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TUNG PLANTATIONS: THOUGHT OF AS A NEW CROP FOR CUTOVER LONGLEAF PINE FOREST LAND

JAMES P. BARNETT

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Long Leaf, LA 71448
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Author:
James P. Barnett, Secretary/Treasurer, Southern Forest Heritage Museum and Research Center, Long Leaf, LA, 71448.

Cover photo:
Great Southern Lumber Company manager R.T. Cushing (left) with collaborator Lamont Rowland in a stand of one of the company's tung plantations (photo courtesy of the Louisiana State University Archives).

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Abstract:
To diversify the Great Southern Lumber Company's operations in the late 1920s, the company planted thousands of acres of tung plantations. The tung or tung-oil tree (*Vernicia fordii)* is native to Central China. The oil from the nut had traditionally been used in lamps in China, but in modern times it was used as an ingredient in paint, varnish, and caulk. Seen as a replacement for longleaf pine (*Pinus palustris*) on cutover forestland, the tung tree seemed like it would thrive in the climate along the Gulf Coast. The Great Southern and other forestland owners invested in tung plantations, and the facilities needed to process the nuts for oil. But freezing weather and hurricanes destroyed most of these plantations, and with increasing foreign competition for producing the oil, this effort ended in the late 1960s. Although the trees are now occasionally used for landscaping purposes along the Gulf Coast, they are now listed as an invasive species in Florida.

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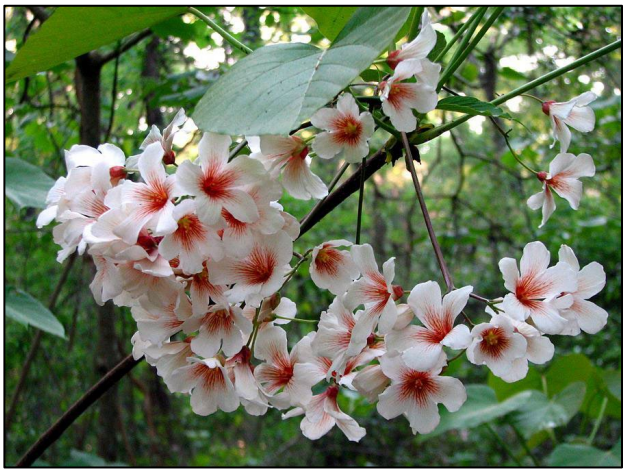
James P. Barnett

In the late 1920s, a different looking tree began to be seen along the highways of southeast Louisiana and southern Mississippi. It was greatly different from the majestic longleaf pines that had occupied the sites. Small and squat, it was seldom over 25-feet tall and exhibited large heart-shaped leaves. In early spring, the trees were draped in brilliant cream and salmon blossoms; some weeks later they bore ruddy, large nut-shaped fruit. Native to central and western China, the tung tree (*Vernicia fordii*) began its heyday along the Gulf coastal area of the South.



For centuries, the oil from tung seeds has been used in China for waterproofing wood, cloth, and paper. The oil has been used in numerous other noteworthy applications. Marco Polo, returning from China in the early part of the fourteenth century, described the marvelous “Chinawood oil” that artisans used in fine enamels and lacquers (Lauber 1945). Other uses included use on tools and furniture, and when mixed with lime and chopped hemp, it was used to caulk junks and small boats. It was used, too, as a leather dressing and as an ingredient in soap. Burned to a soot, tung oil makes a fine carbon that the Chinese employed in the production of India ink. Traditionally, the oil had been used in lamps for lighting throughout China.

PHYSICAL CHARACTERISTICS OF THE TREE

A tung tree, also known as the tung oil tree, begins to bear fruit in its third season after planting, and its life is usually about 30 years. It grows rapidly but seldom exceeds 25 feet in height and opens into an umbrella-shaped canopy of lush heart-shaped leaves. Blooming in late spring, it produces clusters of long-lasting white flowers, tinged in the centers with yellow or red. The tung tree is poisonous in all its parts, including the fruit and seeds. Eating a single seed can cause nausea, vomiting, abdominal cramps, and diarrhea (Brown and Keller 2005).

A plantation of thousands of trees would present an awesome sight in the area during the spring. Communities near tung plantations developed Tung Blossom Tours and Festivals to take advantage of the beauty of the trees. The following is a brochure documenting a 45-mile Tung Trail in St. Tammany Parish in 1958 (Barthet 2020).

