

Malaysia

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Malaysia is a country in South-East Asia, located partly on a peninsula of the Asian mainland and partly on the northern third of the island of Borneo. West (peninsular) Malaysia shares a border with Thailand, is connected by a causeway and a bridge to the island state of Singapore, and has coastlines on the South China Sea and the Straits of Malacca. East Malaysia (Borneo) shares borders with Brunei and Indonesia.

In Malaysia, coconut ranks the fourth most important crop in terms of area planted, after oil palm, rubber and rice. In 1981, the total area planted to coconut was 409,348 ha, but by 1995 it drastically declined to 248,380 ha, which represents about 5% of the country's total agricultural land area. By 2007 the area further declined to around 172,000 ha (FAO 2007). As in the rest of the countries in the Asia and Pacific region, smallholders dominate coconut production, with an average farm size of 2.8 ha and producing about 93% of the total coconuts in the country. It is estimated that a 90,000 farm families are involved in coconut production.

Therefore, the coconut genetic resources of the country are endangered. To improve this situation, the Malaysian Government, primarily through MARDI, collaborated with a number of international coconut R&D organizations, particularly COGENT to undertake research and development activities.

In Malaysian various research stations are involved in coconut conservation (Fong et al., 2005). In the 2000s, seednuts of new varieties namely 'kelapa ringan', 'kelapa hijau', sweet husk and spicata were collected in Kelantan and Terengganu States and sown in MARDI's Research Station in Jerangau. Seven populations of drought-tolerant Tall cultivars were also collected from Sabah, the seednuts of which were sown in polybags at the nursery in Ulu Dusun Agriculture Research Station. Characterization data of 26 accessions from MARDI-Hilir Perak and 47 accessions from Department of Agriculture in Sabah have been submitted to the COGENT's CGRD.

Reference

Fong AW, Kalitu N, Jayashree K. 2005. Status of coconut genetic resources research in Malaysia. In: Batugal P, Ramanatha Rao V, Oliver J, editors. 2005. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp 634-638. Available from: URL: <http://www.cogentnetwork.org/index.php?page=books>

Malayan Green Dwarf (MGD)

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Conservation

Malayan Green Dwarf (MGD) is conserved in the Coconut germplasm centres of at least 5 countries through 11 accessions, totalling more than 600 palms. They are conserved at the Ulu Dusun Agriculture Research Station, Sandakan (Sabah) in Malaysia, in India and in the Solomon Islands. The round-fruited form can only be found in the collections of Côte d'Ivoire and Tanzania.

History

The green form of the Malayan Dwarfs is less widespread compared to the yellow and red forms. It is theorized that the Dwarf palms of Malaysia – red, green and yellow forms – were introduced between 1890 and 1900 from Indonesia. The oldest accessions registered in germplasm banks, as early as 1959, are found in India and in Côte d'Ivoire. Open pollinated seednuts were imported to Côte d'Ivoire from Teluk Anson (now Teluk Intan), Malaysia.

Identification

The Malayan Green Dwarf has generally a thin stem, about 20 to 25 cm in diameter, with no or little bole. Because of its short peduncle, the bunch is well supported by the leaf petioles. Compared with the Malayan Yellow Dwarf (MYD) and Malayan Red Dwarf (MRD), the MGD conserved in Côte d'Ivoire is much more heterogeneous. The fruits are bigger, rounder and with a higher kernel content. Some other Green Dwarf varieties can be distinguished from the MGD or MGD01. The Philippines' Pilipog, Catigan, Tacunan and Sri Lanka's Green Dwarf all have special fruit features that differentiate them from one another. It is difficult to differentiate the Green Dwarf of Thailand, which is also round-fruited, from the so-called MGD in the Caribbean (Jamaica, Cuba) which produces oblong fruits.

Yield and production

The average fruit weight of MGD ranges from 724g (in India) to 890g (in Malaysia). Inside the fruits, the nuts are spherical and weigh from 396g to 641g on average. Under good field conditions, MGD starts to flower 2-3 years after field planting and it may produce 30-80 fruits per palm per year (without irrigation). MGD, mainly used as an ornamental palm, is planted in gardens. Water from young nuts is tasty, but not as sweet as that from the Brazilian Green Dwarf. MGD is sensitive to drought and is highly prone to alternate bearing.

