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A Study of the Retting of Ramie

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A STUDY OF THE RETTING OF RAMIE

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The object of this work was to find, if possible, an organism or group of organisms capable of retting the ramie fibers so that they could be used in textile fabric manufacture.

The ramie plant is a shrub, belonging to the genus Bohmeria. Two species of this genus are called ramie, namely, *B. nivea* and *B. tenacissima* and both produce fibers of textile value.

This plant is a native of China and Sumatra and has been used, especially in China, in cloth manufacture from a very early period. Ramie fibers have found less use in textile fabric manufacture as machines for handling other fiber plants have been invented. There has never been a successful machine for the processing of this plant, although many have been tried with more or less possibilities, and the same has been true of all biological and chemical processes.

Ramie has been cultivated to some extent in many regions, both for experimental and for commercial purposes. It has been grown in some of the gulf coast states of the United States.

The fibers have been used for gas mantles, sailcloth, tent canvas, shirtings and like fabrics. It is the strongest of all vegetable fibers and does not rot easily.

Interest in this plant has been revived almost periodically and a few years ago numerous workers again undertook to find some biological or chemical process, or even a combination of the two, for the decortication and degumming of the fibers. The results may be summed up like the others, except the stripping and scrapping by hand, in that they met with only a fair degree of success.

In this work organisms were isolated from water in which ramie had been submerged for sometime and decomposition had set in and also from ramie stalks which had remained in the open on the ground for about two months. The organisms were tested in pure culture and in combinations for their ability to act upon the ramie. They were also tested on ramie stalks that had previously been cooked for one hour in a one percent sodium hydroxide solution.

None of the organisms or combinations were capable of completely decorticating and degumming the fibers.

The plant was studied by freehand sections during its growth and it was found that the fibers were undoubtedly of pericyclic

origin, in most cases forming a continuous sheath enclosing all tissues inward from the phloem.

Some interesting results were obtained last summer by burying ramie stalks in swamp mud under about four inches of water. Insufficient work was conducted to yield any definite data.

DEPARTMENT OF BOTANY,
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STRUCTURE OF THE LIBRIFORM FIBERS IN THE ROOTS AND CROWNS OF ALFALFA AND SWEET CLOVER

JOHN N. MARTIN

In addition to the middle lamella there are two layers, primary and secondary, in the walls of the libriform fibers. The primary layer is composed of strands of fibrils helically oriented around the fiber almost at a right angle to the fiber axis. The secondary layer is composed of a number of lamellae each of which is composed of fibrils that run parallel to the axis of the fiber.

The primary and secondary layers are cellulose. In sweet clover the secondary layer of the libriform fibers is removed and apparently used as food. The primary layer is then thickened and lignified. In alfalfa the secondary layer of the libriform fibers near the cambium are removed during spring growth and then replaced in the summer.

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THE GERMINATION OF SWEET CLOVER AND ALFALFA SEED IN RELATION TO VARIOUS CONDITIONS OF TEMPERATURE AND MOISTURE

JOHN N. MARTIN

Seeds have been stored in constant low temperatures, constant room temperatures, and in fluctuating temperatures, both in dry and wet, and alternating dry and wet conditions. The experiments