

INFORMATION LEAFLET
FOREIGN WOODS

Forest Products Laboratory, ¹ Forest Service
U. S. Department of Agriculture
1954

QUEBRACHO, QUEBRACHO COLORADO, QUEBRACHO MACHO
Schinopsis lorentzii Engl. and Schinopsis balansae Engl.
Family: Anacardiaceae

By

JEANNETTE M. KRYN, Forest Products Technologist
Division of Silvicultural Relations

Introduction

The name "quebracho" was applied originally by Spanish-speaking people to any tree with very hard or brittle wood. The word is derived from the Spanish verb quebrar - to break, and hacha - an ax, and means ax-breaker. Quebracho colorado is the name widely used in North America and Europe for the commercially important Schinopsis species (15). 2, 3

¹Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

²Underlined numbers in parentheses refer to the list of numbered references at the end of the article.

³The following trees of different genera in Central and South America are also known locally as quebracho (19):

Quebracho

Astronium fraxinifolium Schott; Anacardiaceae; N. Colombia

Krugiodendron ferreum Urban; Rhamnaceae; Br. Honduras

Lonchocarpus michelianus Pittier; Leguminosae; Salvador

Lysiloma acapulcense Benth.; Leguminosae; Honduras

Lysiloma divaricata Steud.; Leguminosae; Salvador

Piptadenia constricta MacBride; Leguminosae; Salvador

Sloanea sp.; Elaeocarpaceae; Jamaica

(continued on page 2)



Distribution and Habitat

About eight species of Schinopsis have been described by botanists, but only two are of commercial importance: S. lorentzii and S. balansae. Their flowers, fruits, and woods are similar. The range includes northern Argentina, western Paraguay, part of Bolivia, and an undetermined area in Brazil as far north as the interior of the State of Bahia. The commercial range extends over 200,000 square miles and includes practically all of the country known as El Gran Chaco of Argentina and Paraguay.

The trees grow among other hardwoods, either singly or in small groups, and there is rarely more than an average of five trees per acre (24).

Other Common Names

Quebracho wood (Schinopsis spp.) is known also by the following names (13, 24):

Quebracho chaqueño - Argentina
Quebracho colorado - Argentina
Quebracho macho - Argentina
Quebracho moro - Argentina
Quebracho negro - Argentina
Quebracho santiagueño - Argentina

³(Continued from page 1)

Quebracho (continued)

Tabebuia chrysantha Nicholson; Bignoniaceae; Honduras

Tecoma sp.; Bignoniaceae; Honduras

Quebracho blanco

Aspidosperma sp.; Apocynaceae; Surinam

Aspidosperma quebracho-blanco Schlecht.; Apocynaceae; Paraguay, Argentina

Poeppigia procera Presl.; Leguminosae; Salvador

Quebracho colorado

Aspidosperma quebracho-colorado Schlecht.; Apocynaceae; Paraguay, Argentina

Quebracho de cerro

Diphysa robinoides Benth.; Leguminosae; Honduras

Baraúna - Brazil
Braúna - Brazil
Quebracho colorado - Brazil
Quebracho hembra - Brazil
Quebracho Cornillo = Schinopsis lorentzii - Brazil
Quebracho Femea = S. balansae - Brazil
Quebracho rubio - Paraguay
Soto negro - Paraguay

The Tree

Size and Shape

Mature quebracho trees may reach a height of 75 feet and a diameter of 3 to 4 feet. The more frequent size, however, is 30 to 50 feet in height and 1 to 3 feet in diameter. Clear boles 20 to 30 feet in length may occur, but they may be bent and twisted and swollen at the base (24, 28, 33).

Bark

The bark of Schinopsis spp. is grayish, with more or less characteristic markings (1, 28).

Leaves

Schinopsis lorentzii is a deciduous tree with pinnately compound leaves and numerous narrow leaflets. Schinopsis balansae, on the other hand, is essentially evergreen with simple, leathery leaves resembling those of the willow oak (Quercus phellos L.), though showing transitions to the compound form with a few coarse leaflets (1, 24).

Flowers and Fruits

The flowers are small and inconspicuous; the winged seeds are similar to those of maple, but occur singly rather than in pairs (24).

The Wood

Color

The heartwood of quebracho is light red when freshly cut but deepens on exposure to brick red or dark reddish brown, occasionally with black streaks. The sapwood is yellowish or grayish, distinct, but not sharply demarcated from the heartwood (1, 11, 24, 32).

Luster

The luster is medium to low, decreasing as the color of the wood becomes darker (11, 24).

Texture, Grain, Figure

The wood has a fine and uniform texture. Interlocked (roey) grain is usually present and produces a narrow stripe figure in the wood (11, 24, 28).

Odor and Taste

The odor of the wood is not distinctive, but the taste is astringent (24).

