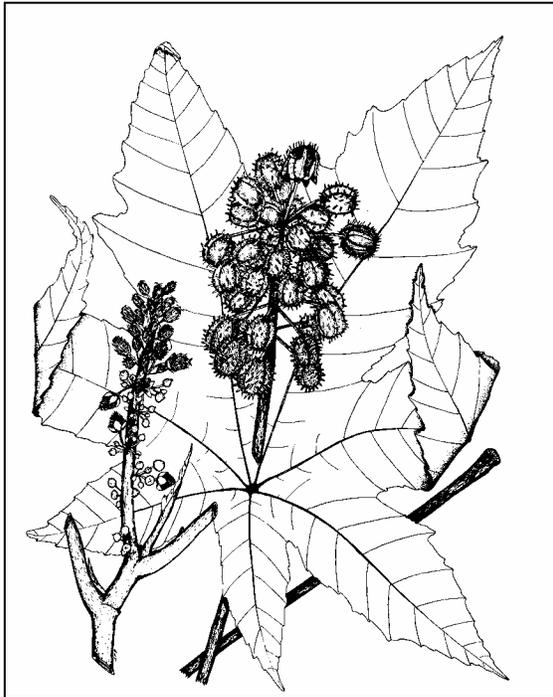


Ricinus communis L.
EUPHORBIACEAE

castor bean

No synonyms



General Description.—The castor bean, also known as the castor-oil plant, higüerito, higüerillo, palma Christi, carrapateira, ricin común, and many other common names, is grown as an annual herb in temperate countries but grows to treelike proportions on fertile ground in tropical climates. The plant usually has only one stem arising from the soil but develops a number of low robust branches when open grown. Castor bean is herbaceous when young but becomes woody with age. The wood is soft and light with a thick central pith. Occasionally, irregular brown heartwood develops (Kadambi and Dabral 1955). The bark is light brown, smooth, and exhibits rings at the nodes and raised lenticels. There are a moderate number of large, star-shaped leaves with 7 to 9 long pointed lobes (Little and others 1974). Castor bean has been cultivated in Africa and Asia from ancient times and used medicinally (CISR 1972).

Range.—Castor bean is a native of tropical Africa but has naturalized in moist tropical and subtropical regions throughout the world. It may be found growing naturally and in cultivation as an

ornamental throughout the tropical and subtropical areas of the United States and its territories.

Ecology.—Disturbance is required for successful natural stands of castor bean. The species is an intolerant pioneer. If disturbance is not repeated, it will be succeeded in a few years by grass, vines, or trees. Castor bean is competitive and most frequently seen in flood zones, on neglected farmland, and roadsides. In Puerto Rico, wild stands rarely succeed on exposed subsoils and highly weathered soils such as Ultisols. In cultivation, where excessive vegetative growth is a detriment, castor beans are often grown on marginal agricultural soils (CISR 1972). Castor bean is not frost hardy. Many pests and diseases are known worldwide, but they rarely present a serious threat to cultivated or wild stands.

Reproduction.—Castor bean flower clusters grow erect at the ends of twigs. Male flowers form on the lower part and female flowers on the upper part of each raceme. The seed capsules are covered with weak spines (spineless types exist). The capsules split into three parts, each containing one seed. The seeds are shiny brown with darker streaks or spots and resemble a bloated tick (Little and others 1974). Two seed sizes are reported in India: 1,164 seeds/kg and 2,610 seeds/kg (Kadambi and Dabral 1955). Stored seeds should be kept cool. Seeds stored at ambient temperature lose 75 percent of their viability within 3 months (CISR 1972). Soaking the seeds for 12 hours prior to sowing is reported to improve germination (CISR 1972). Germination starts in 7 to 10 days and is complete in 25 to 45 days (Kadambi and Dabral 1955). There are hundreds of natural forms and cultivated varieties of the species, including annual and perennial types.

Growth and Management.—Castor beans are planted in rows spaced from 1 to 2 m apart with spacing within the rows of about 0.5 m. When grown as an annual crop, it takes 5 to 9 months from planting to harvest (CISR 1972). Castor beans are reported to survive for 8 to 10 years in India and may reach 6 m in height (Kadambi and Dabral 1955). Annual varieties reach 1 to 2 m in height.

Seed yields under cultivation vary from 200 to 1,700 kg/ha, depending on variety and site quality (CISR 1972).

Benefits.—Castor beans contain from 31 to 61 percent oil (CISR 1972). After decorticating, they are subject to a series of hot or cold presses followed by solvent extraction, each step yielding a different grade of oil (Kirschenbauer 1960). The largest producers are Brazil and India. The principal consumer is the United States (Encyclopedia Britannica 2000), but an annual demand for 100,000 tons of castor oil is reported for Europe (NF-2000 Database 2000). The seed cake remaining after extracting the oil is used as fertilizer or cooked to destroy the toxin and incorporated into animal feeds. Not as popular as it once was, castor oil is still widely used in traditional and herbal medicine, especially in less developed countries. Its principal use in medicine is as a purgative and laxative. Castor oil is also used as a lubricant, lamp fuel, a component of cosmetics, and in the manufacture of soaps, printer's ink, plastics, fibers, hydraulic fluid, break fluid, varnishes, paints, embalming fluid, textile dyes, leather finishes, adhesives, waxes, and fungicides (Encyclopedia Britannica 2000, CISR 1972). It is gradually being replaced as a raw material for some of the uses by petroleum-based products. In India, the leaves are used as food for eri silk worms (Kadambi and Dabral 1955). The stalks from fields are burned for fuel in India and have been shown to be suitable for short-fiber pulp (Kadambi and Dabral 1955). The species has been planted for dune stabilization (CISR 1972). Castor bean is widely planted as an ornamental. Its large, star-shaped leaves make it a bold foliage plant. Some varieties have red- or purplish-colored leaves and stems.

Detrimental Effects.—Castor bean may become a weed in neglected cropland and pasture. It is not difficult to control through cultivation and mowing. Of greater concern than its weedy potential is the high toxicity of its seeds, which contain ricin, a water-soluble protein. Even a small amount of masticated seed is likely to cause death. Humans and horses are especially vulnerable. Fatal doses are from 2.5 to 6 seeds for humans and about 6 seeds for horses (CISR 1972). Symptoms are stomach irritation, diarrhea, abdominal pain, increased heart rate, profuse sweating, collapse, and convulsions. Broken seeds can cause skin irritation. The foliage is only slightly toxic (Anonymous 2000). It is advisable to completely eliminate castor bean from pastures, especially

horse pastures, and pinch off flowers of ornamental plants to prevent possible poisoning of children.

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