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The Cultivation of RUBBER

Dr. E. V. WILCOX

MAR 13

PUBLISHED BY

WILLIAM S. MYERS, D. Sc., F. C. S., Director,

Nitrate of Soda Propaganda.

Late of New Jersey State Agricultural College.

JOHN STREET AND 71 NASSAU, NEW YORK.

Below will be found a list of pamphlets relating to the use of Nitrate of Soda as a fertilizer, which will be furnished gratis to persons desiring information upon any of the subjects named.

The Cultivation of Cotton.

El Cultivo del Algodon.

The Cultivation of the Olive.

The Cultivation of the Sugar Cane.

El Cultivo de la Cana de Azucar.

Report on Alabama Cotton Prize.

Experiments with Chemical Fertilizers.

Abstract of Bulletin No. 52 on Onion Culture.

Extracto Del Boletin Num.° 52 sobre El Cultivo de la Cebolla.

The Cultivation of Tobacco.

El Cultivo Del Tabaco.

Straight Fertilizer Formulas for Farm Crops.

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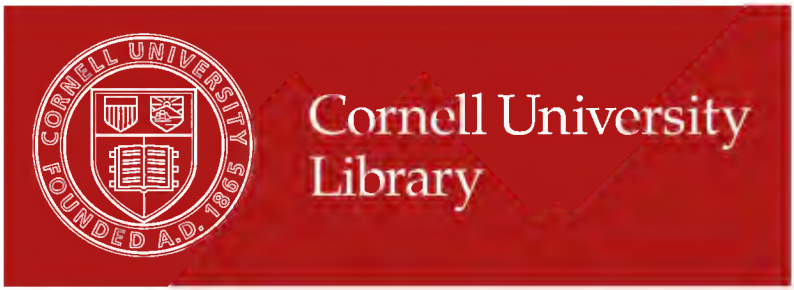

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The Cultivation of Rubber.

With the enormous increase which has taken place in recent years in the use of rubber for old and new purposes, interest has been awakened in the value and importance of wild forest rubber and in the possibilities of profitable rubber planting. The Custom House records of New York City for December, 1909, show an importation of 10,000,000 pounds of rubber. During the year 1909 the output of rubber from plantations in British India amounted to nearly 380 tons per month. The consumption of rubber in the United States and Canada has constantly increased from 14,000 tons in 1896 to 31,000 tons in 1909. These figures, relating to the rapid increase in the use of rubber, might be duplicated for other civilized countries and show that the importance of this product is rapidly increasing. Since the world was for a long time supplied with rubber from wild trees, it was feared when the commercial planting of rubber was undertaken that the markets would soon be so flooded with rubber as to greatly reduce the price. It was freely predicted that the price of rubber might be driven down to twenty-five cents per pound, and that when this event took place all rubber plantations would be driven to financial ruin, except such as were in the fortunate position of being able to produce rubber at twenty-five cents per pound. Contrary to these predictions, we have recently seen very high prices for rubber and a demand in excess of the available supply, in the face of large outputs which are being marketed from plantations. It seems safe to assume that with the increase in the supply of plantation rubber the use of rubber will be extended so as to take up the increase without lowering the price beyond a profitable figure.

Kinds of Rubber Trees.

Much speculation has been indulged in regarding the relative advantages of the different species of rubber

trees. In Mexico attention has been given chiefly to Castilloa. In Ceylon and the Straits Settlements, Ceara was tried, partly as a shade for other crops, and partly as a source of rubber. It has been gradually discarded, however, for Hevea rubber which gives greater promise than any other species in the enormous plantations of the British provinces of India. Likewise in Hawaii, where at first Ceara rubber was chiefly in favor, the trend of opinion was later toward Hevea and recent plantings have been chiefly of the latter species.

As is well known to the rubber world, the standard of excellence in rubber has been set by Hevea in the Indian provinces. Nevertheless, profitable prices are received for Castilloa and Ceara rubber and also for various wild rubbers from the original forests. Recently a quotation of $1.97 per pound was received for Ceara rubber produced on the Hawaiian rubber plantations.

Cultivation Desirable.

Since rubber was first obtained from forest trees growing under wild conditions, it was thought that plantations might adopt similar methods and grow rubber trees practically as a forest, without attention in the way of cultivation. This idea, however, has been pretty effectually dispelled. In numerous instances it has been found that rubber trees respond as promptly to cultivation and artificial care as other tree crops. On some of the Hawaiian plantations there are cultivated Ceara trees one year old which are larger and of more vigorous growth than three-year-old trees grown under similar conditions, but without cultivation.