Weight

Quebracho is rated very heavy, with a specific gravity (air-dry) of 1.15 to 1.35 and a weight of 70 to 80 pounds per cubic foot (16, 24, 32).

Mechanical Properties

The wood is extremely hard and very tough (17).

Seasoning and Shrinkage

Lumber tends to check and warp in seasoning (11, 24).

Resistance to Decay and Marine Borers

Quebracho is rated highly durable even under severe conditions. Railway cross-ties and dock timbers which have been in service 40 years or more are reported to be as sound as when installed, except for surface weathering. The wood is said to be resistant to the teredo or shipworm of tropical and subtropical waters. Standing trees, however, are often defective because of decayed heartwood (15, 24, 32).

Working Characteristics

Quebracho wood is hard and flinty when dry and therefore difficult to cut, but it splits readily. The wood takes a high polish (16, 24, 32).

Uses

Quebracho is used locally for posts, telegraph poles, bridge timbers, railway ties, paving blocks, cart axles, and for any construction where great durability is desired. It is rarely cut into boards because of the difficulty of sawing and the tendency of the lumber to check and warp.

One important use of quebracho is for tannin extract. The heartwood contains from 20 to 30 percent tannin and 3 or 4 percent water-soluble nontannin. The sapwood contains about 3 percent tannin and 8 percent water-soluble nontannin. Tannin and water-soluble nontannin are present in equal amounts, about 10 percent, in the bark. Although bark and sapwood in quebracho are nearly as rich in tannin as are the utilized portions of oak and chestnut, they are not used commercially. The extract is said to differ from all other known vegetable tanning extracts in that it will not ferment (16, 24, 30, 32, 33).

Quebracho is one of the three native woods considered important for railway ties in Argentina. The Buenos Aires Pacific Railway reports that ties are usually renewed every 25 to 30 years. The Central Argentina Railway says ties are renewed every 25 years because of the wearing of the rail spike holes and the non-use of tie plates. Trials of quebracho in the United States by two railroads indicate the wood will last from 12 to 35 years (4).

Dermatitis

A form of dermatitis is said to occur in persons sensitive to contact with the branches, leaves, or sawdust of the tree. The poison seems to be

associated with the oily gum that characterizes quebracho wood. Many genera of the same family, the Anacardiaceae, including the poison ivy (Toxicodendron sp.), cause a similar dermatitis (26).

Structure

Growth rings are not distinct. Pores are medium to small in size, scarcely visible without a lens. Tyloses, often sclerotic, fill the pores. The rays are fine, not visible without magnification. Radial gum ducts are moderately numerous in the rays, and large crystals are common. Fibers are typically septate.

References

1. Alfonso, J. L.
1945. El quebracho colorado chaqueño (Schinopsis balansae).
El Campo (Buenos Aires) Vol. 29, No. 342, pp. 34-36.
2. Anonymous
1943. Caracteres tecnologicos de 100 maderas argentinas y sus aplicaciones industriales. Maderil, Buenos Aires, Argentina, Vol. 15, No. 175, pp. 12-15. (U. S. D. A. Bibliog. of Agr., Vol. 2, No. 5, P. E-97, Sect. E, May 1943) [Physical properties and industrial uses for one hundred Argentine woods, in tabular form.] (Biol. Absts. 18(3):591, Sect. D, March 1944)
3. Belavsky, E. and Termignoni, E.
1952. Brazilian Tannins.
J. Am. Leather Chem. Assoc. Vol. 47, pp. 594-603.
Printed by the Chemical Publishing Co., Easton, Pa.
(Abstr. in Economic Botany, Vol. 7, No. 2, p. 189, 1953.
Pub. at New York Bot. Gard., N. Y.)
4. Belcher, R. S. (Chairman) and others
1925. Ties. Appendix C -- Cross-Ties of Foreign Woods.
Amer. Railway Engineering Association Bulletin Vol. 26,
No. 275, pp. 1033-1075, Chicago, Ill.
5. Bourke-Borrowes, D.
1929. Recent Travels Through Parts of Western Brazil and Eastern Bolivia.
Empire Forestry Journal No. 8, pp. 60-70. London.
(Reviewed in Trop. Woods No. 21, pp. 48-50, 1930. New Haven, Conn.)
6. Durland, William D.
1923. Notes on Quebracho Colorado.
Jour. Forestry, Vol. 21, No. 6, pp. 600-605. Washington,
D. C.
7. _____
1923. The Quebracho Industry of the Argentine.
Timberman, Vol. 24, No. 7, p. 175. Portland, Oreg.

