Roselle—A Potentially Important Plant Fiber

Not yet exploited in the Western Hemisphere, this jute-like African fiber possesses commercial possibilities and is obtained from a plant that furnishes also edible fleshy calyces and oil-containing seeds.

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Introduction

The roselle plant (Hibiscus Sabdariffa L.) is used principally for its bast fibers and for its fruit, the latter being utilized for making jelly and preserves. The silky, soft and light-colored fiber obtained from this plant has practically the same chemical and physical properties as jute (Corchorus capsularis L.) fiber and, therefore, offers a very satisfactory jute substitute.

At the beginning of the second World War roselle attracted considerable attention with respect to its being utilized as a quick source of soft fiber for the manufacture of burlap and other fibrous articles. Consequently a comprehensive review of the literature, presented here, was made in order to assemble the worldwide information dealing with the roselle plant and its products. Although statements made in some cases are rather confusing and contradictory, one must remember that the data here reported have been compiled from widely separated locations that have greatly different soil and environmental conditions.

Considerable confusion exists with respect to literature references, several of which, especially from this hemisphere, deal with “roselle”, although it has been determined that the plant material discussed was actually kenaf (Hibiscus cannabinus L.), a close relative of roselle (9). Although plants of these two species are apparently quite similar regarding cultural and environmental requirements, our limited experience with roselle in this hemisphere precludes comparative evaluation of the material presented here with that which has been published on kenaf (10).

History

In a study of the history of roselle, Wester (46) found that the first published account of the plant was made by the Flemish botanist, M. de L’Obel, in 1576 (31). Wester believed that the species was probably brought westward from India by the Mohammedans who invaded India several centuries before the plant was described by M. de L’Obel. That the plant was from the beginning known by the name “Sabdariffa”, a Turkish word, according to Drury (13, p. 252), lends color to this belief. Use of the leaves for greens and reference to its cultivation for fiber first appeared in 1687 (23).

Roselle was reliably reported from the Western Hemisphere at the beginning of the eighteenth century, at which time it was in cultivation (46). Wild plants of Hibiscus Sabdariffa that occur in the American tropics would seem to have escaped from cultivated fields. This indicates that the species is not indigenous to the American tropics but is probably of Old World origin.
Probably the first roselle, the tall, unbranched type (var. *altissima*), cultivated for fiber in the Western Hemisphere was grown in Cuba in 1919 (5). The seed for this crop was sent by P. J. Wester from the Philippine Islands to the Cuban Agricultural Experiment Station.

We are led to believe that the culinary uses of the calyces of this species were first recognized in Jamaica in 1707 (41 p. 224), where, it was stated, "the capsular leaves are used for making tarts, jellies, and wine for the treatment of fevers and hot distempers, to allay heat and quench thirst". It is reported that the species was introduced into Florida from Jamaica, probably during 1870 to 1880, and that it was first grown in California about 1896 from seed imported from Australia (46). It is rather odd that roselle was introduced into the Philippine Islands from the Western Hemisphere (Trinidad) in 1905–250 years after it was known in Java. Considerable interest in roselle developed in Florida and California during the early 1900's with respect to the use of the enlarged calyces in jam and jelly making.

Use of roselle for commercial purposes was not recognized until the middle of the last century when it was found to be of value as a source of fiber (40). That the plant attracted but little attention until a comparatively few years ago is shown by the fact that it was not included by A. de Candolle in his "Origin of Cultivated Plants", published in 1882. Roselle appears to have been a horticultural crop of considerable importance in Queensland, Australia, in 1892, since there were two preserving factories in operation for utilization of the calyces (46). Roselle jam is reported to have been shipped to Europe in large quantities in 1896. Later this industry must have suffered a serious decline, for the Queensland Department of Agriculture Report for 1909 states that there were only 1.6 hectares (four acres) of roselle producing edible commodities.

**Description and Nomenclature**

Roselle, which produces enlarged edible calyces and the roselle fiber of commerce, is an annual plant belonging to the large family Malvaceae. It is closely related to several genera containing fiber-producing plants, *e.g.*, *Abutilon*, *Sida*, *Malva*, *Althaea*, *Urena* and *Lavatera*. Its most important relative from a commercial standpoint is cotton (*Gossypium* spp.). Other species of economic value related to roselle include okra (*Hibiscus esculentus* L.), the young fruit of which is commonly used as a vegetable; kenaf (*H. cannabinus*), cultivated for the fiber obtained from the inner bark; and some used for ornamental purposes, of which the Swamp or Rose Mallow (*H. moscheutos* L.) is a common example.

Roselle has been variously called "sorrel", "red sorrel", "East Indian sorrel plant", "thorny mallow" and "variously-leaved hibiscus". The assumption by Royle (40) that the name "roselle" is a corruption of the French word "oseille", (the equivalent of the English word "sorrel"), seems well justified. It has been spelled "rouselle", "rosella" (Spanish) and "rozelle". In the commercial trade of some parts of the world the calyces of the edible types of *Sabaloscaria* are called "karkade flowers". In India the plant is known under the vernacular names "mesta", "patwa", "lal ambari" and "kempu". The fiber has been called "India rosella hemp", "rosella fiber", "rosella hemp", "rozelle hemp" and "Pusa hemp".

Most of the statements and descriptions concerning roselle refer to a plant with red stems and calyces, the latter being used for culinary purposes. In some articles mention is made of a form with a green or whitish calyx, but no descriptions were given until not only the red