. The fronds are particularly large with an immense peduncle (some exceed two meters). The fronds have very long leaflets (record of 114 cm on average in the Philippines). The fruits are large and round to slightly ovoid, sometimes wider than long. They vary in colour from green to brown. With their thin husk, their composition is excellent. The inner nut is wider than long, forming a point at the end with the three germination 'eyes'. On fertile volcanic soils in Papua New Guinea, the fruits can be very heavy (3371g) and contain a lot of meat (739g). However, in other countries, the average fruit weight fluctuates between 1490g in Malaysia and a little over 2000g in Côte d'Ivoire. The nut weight of MVT in Papua New Guinea just exceeds 1000g with the kernel weight varying from 450 to 600g.

Yield and production

On average, flowering begins 6 to 6.5 years after planting. In Côte d'Ivoire, production levels have so far remained mediocre, at around 10 to 20 fruits per palm per year up to the 15th year. In India, the same variety has produced 68 fruits per palm per year, but this was observed among palms which planted more than 20 years ago.

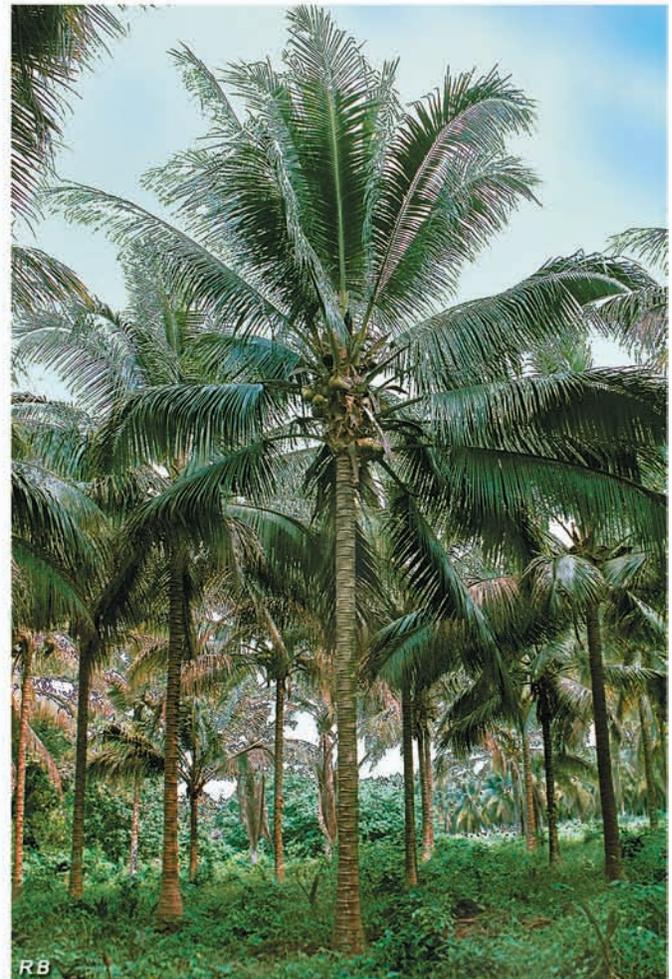
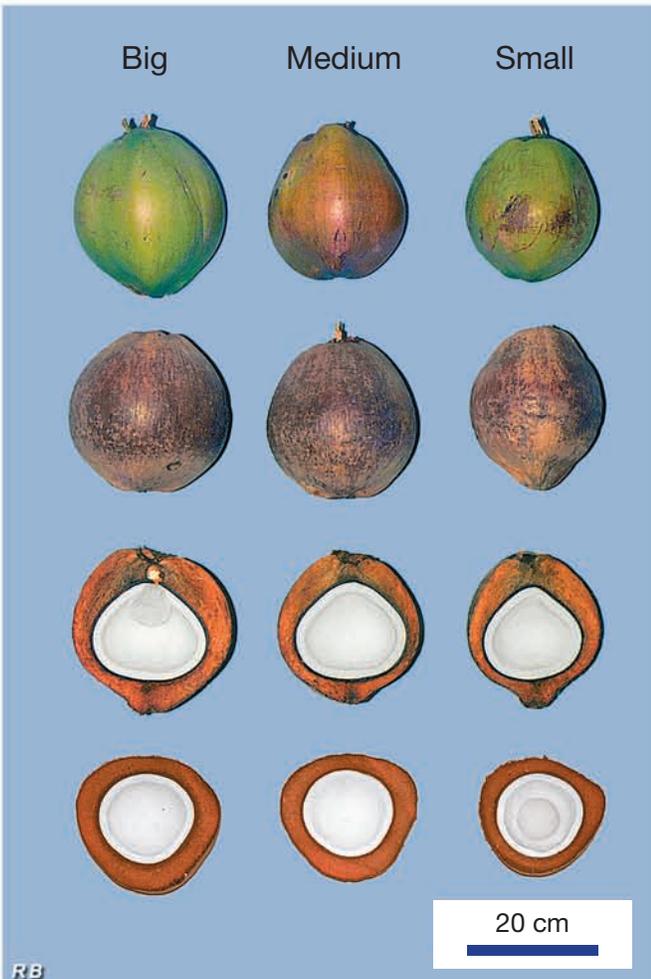
Other information