8. Durland, William D.
1924. The Quebracho Region of Argentina.
Geogr. Rev., Vol. 14, No. 2, pp. 227-241. New York.
9. Durrieu, Mauricio
1937. Tratado de los Presupuestos de Obras de Ingeniería y
Arquitectura - Carpintería.
Revista del Centro de Estudiantes de Ingeniería de
Buenos Aires, Argentina.
10. Ferandes, C. S.
1941. Da estrutura peculiarissima do cerne de Schinopsis brasiliensis.
[The very peculiar structure of the wood of Schinopsis
brasiliensis.]
Arquivos do Instituto Pesquisas Agronômicas. Pernambuco,
Brazil.
11. Hess, Robert W.
1946. Identification of New World Timbers, Part II.
Tropical Woods No. 87, pp. 27-28, New Haven, Conn.
12. Hoar, H. M.
1924. Quebracho: The origin and growth of the industry and the signif-
icance of the control to the leather industry of the United
States.
Trade Information Bull. No. 295, Tanning Materials Survey,
Part 3, 32 p. U. S. Dept. of Commerce, Bureau of Foreign
and Domestic Commerce. Hide and Leather Division.
Washington, D. C.
13. Horn, Eugene F.
1946. Brazilian Tanning Materials.
Tropical Woods No. 88, pp. 32-33. New Haven, Conn.
14. Howard, A. L.
1948. A Manual of the Timbers of the World. 3rd Edition, p. 505.
MacMillan & Co., Ltd., London.
15. Kerr, George A.
1935. Quebracho Forests of South America.
Pan-American Union, Commodities of Commerce Series
No. 9. 31 pp. Washington, D. C.

16. Kribs, David A.
1950. Commercial Foreign Woods on the American Market.
p. 53. Edward Bros., Inc., Ann Arbor, Mich.
17. Latzina, Eduardo
1938. Ensayos de Dureza, Compacidad y Porosidad.
Lilloa, Vol. 2, pp. 353-412. Buenos Aires, Argentina.
18. Mell, D. C. and Brush, Warren D.
1912. Quebracho Wood and its Substitutes.
U. S. Dept. Agr., Forest Service, Circular 202.
Gov't. Printing Office, Washington, D. C.
19. Meyer, H.
1933. Buch der Holznamen. Pp. 449-450.
M. and H. Schaper, Hanover, Germany.
20. Norton, Thomas H.
1918. Tanning materials of Latin America.
U. S. Dept. of Commerce Special Agents Series No. 165.
32 pp. Gov't. Printing Office, Washington, D. C.
21. Peterson, Lyall
1944. Forest Products in Paraguay.
Commodity Report No. 6, p. 66, STICA (Servicio Técnico
Interamericano de Cooperación Agrícola).
22. Ragonese, A. E. and Castiglioni, J. A.
1947. Nueva especie del género Schinopsis y area geográfica de
las especies argentines. [New species of Schinopsis and
geographical distribution of the Argentine species.]
Revista de Investigaciones agrícolas, Buenos Aires, Vol. 1,
part 2, pp. 93-100.
23. Record, S. J.
1939. American woods of the Family Anacardiaceae.
Tropical Woods No. 60, pp. 34-38, New Haven, Conn.
24. _____ and Hess, R.
1943. Timbers of the New World. Pp. 47-49.
Yale University Press, New Haven, Conn.
25. _____ and Mell, C. D.
1924. Timbers of Tropical America. Pp. 391-395.
Yale University Press, New Haven, Conn.

26. Rendle, B. J.
1929. "Paaj" Dermatitis Produced by Red Quebracho.
Tropical Woods No. 17, pp. 7-8, New Haven, Conn.
27. Senear, Francis E.
1933. Dermatitis Due to Woods.
Jour. of the American Medical Association, Vol. 101,
pp. 1525-1532. Chicago, Ill.
28. Tortorelli, Lucas
1940. Maderas Argentinas, estudio xilológico y tecnológico de
las principales especies arbóreas del país.
Universidad de Buenos Aires, Facultad de Agronomía
y Veterinaria. Buenos Aires, Argentina.
29. United States Tariff Commission
1940. The Foreign Trade of Latin America.
Part III, Vol. 2, pp. 383-392. Selected Latin American
Export Commodities. Washington, D. C.
30. _____
1947. Agricultural, Pastoral, and Forest Industries in Argentina.
Pp. 9, 83-85, U. S. Govt. Printing Office, Washington,
D. C.
31. Wise, Louis E. and Ratliff, Evelyn K.
1947. Summative Analysis of Quebracho Wood.
Tropical Woods No. 91, pp. 40-45. New Haven, Conn.
32. Woods, R. P.
1949. Timbers of South America. Pp. 47-48.
Timber Development Association, London.
33. Zon, R., and Sparhawk, W.
1923. Forest Resources of the World.
Vol. II, pp. 668-669, 672-673, 684, 782-783, 786-787.
McGraw-Hill, New York.