Terminalia catappa L.



Common Name: Tropical almond; West Indian almond; sea almond

Synonymy: None

Origin: Southeast Asia to Northern Australia, Madagascar

Botanical Description: Deciduous tree to 35 m (115 ft) tall but usually to 15 m (50 ft) in Florida; branches conspicuously whorled and horizontally tiered, spreading to 10 m (33 ft); bases often buttressed. Leaves simple, alternate, broadly ovate, clustered at branch tips, to 30 cm (12 in) long and 12 cm (5 in) wide, glossy, stiff, glabrous or with a few hairs below, turning vivid red prior to leaf fall (usually at least one red leaf present); 6-9 pairs of obvious lateral veins; margins entire, bases slightly heart shaped to wedge shaped with 2 glands at base, tips round or with a small, pinched tip; petiole to 1.5 cm (0.6 in). Inflorescence a slender, open, many-flowered spike, to 15 cm (6 in) long, shorter than the leaves; bisexual flowers on lower part of spike, male flowers above. Flowers tiny, greenish white, petals lacking, 10-12 stamens; calyx lobes triangular, hairy below. Fruit a firm, fleshy drupe, almond-like, ellipsoid, with distinct rigid wings, reddish yellow to dark purple when mature, to 8 cm (3.1 in) long and 5 cm (2 in) wide, 1-2 seeded; seeds edible, to 4 cm (1.5 in) long, cylindrical, encased in a fibrous husk.

Ecological Significance: Introduced as an agricultural species before 1933 (Gordon and Thomas 1997), and commonly grown as an ornamental in south Florida (Morton 1985). Naturalized by 1933 "in pinelands and old fields" (Morton 1976) and now found in over 45 conservation areas in south Florida (Gann et al. 2001, FLEPPC 2002). Invades coastal strands and berms, beach dunes, hardwood hammocks, disturbed sites, sandhills, maritime and rockland hammocks, pine rocklands, shell mounds, and mangroves throughout the Keys and north to Jonathan Dickinson State Park (Gann et al. 2001, FLEPPC 2002).

Readily integrates into the forest canopy in coastal areas, and grows in uplands, near river mouths, and on coastal bluffs (Francis 1989). Considered one of the most invasive horticultural plants in Hawaii (DOFAW 2001) where it is abundant on windward shorelines (Kepler 1997) and naturalized in mesic to wet coastal areas (Smith 1985). Widespread along sandy and rocky coastlines in Cameroon, sometimes becoming the dominant tree and often replacing the natural coastal scrub/forest fringing vegetation in West Africa (D. Le Maitre, Environmentek CSIR, South Africa, 2003 pers. comm.).

Invades inshore areas on the Cayman Islands (Sauer 1982, FTG), and is a common canopy tree in dense coastal forests of the Dominican Republic (Zanoni et al. 1990) and Jamaica (Morton 1985). A hardy pioneer species, it was one of the first beach-forest trees to establish on newly-formed Krakatau Island (van Borssum 1960). Edible fruit and raw nut kernels are high in protein and fats (Morton 1985). Trees may be windthrown or suffer severe breakage during hurricanes (Francis 1989).

Distribution: Herbarium specimens documented from Brevard, Broward, Miami-Dade, and Monroe counties (Wunderlin and Hansen 2002). Also reported from Martin and Palm Beach counties (FLEPPC 2002). Widely naturalized in tropical regions of the world, including India, East and West Africa, the Pacific Islands, all countries of tropical America, Bermuda, the Caribbean (Morton 1985), Puerto Rico, Hawaii, and the Virgin Islands (USDA NRCS 2002). Naturalized in South Africa (Prins and Maghembe 1994). Targeted for removal from commercial production by FNGA/TBWG growers associations (FNGA 2001). Restrictions exist in Miami-Dade County.

Life History: Fast growing, up to 1 m (3 ft) per year (Hayward 1990). Inhabits high-light coastal environments in its native range and is photosynthetically plastic, rapidly adapting to shade or full sun (Lovelock et al. 1994). Tolerates semi-arid conditions; wind resistant (Morton 1985); salt-water-tolerant; forms adventitious roots and hypertrophied lenticels when flooded (Kuo et al. 1999); withstands flooding for long periods of time (Morton 1985). Grows well on a variety of soils, including sand, silt, loam, fill dirt, well-drained clay, acidic to moderately alkaline (Francis 1989), and saline soils (Morton 1985). Forms dense crowns that shade out competition; long-lived and may survive over 80 years (Morton 1985). Leaves turn bright red or scarlet and are often shed all at once in mid-winter in south Florida (Morton 1985). Leaves contain tannins (Tanaka et al. 1986) and trees produce significant amounts of biomass (Gilman and Watson 1994c). Withstands occasional light frosts (Francis 1989). Deep-rooted but can form shallow roots when water tables are high (Francis 1989). Flowers at an early age and can produce several hundred seeds per tree annually (Francis 1989). Fresh seeds germinate quickly, with germination rates of 97% in water-soaked seeds and 70% in untreated seeds (Prins and Maghembe 1994). Seedlings grow well in shade and tolerate full sun, but are slow growing when young (Francis 1989). Seeds remain viable for long periods, even after floating for several months in seawater (Graham 1964, Nakanishi 1989). Drift seeds have been found on Santa Rosa Island in the Florida Panhandle (Burkhalter and Wright 1989). Seeds dispersed by water, bats (Exell 1954, Ramirez et al.1993), flying foxes, birds (including large parrots), and other animals (Francis 1989, Morton 1985).