

● The coconut tree has a thousand and one uses but so has the Babassu of Brazil.

BABASSU

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BABASSU is genuine Brazilian Palm which forms vast and dense groves in various states of the country particularly in Maranhao and Pisui.

Its habitat covers an extensive area, which includes the Amazon and Mato Crosso, down to Bolivia.

It also occurs in the state of Minas Gerais growing simultaneously with the Macaubapalm (*Acrocomia sclerocarpa*).

Scientific Classification—*Orbignia speciosa* (Barbosa Rodrigues), Family, Palmae.

Regional Distribution—It is in the state of Maranhao that one finds the largest area covered with Babassu palms, forming very large groves with approximately 13 billion palms—an extension of some 8,655,400 hectares (21,387,493), each palm yield an average of 1,000 nuts which means a total of Maranhao is estimated at 195 million tons of kernels, the yearly Brazilian production capacity is estimated at 300 million tons of kernels.

Uses—Practically all of the Babassu is used. The leaves are used in the manufacture of straw hats, purses, mats, sieves, and baskets.

The nut is burned green to smoke up latex, as it produces a thick smoke.

The kernel has several uses. A fiber having various uses is scutched from the epicarp. The yellowish fecula extracted from the mesocarp is a nutritious meal from which beverages similar to chocolate, and mushes for children and convalescents, are made. The endocarp, which represents 75% of the nut, can be used as a substitute for vegetable ivory where this is used in place of home for making small articles, such as buttons, insulators, etc.

Tests made in the United States showed that the absorbent substance (fuller) can be used in the composition of dynamites. The mesocarp is also used as insulating material.

From the shell the following products can be obtained, Calcium acetate, Methyl alcohol, acetic acid, vinegar from pyrolignous acid, light and heavy lubricating oils dyes. Carboic acid, creosol, iron inks, tars, rossins, and a high-quality fuel.

The oil is used both as lubricant and as fuel; in the perfume industry, it is used in the manufacture of quality soaps; in cooking, it substitutes lard and olive oil. The butter made from babassu as good and nutritious as that made from milk, is already used.

The stalks of the palms are used as stays or props.

Chemical and composition—The babassu nut is composed of the following parts:

Epicarp	11 %
Mesocarp	23 %
Endocarp	57 %
Kernel	9 %

The epicarp is composed of resistant fibers, that cover the mesocarp.

The mesocarp is composed of a compact, pulpy substance, violaceous white with a high percentage of starch and tannic acid.

The endocarp is the enclosure of the kernel if it is a compact tissue of ligneous cells, it can be used in the making of buttons, etc., it contains hydrochloric acid, silica, iron phosphorus, magnesium, and alka-line metals.

The seed is actually the kernel which yield and oil of a high industrial value, the analysis of which reads as follows:



Looming as a Competitor to the Philippine coconut from which Vegetable Oil is made in the babassu tree of Brazil.

Density at is degree C9218
Melting Point	23.2 C
Acidity index	237.4
Saponification index	12.82
Iodine value	14.11

The cake—After the extraction of the oil from the kernel the residue, which still contains a certain amount of oil is pressed into cakes, used as cattle food, enjoying a great demand in foreign markets.

Te epicarp, the mesocarp and the endicarp can be actually used as fuel for various tests have been made with positive, encouraging results.

A methodical study concerning the treatment of babassu coke gave the following results:

30 %	metallurgical coke
60 %	acetic acid
8 %	tar
1.5 %	methyl alcohol

The coke analyzed in the laboratory of the "Escole dos arte et Metiers" in France, gave the following results:

90 %	pure carbon
5.4 %	volatile matter
4.4 %	ashes
0.85 %	total humidity

As a dry fuel it gives 7,700 calories. It is considered a most excellent fuel because it does not contain sulphur or arsenic and has but a very small percentage of phosphorus.

Status of Industry.—The babassu oil industry in Brazil is still in its primary stage, in spite of the existence of a few mills, especially in the State of Maranhao.

The United States and Europe give a preference to babassu nuts yielding from 65% to 66% oil.

Trade.—Following is a list showing exports of babassunuts, during a period of live years.

Year	Tons	
1933	613	\$
1934	214	\$
1935	9,809	\$
1936	30,276	\$
1937	21,777	\$
Dollars	Average value	
Paper	Per Ton	
28,499	\$ 46	
15,234	\$ 70	
769,433	\$ 77	
3,365,33e	\$109	
2,467,538	\$112.	

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PRODUCER GAS . . .

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passes through the oil, the inlet being submerged in the liquid. Another type depends on the splashing of the oil on to plates over which the oil and on maintaining the oil at the correct level.

Coolers

It is of the greatest importance that the gas should be cooled to as low a temperature as possible before entering the engine. Adequate cooling ensures that the gas delivered to the engine is at its maximum density, giving the greatest charge (by weight) for the cylinders. Some makers have provided special coolers for this purpose in the form of radiators or nests of pipes through which the gas passes and so placed that they are cooled by the air as the vehicle moves. A separate cooler is not always necessary if the scrubbers afford ample cooling, but it can usually be classed as highly desirable. Coolers should not require any attention apart from occasional inspection to see that no soot is accumulating.

Fans Or Blowers

With some producer equipment it is usual to supply a fan or blower to be operated by hand in order to heat the furnace before starting. The fans are very similar to those used on the blacksmith's forges and need no description. Other makers depend on the engine to supply the draught for starting the fire and start the engine on petrol. This method of starting

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