

lobata are the same thing. However the name *D. echinocarpa* may not be used for this plant in as much as the name is no more than a renaming of *Limodorum pendulum* Aubl. The species is occasional in Costa Rica.

A BLACK WALNUT FOR CENTRAL AMERICA

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EDIBLE nut trees in Central America are rare; the production of edible nuts is practically non-existent; and the source of fine quality furniture wood is becoming limited. It is highly possible that the recent introduction of the Peruvian black walnut, *Juglans neotropica* Diels, may help serve a multi-purpose need for the middle elevation areas of Central America.

Juglans neotropica is the name most commonly applied to the black walnut of the Andean slopes, existing at least from Ecuador to Bolivia. Additional species have been described from within this large range but there will remain some question as to their validity until more collections are available and until a critical study is possible. It is known that considerable variability exists within confined areas, and certainly its geographic distribution suggests a highly variable range of habitats. Care should be taken in the selection of types suitable for specific localities, —perhaps grafted horticultural varieties may be the solution.

In the region of the comparatively low passes of northern Peru the Peruvian black walnut grows in the valleys of both eastern and western Andean slopes in comparatively dry conditions between 1500 and 2100 meters. Otherwise the tree seems to exist under the wetter conditions found in the valleys cutting into the eastern slopes of the Andean range throughout Peru and well into Bolivia. From personal observation in the vicinity of Tingo María and east to the Pampas del Sacramento, from La Merced and the upper Perené valley, the Urubamba valley, and from Quince Mil in the Inamabari and

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subsidiary valleys, this tree grows at an altitude of from 600 to 1400 meters under an annual rainfall from 100 to 200 inches. The tree also has been observed cultivated in Lima under irrigation in desert conditions.

Old trees will vary from 15 to 30 meters tall and from 60 to 90 centimeters in diameter. The boles of trees in the forest are straight and without low branches. However, when cultivated in the open there would appear to be a natural low branching unless pruning is applied.

The wood is highly prized in Peru for furniture and various cabinet work, including inlay. The color of the wood is dark brown with medium grain. The wood has a satin-like texture. It is very similar in quality to the black walnut of the United States, even to its odor. Wood in my possession in the United States has neither warped nor checked over a period of a year and a half. At Turrialba, Costa Rica, a board under test for nearly two years has been resistant to both termites and the powder post borer.

The nuts of the Peruvian black walnut are very similar to those of the black walnut of the United States. The grooves of the hard seed coat of *J. neotropica* are more rounded, or less sharp, than those encountered in *J. nigra*. The size range of the hulled nuts is variable from two to about five centimeters in diameter. In flavor the kernels are excellent and indeed similar to those of the better varieties of *Juglans major* and *J. nigra*.

The nuts are eaten locally in Peru and are esteemed by those who know them. However, due to the scattered distribution in the forests the nuts seldom reach markets. Apparently no commercial groves have been planted, either for nuts or for lumber.

During September 1948 seeds were obtained through our representative at the Estación Experimental Agrícola de Tingo María, Peru, from the La Merced region of the upper Perené valley. Of thirty-five seeds planted directly in the nursery bed² (without cutting the seed coat) we obtained ten seedlings. The first seed germinated within six weeks after planting. The seedlings were transplanted to permanent sites at about seven months of age with perfect transplanting success,

² Seeds planted and plants established at the U. S. D. A. Rubber Station, Turrialba, Costa Rica.

without undue care. The seedlings varied from 45 to 150 centimeters tall. The largest seedling after nearly one year from planting the seed is now 2.1 meters tall with a basal diameter of five centimeters. It is not yet known at what age cultivated trees will start to fruit nor is it known how many years will be required for a tree to reach commercial timber size. Under conditions existing at Turrialba it appears, in early stages, to grow as rapidly as do mahogany and Spanish cedar.

Due to the dye content of the leaves and a strong odor, similar to that characteristic of *Juglans nigra*, this species is not eaten by animals. This advantage will make the tree ideal for fence-rows and door-yards. It is a tree with both a high lumber value and also it produces edible nuts.

The natural habitat of the tree plus our limited experience with it so far indicate that it could be planted at altitudes from about 600 to 1700 meters above sea level, both in areas of limited dry season and in those with perhaps as much as a dry season of six months. To date, no fungus or insect pests have been noted attacking this species at Turrialba.