

# Brazil

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## Genebank

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Brazil is the largest and most populous country in South America. Bounded by the Atlantic Ocean on the east, Brazil has a coastline of over 7491 km. It is bordered on the north by Venezuela, Suriname, Guyana and the overseas department of French Guiana; on the northwest by Colombia; on the west by Bolivia and Peru; on the southwest by Argentina and Paraguay and on the south by Uruguay. Numerous archipelagos in the Atlantic Ocean are part of the Brazilian territory.

Coconut growing is important for the economies of north-eastern and northern Brazil, accounting for approximately 82% of the country's production. Brazil ranks fifth among the coconut producing countries in the world (FAO 2002). Coconuts are planted from the northern State of Roraima to the State of Paraná in the south, with high concentrations in the coastal line from Pará to Rio de Janeiro. Coconuts are cultivated in the most diverse soil, climate and management conditions. The most utilized coconut parts are water from the green coconut (tendernut) and the fresh meat from the mature nut. The use of coconut by-products in Brazil is still very limited.

Populations of Tall coconut palms introduced by the Portuguese in the 16th century spread through the north-eastern coastal zone, adapting themselves to various environmental conditions to create different ecotypes (Ribeiro et al. 1995). The Brazilian Agricultural Research Corporation (EMBRAPA) collected, characterized and conserved the genetic variability of these populations, and used them for developing superior hybrids with better production traits and quality, adapted to different Brazilian agroecological zones. Brazil has established a coconut genebank in the State of Sergipe to serve EMBRAPA's coconut improvement programme. There is now a commitment to upgrade this genebank to become an International Coconut Genebank for Latin America and the Caribbean (ICG-LAC) with the support of the Bioversity International and the International Coconut Genetic Resources Network (COGENT).

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## Brazilian Green Dwarf (BGD) in Brazil and Côte d'Ivoire

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### Conservation

Brazilian Green Dwarf (BGD) is conserved in Brazil and in the coconut germplasm centres of at least eight countries. It is represented by 17 accessions totaling more than 3000 palms. It was introduced into the collections of Benin, Ghana, Philippines, Sri Lanka, Vietnam and Tanzania from Côte d'Ivoire. Seednuts were also sent to Guyana and Tahiti in the 1980s.

### History

BGD is a legendary coconut variety. Its sweet young nuts are sold for drinking along the tropical beaches of Brazil. It is difficult to trace the history of the Green Dwarfs around the world. The BGD now conserved in Côte d'Ivoire was collected in African Equatorial Guinea around 1960. Originally, this Dwarf was introduced into Africa from the city of Recife, Pernambuco, Brazil, by the agronomist Don Osman Silveira in June 1950. It is said that BGD was introduced into Brazil in 1920 from the Bogor botanical garden in Indonesia. However, recent DNA molecular studies point out that BGD originated from the Philippines.

### Identification

More than 45 Green Dwarf coconut varieties are referenced worldwide. Some of them can be easily distinguished from the BGD. The Pilipog, Catigan, Tacunan, Sri Lanka and Thailand Green Dwarfs have all special fruit features that make them quite different. Different names from different locations have been given to the same variety. For instance, BGD is also known as Equatorial Guinea Green Dwarf (EGD) in Africa. It is very difficult to compare the coconut palms planted on other continents and diverse environments. DNA molecular techniques will probably help to reduce the number of varieties that are today considered distinct. The palm generally has a thin stem, about 20-25 cm in diameter, with little or no bole. The youngest leaves at the top of the palm are quite erect, more than those of the Malaysian Dwarfs. Due to its short peduncle, the bunch is well supported by the leaf petioles. Fruits are oblong-shaped, with an intense green colour. The average fruit weight ranges from 556g in the dry zone of Tanzania to 1090g in the rich volcanic soils of the Vanuatu islands. Inside the fruits, the nuts are almost spherical and weigh from 353 to 556g.

### Yield and production

BGD generally starts to flower 2-3 years after planting. It may produce 50-100 fruits per palm per year under good conditions. With irrigation and fertilization, BGD produces around 150 nuts per palm per ha, at a planting density of 200 palms per ha. Water from young nuts is very sweet and tasty. Currently, about 59 000 ha of this cultivar are planted in Brazil. Some Brazilian farmers have become rich by planting BGD and selling young nuts to drink.

