# The Mangosteen

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No other tropical fruit has been so highly praised as the mangosteen, *Garcinia mangostana* L., which belongs to the natural family Guttiferae. It has been called the "queen of fruits," and the "finest fruit in the world." Its flavor has been compared with nectar and ambrosia. Popenoe* states that the combination of beautiful coloring with delicate enticing flavor entitles the mangosteen to rank above all other fruits of the Asiatic tropics. The mangosteen compares well with finely flavored peaches, pears and nectarines, and has none of the insipid or mawkish flavor ascribed to other tropical fruits.

The mangosteen is related to several native plants of the western hemisphere such as *Clusia* or "cupey," *Mammea americana* or "mamey apple," and *Calophyllum antillanum* or "palo de Maria." Although fruits of some other species of *Garcinia* are edible, the mangosteen is the only member of this genus which is so outstandingly flavorsome.

The mangosteen is thought to be native to the Malay Peninsula and to the Molucca and Sunda Islands. It is extensively cultivated in Malaya, Indonesia, Ceylon, parts of Siam, French Indo-China, the Philippine Islands and lower Burma. Many attempts have been made to introduce it into South and Central America, the Hawaiian Islands, the West Indies, into California and Florida. So far as is known, all of the California and Florida trials have resulted in failure. It is rare in Hawaii, but there are bearing trees in Jamaica, Puerto Rico and Trinidad. The United Fruit Company has a semi-commercial planting in Honduras comprising several acres, and there are also some bearing trees in the Panama Canal Zone.

The mangosteen is a columnar or pyramidal, slow-growing, evergreen tree (Figure 1), which attains a height of 30 to 40 feet. It has a strong central trunk with evenly spaced side-branches, which may become pendent at the tips. Even when not in fruit, its clean growth is decidedly ornamental. The leathery leaves are opposite, short-stalked, elliptic-oblong in form with acuminate tips. The upper surface of the leaf is bright shining green with a dull green under-surface. All parts of the plant are entirely without pubescence. The hermaphro-

Fig. 1. Even when not in fruit, the mangosteen is a handsome tree with its columnar habit and bright green leaves.

*Popenoe, W. Manual of Tropical and Subtropical Fruits. MacMillan, N. Y., 1920.

ditic flowers are borne singly or in pairs terminally upon the branchlets. The color of the two-inch broad, fleshy flower is greenish white.

The fruit (front cover) is about the size of asmall to medium-sized apple, and when ripe becomes dark reddish violet or purple in color. Although sometimes marked with brownish scars, it is usually smooth and solid in color. The skin is a thick tough pericarp or rind which exudes a bitter, yellowish resin, especially when ripe. The calyces and stigmatic lobes persist until the fruit is ripe, and the number of stigmatic lobes is indicative of the number of internal segments. The fruit is opened by an equatorial cut in the rind to expose the five to eight transluscent white segments. These segments, the edible part of the fruit, are more easily separated from the rind and from each other than are the segments of a tangerine. The white, juicy pulp has a pleasing sweet-tart flavor which is generally well accepted by people from both temperate and tropical climates alike.

The earliest fruiting of the mangosteen in the western hemisphere was in 1875 in Trinidad. In 1885, a tree came into bearing in Jamaica. Many of the trees now present in the British West Indies originated from these early introductions. In 1903, two trees were brought to Puerto Rico from Trinidad and planted at the Federal Experiment Station. For several years they have borne large crops of fruit. Some of the oldest seedlings grown from the two parent trees are just starting to bear fruit.

Experience has shown that the seed germinate well in flats of peat moss. They have a short life unless planted shortly after removal from the fruit, but the viability may be preserved by storage at room temperature in the fruit, or by storing the clean seed in moistened peat moss or powdered charcoal. Apparently cold storage cannot be used to prolong viability. A storage temperature of 50° F. killed the seed in one week at Mayaguez.

When the seedlings reach the two-leaf stage they should be transplanted to heavily shaded outdoor nursery beds. This is best done during the early part of the rainy season when atmospheric humidity is high. Large amounts of rotted animal manure should be incorporated into the nursery soil. As soon as the plants have recovered from transplanting the light may be increased gradually until the plants are receiving almost one-half of full sunlight. After about two years in the nursery, the seedlings may be transplanted to the field with large balls of soil so as to prevent injury to the root systems. Shading is also important to survival after this transplanting, but it should be gradually removed, and the plants should be adjusted to full sunlight in about two years. The plants seem to benefit from a one-inch mulch of rotted manure applied each year toward the end of the rainy season.

Seedling mangosteen trees may be expected to come into bearing between the 10th and 15th year depending upon the location, care, and vigor of the tree. At first the annual crops will be small, but at full bearing a good tree should produce as many as 1500 fruits. Not every year will be a good crop year. The two mature trees at the Federal Experiment Station have given good crops for several years, but they gave scarcely any fruit in 1952.

The seeds of the mangosteen are produced parthenocarpically, that is, without pollination of the flower. Genetically, therefore, the seedlings are exactly like the parents. In fact, only one variety of mangosteen is known. Since it comes true from seed, seedage is the best and simplest means of propagation.