The bark is smooth, thin and bleeds latex if cut. The fruit of the tung tree resembles that of a large brown walnut or a russet apple and may occur singly or in clusters. The pulpy exterior covering contains a nut-like shell 1 to 3 inches in diameter that holds from three to five oil-bearing seeds (Brown and Keeler 2005). Typically called nuts, the fruit, consisting of several seeds, is technically not a nut but a berry—a nut is botanically defined as having a single seed.

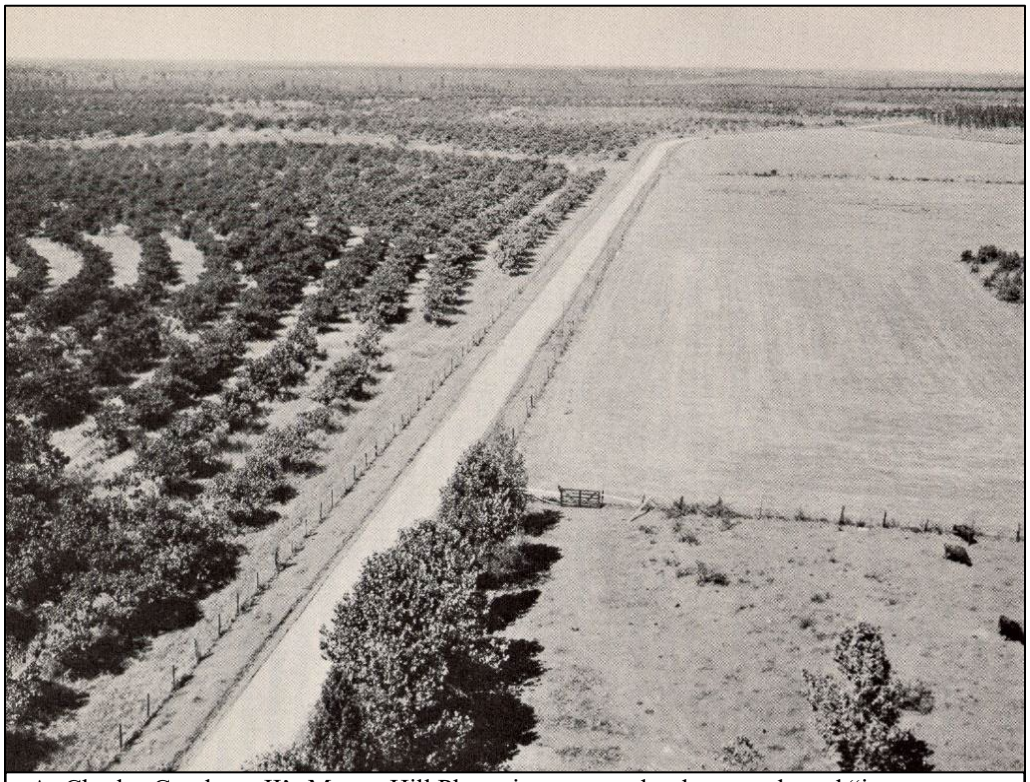
Fruits mature and drop to the ground in late September to early November. At this time, they contain about 60 percent moisture. They then were left on the ground for 3 to 4 weeks until the hulls were dry, and the moisture content dropped below 30 percent.

WHY AND WHEN INTRODUCED TO THE UNITED STATES

The introduction of the tung tree as a commercial crop coincided with the demise of another one, the virgin longleaf pine (*Pinus palustris*) forest that extended from East Texas to the Florida Panhandle. John H. Claiborne described the forest in 1841: "For twenty miles a stretch you may ride through these ancient woods and see them as they have stood for countless years—untouched by hand of man and only scratched by the lightning fired tempest" (Robb and Travis 2013). These forests were eventually harvested by the lumbering industry to provide lumber for building the developing cities of the Midwest during the early 20th century.

While many lumbermen who came into the South to harvest longleaf pine forests closed their mills and left when the pines were cut, a few began to seek ways to diversify their operations and maintain the towns they had created. In Louisiana, the Goodyear family led this effort, who owned the Great Southern Lumber Company at Bogalusa. And in Mississippi it was the L.O. Crosby's Yellow Pine Company at Picayune who led the effort.