This variety was first brought to Côte d'Ivoire from the Solomon Islands in pollen form for experimental crosses. The first attempt to introduce seednuts ended in costly failure. Five hundred seednuts were loaded at Lae, a Papuan town, in October 1972. The ship was delayed and passed through cold zones. The seednuts did not arrive in Africa until March 1973, totally rotten. The second introduction took place in 1983, and only just slightly succeeded; when the bags were opened, almost a fifth of the seednuts had already germinated. In Vanuatu, MVT pollen was also imported in the 1990s to produce several experimental hybrids in connection with a project involving several Pacific island groups.

Reference

Ovasuru T, Tan GY, Bridgland LA. 1993. Coconut germplasm collection in Papua New Guinea. In: Nair MK, Khan HH, Gopalasundaram P, Bhaskara Rao EVV, editors. *Advances in Coconut Research and Development*. Oxford & IBH Publishing Co. New Delhi, India. pp. 33-42.

Markham Valley Tall (MVT)



Markham Valley Tall (MVT) in India

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Conservation

Markham Valley Tall (MVT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. It is represented by about 11 accessions, distributed in 9 different Conservation sites in the world.

History

MVT was introduced to the germplasm collection at CPCRI in 1972. The variety from Markham Valley, Papua New Guinea was noted by Ohler (1984) for its short stem and large thick husked fruits which are round to angular in shape.

Identification

Markham Valley Tall is a robust and tall-statured palm, attaining a height of 9.6-12 m 23 years after planting. The stem has a medium-sized bole and has an average girth of 91.7 cm. The crown is circular and carries 36-38 leaves. The annual rate of leaf production is 13-15 leaves per palm and the length of ten internodes is rather long, averaging 54.1 cm. The leaves are long with strong petioles and the leaflets are long and broad. The palm starts flowering 74-78 months after planting. The inflorescences are long with strong peduncles have 37-49 long spikelets. However, the average number of female flowers per spikelet is low. There are 14-28 female flowers in an inflorescence. Fruit set is about 38%. Pollination is through forced allogamy as there is a distinct gap of 2.5 days between the male and female phases. MVT has very large, round and greenish-yellow fruits with nuts that have a thick endosperm.

Yield and production

MVT starts fruiting at the age of 91 months. It is a regular bearer; producing 10-12 bunches per year. The average nut yield is 68 fruits per palm per year although there is a wide variation in the yield between palms, ranging from 41 to 95 fruits per palm per year. The fruits are very large in size and have about 28% husk. The nut without the husk weighs 1282g and can produce 307g copra which contains about 67.3% oil. Under rain-fed conditions, MVT cultivar can produce about 3.6 t copra per ha per year and 2.4 t oil per ha per year.

Other information

Markham Valley Tall is susceptible to coconut root (wilt) disease and to foliar decay caused by *Mindus taffini* (FDMT). It is comparatively less susceptible to *Drechslera incurvata* leaf spot and moderately resistant to lethal yellowing in Jamaica. This cultivar is suitable for commercial copra/oil production as it gives good copra yield along with high percentage of oil. Tender nut water quality is mediocre. MVT has been evaluated for yield and performance in hybrid trials in India, Vanuatu and Papua New Guinea. In Fiji, this variety has been crossed with Malayan Red Dwarf (MRD x MVT) and evaluated in hybrid trials.

References

- Been BO. 1981. Observations on field resistance to lethal yellowing in coconut varieties and hybrids in Jamaica. *Oléagineux* 36:9-11.
- Jacob PM, Nair RV, Rawther TSS. 1998. Varietal resistance. In: Nampoothiri KUK, Koshy PK, editors. Coconut root (wilt) diseases. CPCRI, Kasaragod, Kerala, India. pp. 97-104.
- Ohler JG. 1984. Coconut: Tree of life. FAO plant production and protection paper No. 57. FAO, Rome.
- Ratnambal MJ, Niral V, Krishnan M, Ravi Kumar N. 2000. Coconut Descriptors Part II, Central Plantation Crops Research Institute, Kasaragod, India.
- Sumbak J. 1975. Leaf spots of coconuts. *Papua New Guinea Agricultural Journal* 26:43.

Markham Valley Tall (MVT)