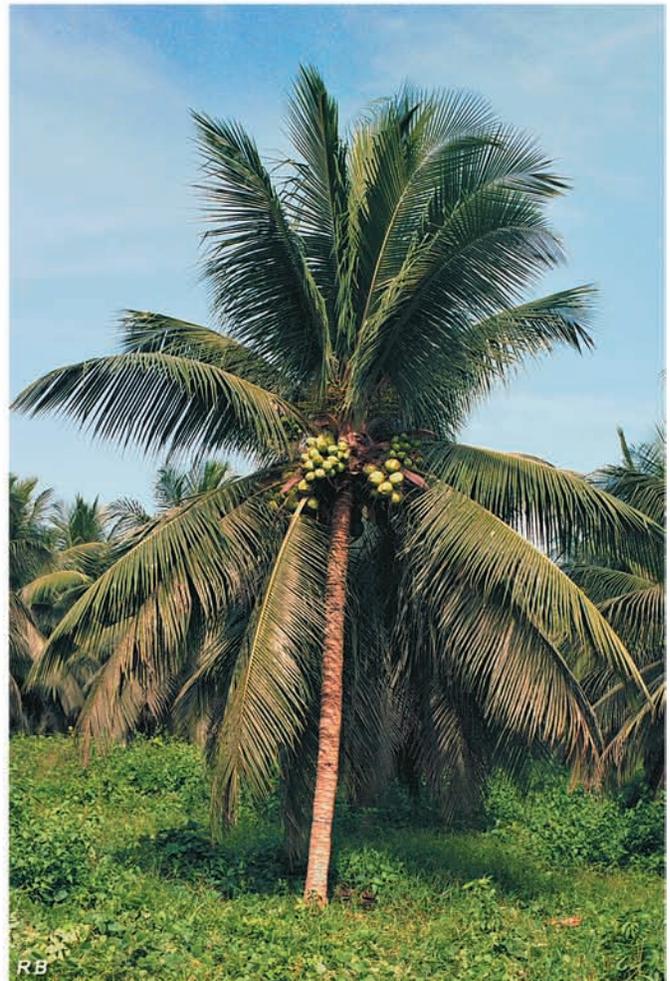
### Other information

BGD was used as female parent in producing many coconut hybrids. However, in Côte d'Ivoire, none of these hybrids were released to farmers. The progenies from BGD were more heterogeneous than those obtained with other Dwarfs, such as Malayan Yellow Dwarf (MYD) or Cameroon Red Dwarf (CRD). In Africa, hybrids with BGD were also quite sensitive to nut fall caused by the fungus of *Phytophthora* sp. Nevertheless, the hybrid from BGD and the Rangiroa Tall (RGT) was recommended for the corral soils of Polynesian islands in the Pacific region. Hybrids from BGD and local Tall coconuts are also being tested in Brazil.

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# Brazilian Green Dwarf (BGD)



## Brazilian Green Dwarf (BGD) in the Philippines

*Rivera RL, Santos GA, Emmanuel EE, Rivera SM*

### Conservation

Brazilian Green Dwarf (BGD) is represented by 73 palms at the field genebanks of the Philippine Coconut Authority–Zamboanga Research Centre (PCA-ZRC) field and in the Coconut Breeding Trials Unit in Mambusao, Capiz, Philippines.

### History

The Brazilian or Equatorial Green Dwarf was imported from Côte d'Ivoire in 1978. The BGD conserved in Côte d'Ivoire was collected in the African country of Equatorial Guinea around 1960. But this Dwarf was introduced to Africa from the city of Recife, Pernambuco, Brazil, by the agronomist Don Osman Silveira in June 1950. It is said that BGD was introduced to Brazil in 1920 from the Bogor botanical garden of Indonesia. However, recent DNA molecular studies point out that BGD originated from the Philippines.

### Identification

This variety is characterized by very marked dwarfism, good fruit composition, semi-autogamous, fruits smaller than those of Catigan Green Dwarf or Tacunan Green Dwarf. It is also known as Equatorial Guinea Green Dwarf (EGD).

### Yield and production

EGD could easily reach its reproductive stage in 24 to 36 months given good cultural management. For a Dwarf variety, the copra content of the nuts is rather high at about 200g. Whole fruit weight is 878g, consisting of 269g husk, 149g shell, 302g meat. At 10-26 years of age, a palm bears 106 nuts. Copra production is 3 t per ha.

### Other information

Toddy (the sweet sap extracted by incising the young inflorescence of the palm) from EGD ferments vigorously like the toddy gathered from Tall palms. PCA-ZRC records showed that initial toddy production of almost one liter per palm per day could be attained, increasing up to more than four liters per palm per day. Another promising product from the sap of EGD is coconut sugar because of its high total soluble solids. When toddy is intended for sugar production, the preferable harvest time for higher yield is in the afternoon. The average total soluble solids of toddy is around 14% and could even reach 20% with appropriate maintenance and cleaning of receiving receptacles. The coconut sugar is mainly used in cooking and desserts and cannot be replaced by other types of sugar due to its unique flavour. The demand for this product is expected to increase significantly in the future.

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# Brazilian Green Dwarf (BGD)

*photographed in Côte d'Ivoire*