The most successful diversification for the Great Southern Lumber Company was development of a paper mill, and for the Yellow Pine Company, it was development of wood naval stores facilities. Both companies had, however, large areas of clearcut land needing to be put back into some type of productive use.

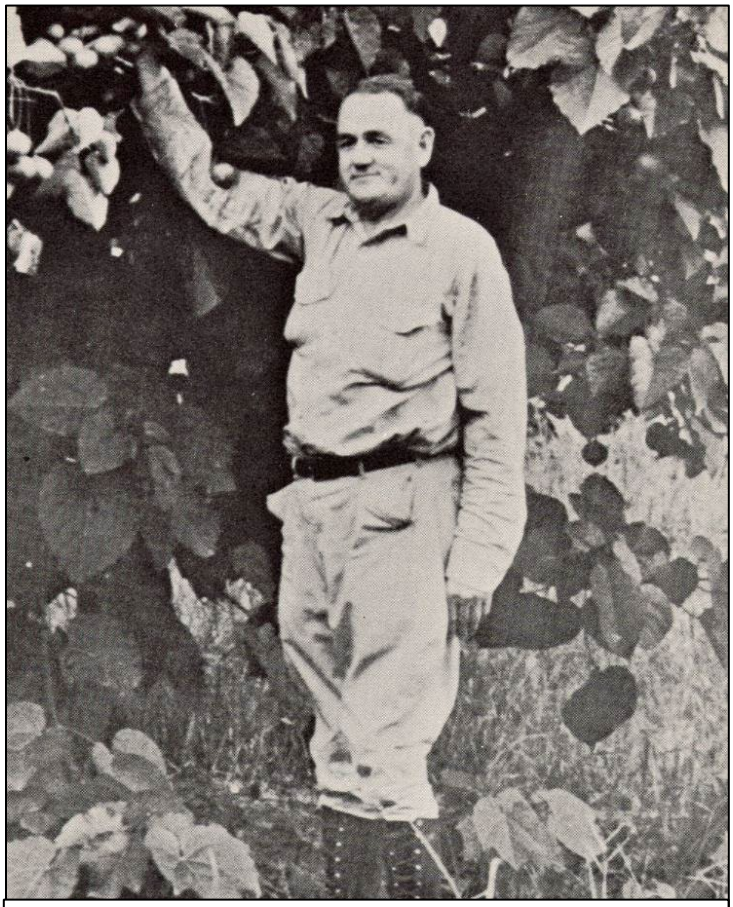


At Charles Goodyear II's Money Hill Plantation tung orchards were planted "in every direction as far as the eye could see." Today, the original 12,500 acres include a golf course and residential community and a site where longleaf forests have been restored (Goodyear 1950).

The potential of establishing tung plantations to produce valuable tung oil for commercial use appealed to both companies. In 1929, earlier trials showed that the Gulf Coast area was suitable for growing tung trees—good soil and climate conditions—and major commitments were made to plant, grow, harvest and process tung fruit for oil production.

DEVELOPMENT OF THE TUNG INDUSTRY

Beginning in 1905, the Department of Agriculture began an evaluation of tung trees into the United States, and in 1912 research indicated that the Gulf Coast met the requirements for its special growing conditions. Lamont Rowlands became a proponent of establishing tung plantations and in the late 1920s, he convinced Charles Goodyear II at Bogalusa on the merits of establishing tung plantations. More than 500,000 trees were planted, and in response to the endeavor, the U.S. Department of Agriculture established a Tung Orchard Bureau in Bogalusa to develop guidelines for its management (Robb and Davis 2013). Initial cultivation of tung trees occurred in southern Mississippi in 1925, and a decade later the merits of raising crops of tung trees were extolled in the Picayune, MS newspaper.



F.O. “Red” Bateman, standing by a tung tree, contributed significantly by improving the cultivation requirements needed by tung trees in orchards (Goodyear 1950).

F.O. ”Red” Bateman, who was the head ranger for the Great Southern Lumber Company’s reforestation effort, was assigned responsibility for improving cultivation methodologies for tung trees in orchard settings. He was responsible, apparently, for the increased production in the orchards. This effort resulted in the development of the Bogalusa Tung Oil Company and resulted in one of the largest tung plantations in the United States. Many others also became involved in the tung industry. In the late 1950s, there were 45,000 acres of tung orchards in Louisiana and 85,000 acres in Mississippi (Kerr 1958).