The time factor in securing a yield from rubber is of the greatest importance. Even under the best conditions, there is a long wait from planting until the age for tapping, and financial success with rubber will be greatly influenced by any methods which may be adopted to hasten the maturity of the trees.

When the trees are 8 or 10 years old one can begin to extract the Latex. At 30 years the trees are at their maximum of production.

The success obtained from the judicious use of Nitrate of Soda with forestry and nursery stock, suggests great success with Nitrate of Soda for hastening the maturing of rubber trees.

Soil Requirements.

With regard to the soil and climatic conditions favorable for rubber production, it is a difficult matter to make specific statements. The requirements are not so exacting that rubber trees will not thrive under quite a variety of soil and rainfall conditions. We often see the statement that Ceara rubber and the related species, *Manihot dichotoma* and *M. piauiensis*, will grow in very dry regions.

While this statement is perfectly true, it is also quite true that all of these species will grow more rapidly, reach maturity more quickly and yield more heavily where the rainfall conditions are more favorable. In very dry regions the period of rest, during which the leaves are shed from Ceara rubber, is greatly prolonged, and the date of maturity of the tree is thus delayed.

Experiments thus far conducted, and observations made on the natural habitat of the rubber trees, show that these trees will thrive on a great variety of soils. Nevertheless, the best growth is obtained on soils which are reasonably fertile and of which the physical properties are such as to prevent undue caking or stagnation of the water supply.

In other words, rubber, like most other crops, will thrive best on soils which have a high power of retaining moisture, and from which the moisture is given up slowly. In such soils aeration is satisfactory, and the application of fertilizers will have the most effect.

Fertilizers for Rubber Plantations.

With regard to the use of fertilizers on rubber plantations, experimental information is very meagre. In the large amount of literature on rubber cultivation one meets everywhere with tentative suggestions regarding the application of barn-yard manure, green

manures and artificial fertilizers to rubber trees. These suggestions, however, are, for the most part, not based on actual experiments.

The best advice that can be given on the subject at present is to have an analysis made of the soils and then supply such elements as are actually deficient or as are removed by the growth of the rubber trees. In the cultivation of young plantations it may prove profitable, and even desirable, to grow inter-crops between the rows of rubber trees. This is easily possible if the trees are planted at intervals of twenty feet. The crops to be grown between rubber trees will depend somewhat upon the nature of the soil and the amount of rainfall. If legumes are grown as inter-crops the necessary humus and a portion of the required Nitrogen will thus be supplied to the soil.

If other crops, such as cotton, corn or sweet potatoes, are planted between rubber trees, it must be remembered that they, in turn, will take their share from the soil fertility; and this point must be borne in mind in considering the fertilizer problem of the whole plantation. Until more extensive experiments have been made, it is impossible to make more specific recommendations as to a plan of fertilizing rubber plantations to encourage the growth of the trees.

Nitrate of Soda for Increasing Flow of Latex.

It has often been suggested that a scheme of fertilization might be devised whereby the flow of latex could be temporarily energized at each tapping period. In order to gain evidence on this point, a series of experiments were undertaken in Hawaii with Nitrate of Soda. The fertilizer was applied, at the rate of one-fourth and one-half pound per tree, a few days before tapping. It was found best to incorporate the fertilizer deeply and thoroughly in the soil over the young and actively growing rootlets. If the soil, at the time of application, be excessively dry immediate effects may not be noticed from the application of Nitrate of Soda until a rainfall occurs, or until artificial irrigation is applied. If, on the contrary, the soil is moist at the time of application, and gentle rains occur

soon afterward, quite striking results are shown within two or three days, but a deep and thorough incorporation of the Nitrate in the soil will be of advantage. In some cases the yield of Ceara rubber trees was doubled during the fall tapping period by the application of one-half pound of Nitrate of Soda per tree. It has not been determined exactly how the Nitrate of Soda brings about this stimulation in the flow of latex, but the fact appears to be true, and is believed to be well worth considering at tapping time on commercial plantations. The coagulation of the latex likewise appears to be much improved from the use of the Nitrate of Soda.

Experiments with Nitrate of Soda on Ceara Rubber were begun by Prof. Jared G. Smith in 1905 and continued by the author, so that Dr. Wilcox has had first hand experience based on personal knowledge of conditions controlling the growth of India Rubber. No doubt the growth of large, healthy trees is promoted most advantageously by the rational use of fertilizer.

WILLIAM S. MYERS,
Director.