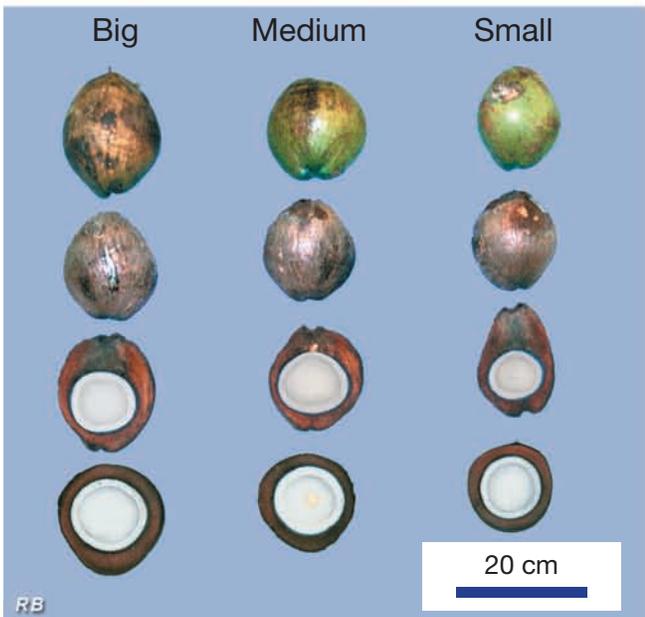
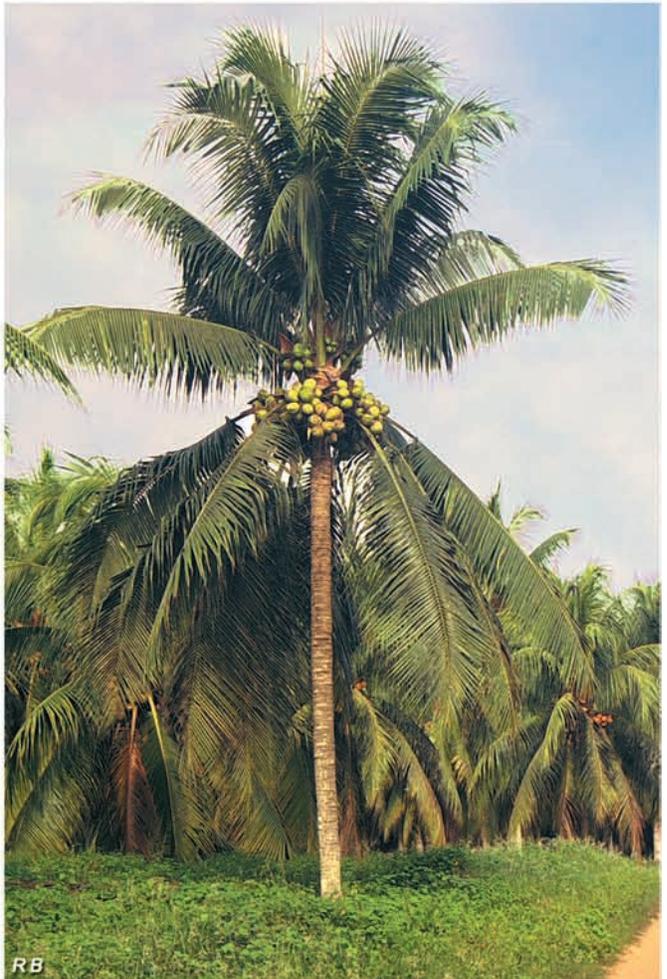
Other information

The population introduced in Africa was a mix of pure Dwarf, and natural Dwarf x Tall hybrids. Within the 52 palms initially planted, only 25, selected as putative true-to-type MGD, were used to reproduce the accession. The progenies obtained were again rather heterogeneous. Most of the palms have a thin stem (girth of 65 to 70 cm) without basal bole, and began to flower 25 to 35 months after planting. However, some of the palms have thick stem (girth about 80 cm) with a large bole (girth up to 130 cm) and only flower 60 to 70 months after planting. These last ones do not show Dwarf characteristics. The exact pedigree of each palm was studied and it appeared that 3 of the 25 putative Dwarf parents do not transmit Dwarf characteristics to their progenies. MGD has been crossed with improved West African Tall (WAT) and Rennell Island Tall (RIT) in Côte d'Ivoire.