The tung orchards were hubs of activity at harvest time, which started in the fall as the greenish nuts grew reddish and fell from the tree. Often, they were allowed to lay on the ground until the moisture content dropped to less than 30 percent. They were then sacked and hauled to drying barns. After sufficient drying, they were transported to processing plants where the oil was pressed from the nuts. Under favorable conditions, an acre of tung trees produced about two tons of nuts and one hundred gallons of raw tung oil. Late spring freezing conditions could kill spring growth and destroy the fruit for that year.

INFLUENCES OF THE TUNG INDUSTRY

Lumbermen and other owners of cutover forest land began to see tung plantations as a profitable enterprise, and many thousands of acres were planted. The beauty of the flowering trees inspired numerous local activities. Numerous southern communities became strongly identified with the tung industry. Picayune, MS, for example, billed itself as the “Tung Capital of the World” with more than 100,000 acres in the county devoted to tung orchards. In Bogalusa, LA, to promote the tung oil industry, Bogalusa Tung Oil sponsored the Tung Blossom Queen of Louisiana contest. Each spring, a young woman would be recognized in “royal ceremonies, which took place on a platform, surrounded by blooming tung trees where once had been a pine forest” (Robb and Travis 2013).

The importance of the tung oil industry to the Gulf Coast economy in the 1930s was captured in a mural painted in 1939 for the Covington, LA, post office. “Tung Oil Industry,” painted by Xavier Gonzalez and funded by the Treasury Department, depicts the use of cut-over timber land for the planting of tung orchards and emphasizes the role of African American workers to the labor-intensive growing and harvesting of tung nuts (Robb and Travis 2013).

The “Tung Oil Industry” painting 16 x 5 feet in size by noted artist Xavier Gonzalez commissioned in 1939 for the Covington, LA, post office has been restored and copied. It is on display at the Smithsonian American Art Museum (photo courtesy of Flickr).

During World War II the production of tung oil in the South was emphasized, and the production went to the military for war support. In 1942, 200,000 of the 750,000 acres suitable for tung production were being cultivated, and expansion of the industry was encouraged. Overall, the emerging American tung oil industry initially benefited from government promotion during the war, but it would be set back by the promotion of substitutes.

The Louisiana Tung Blossom Queen and her court after coronation in Bogalusa in 1946. Charles Goodyear II who was instrumental in establishing the tung oil industry in Louisiana stands with tung blossoms in the background (Goodyear 1950).

THE DEMISE OF THE INDUSTRY

From the early 1950s to 1969, the domestic tung oil market steadily declined because of the development of petroleum-based substitutes and severe freeze damage in four years between 1965 and 1969. Even more significant were the effects of Hurricane Camille, which struck the Mississippi Gulf Coast in 1969. The storm destroyed 35,000 to 40,000 acres of tung trees. A severe freeze and Hurricane Katrina damage in 2005 ended the tung oil industry.

The era of commercial tung plantations is now gone but should not be forgotten. It helped diversify an agricultural economy and revive local communities suffering from the end of the cutover pine logging period. Planting in the cutover pine land slowed soil erosion and contributed to a regional paint and varnish industry. Local events like Picayune's springtime Tung Blossom 5K Walk and One-mile Fun Run preserve the memory of a time when tung plantations had an influential effect on the local and regional economy.

REFERENCES

Barthet, R. 2020. Tung oil industry's headstart. Tammy Family. https://tammanyfamily.blogspot.com/2020/10/tung-oil-industrys-headstart.html. Accessed December 20, 2021.

Brown, K.; Keeler, W. 2005. The history of tung oil. Wildland Weeds. Winter: 4-6.

Goodyear, C.W., II. 1950. Bogalusa story. Buffalo, NY: William J. Keller, Inc. 208 p.

Kerr, E. 1958. Prediction: a bumper tung crop. Forests & People. 8(4): 36-37, 45.

Rauber, E.L. 1945. The tung oil industry: growth and prospects. Atlanta, GA: Monthly Review, Federal Reserve Bank of Atlanta. XXX (11): 121-128.

Robb, J.B.; Travis, P.D. 2013. The rise and fall of the Gulf Coast tung oil industry. Forest History Today. Spring/Fall:14-22.