Reference

de Nucé de Lamothe M, Rognon F. 1977. Les cocotiers nains à Port Bouët (Côte d'Ivoire). I. Nain Jaune Ghana, Nain Rouge Malaisie, Nain Vert Guinée Equatoriale et Nain Rouge Cameroun. *Oléagineux* 32:367- 375.

Malayan Green Dwarf (MGD)



Malayan Red Dwarf (MRD)

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Conservation

Malayan Red Dwarf (MRD) is conserved in the coconut germplasm centres of at least 17 countries by 32 accessions, totalling more than 7000 palms.

History

The Malayan Red Dwarf is one of the most common coconut varieties. In many islands in the Pacific region, this red Dwarf is more frequently planted than the yellow form. The prevailing idea is that the Dwarf palms of Malaysia – red, green and yellow forms - were introduced between 1890 and 1900 from Indonesia.

Identification

The colour of the seedling sprouts, the leaf stalks, the inflorescence, and the immature fruits of the Malayan Red Dwarf are not really red but some kind of bright orange. The MRD has generally a thin stem, about 22 to 25 cm in diameter, with no bole. When the growing conditions are ideal, it may have a little bole (35 to 40 cm of diameter). This can be seen in the oval picture, showing an MRD palm planted on the volcanic soil of Vanuatu islands. The upper canopy appears a little like untidy hair. The top leaves of the Cameroon Red Dwarf, for instance, are much more straight and erect. Due to its short peduncle, the MRD's bunch is well supported by the leaf petioles. The reproductive system has been described as direct autogamy. More than 30 types of Red Dwarfs are referenced worldwide. Some of them look very similar to the Malayan type: Red Dwarfs from Sri Lanka, Chowgat in India, Nias in Indonesia, Chumphon in Thailand, and even Cuba. Molecular analysis techniques will help determine if these Red Dwarfs are identical or not. Some other Red Dwarfs can be easily distinguished from the Malayan type. The Cameroon Red Dwarf bears pear-shaped fruits of paler orange colour. Some Red Dwarfs from the Pacific region produce bunches with a long peduncle and numerous smaller fruits having a more intense red-orange colour (such as the Tahiti Red Dwarf). The fruits of other Red Dwarfs, such as those from Papua New Guinea, have a nipple at the bottom.

Yield and production

Malayan Red Dwarf produces medium-sized, oblong fruits that are generally a little bigger than those of the Malayan Yellow Dwarf. The average fruit weight ranges from 668g (in Brazil) to 1080g (in Vanuatu). Inside the fruits, the nuts are almost spherical and weigh from 443g to 755g.

Under good field conditions, MRD starts to flower 2 to 3 years after field planting and it may produce 70-90 fruits per palm per year (without irrigation). MRD is mainly an ornamental palm that is planted in gardens. Water from young nuts is sweet and tasty, but not as sweet as some Green Dwarfs. The kernel is thin and gives rubbery copra. MRD is sensitive to drought and is subject to alternate bearing.

Other information

The MRD is tolerant to the lethal yellowing disease (LYD) of Jamaica (Romney 1980) but sensitive to the LYD found in Tanzania and Ghana. MRD is used as a parent of many coconut hybrids. The crosses with the Rennell Island Tall (RIT) and the Tagnanan Tall (TAGT) have been widely released to farmers. In Malaysia, MRD is also used as a mother plant in Menumbok Coconut Station for hybrid seed production.

References

- de Nucé de Lamothe M, Rognon F. 1977. Les cocotiers nains à Port Bouët (Côte d'Ivoire). I. Nain Jaune Ghana, Nain Rouge Malaisie, Nain Vert Guinée Equatoriale et Nain Rouge Cameroun. *Oléagineux* 32:367- 375.
- Romney DH. 1980. Agronomic performance of "Malayan Dwarf" coconut in Jamaica. *Oléagineux* 35:551-554.

Malayan Red Dwarf (MRD)

