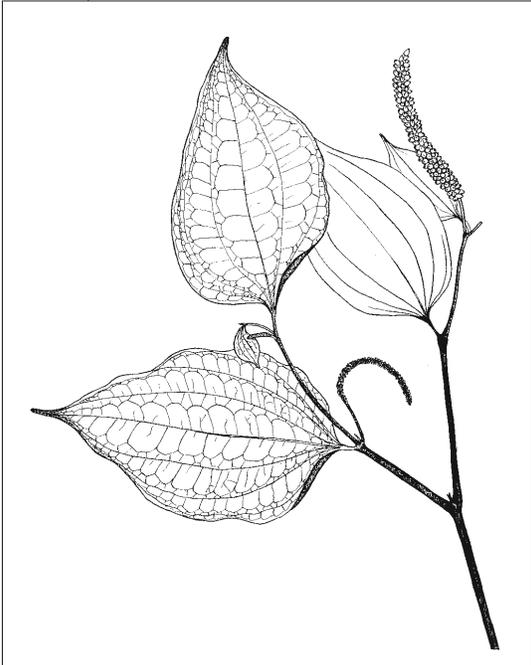


***Piper amalago* L.**  
PIPERACEAE

higuillo de limón

Synonyms: *Enckea amalago* (L.) Griseb.  
*Enckea seiberi* Miq.  
*Piper medium* Jacq.  
*Piper seiberi* (Meq.) DC.



**General Description.**—Higuillo de limón is a Spanish name meaning lemon pepper. Although the species is a pepper with the characteristic peppery taste of foliage and seeds, the pungent, disagreeable odor of crushed leaves, stems, and fruits hardly suggests lemon. Other common names include joint wood, soot-soot, guayuyo, cordoncillo, anisillo, alcotán, anisetto, and malimbé (Little and others 1974).

Higuillo de limón is a shrub that sometimes becomes a small tree. It is recognized by its enlarged, ringed nodes on smooth, green stems with many brown lenticels. Stems on older plants become gray. Higuillo de limón often has multiple stems from the base, but usually does not branch further until the crown is reached. The crowns have relatively few branches and may be flattened in older individuals. The wood is of moderate density and brittle. A taproot forms in seedlings, but secondary roots that fan out and down later match it in size, and even become thickened in older plants. The alternate, dark

green, hairless leaves are 4 to 14 cm long and 2 to 7 cm broad. They are pointed at the tip, ovate to elliptic, and have palmate venation with five main veins. Tiny flowers are borne in compact, cord-like, gray-green spikes 6 to 12 cm long. At maturity, the small (1.5 mm) fruits (drupes) are closely packed along the spike (Liogier 1985, Little and others 1974).

**Range.**—Higuillo de limón is native to tropical Mexico, Central America, South America, and the Greater and Lesser Antilles (Howard 1988).

**Ecology.**—Higuillo de limón is primarily an understory species of old growth and secondary forests. It is also found in openings and along roads. The species will endure all but the densest shade under stands, but needs openings or at least intermediate crown positions in open forest or brush thickets to reproduce. However, higuillo de limón is rarely among the pioneers that colonize disturbed sites, tending instead to invade after a low stand of trees or brush has become established. It endures competition with herbs, trees, and shrubs, but does not survive in deep grass swards. The species will grow in soils with textures from sand to clay and in all drainage classes except excessively drained and very poorly drained. It does not appear to be sensitive to differences in soil parent material. In Puerto Rico, higuillo de limón grows in areas receiving from about 1200 to 2500 mm of annual precipitation and from near sea level to more than 600 m in elevation.

**Reproduction.**—Higuillo de limón flowers and fruits throughout the year (Little and others 1974). In Costa Rica, frugivorous bats are the most and perhaps the only important dispersers of higuillo de limón seeds (Elizondo 2000, Fleming and others 1977). One sample of fruits from Puerto Rico yielded 890,000 seeds/kg. On moist filter paper, these seeds gave 77 percent germination between 8 and 37 days after sowing.

**Growth and Management.**—In Puerto Rico, higuillo de limón reaches 5.5 m in height and 8 cm in diameter (Little and others 1974). The species may become a tree to 15 m in high forests in Mexico, although it remains a shrub or small tree in successional forests and gaps (Chazdon and others 1988). Its stems have no visible annual rings and are therefore difficult to age. Judging age by stem internodal segments, individual stems in Puerto Rico appear to reach 5 to 10 years old. Because resprouting occurs from the roots, individual plants may live much longer. Natural regeneration of higuillo de limón occurs readily in early secondary forest and in open stands of older forest when seed sources are present. Stands can be easily manipulated to encourage it. Small quantities of seed have been separated by hand with tweezers after mashing the fruit. Larger quantities probably can be obtained by gentle maceration and wet sieving. Germination on the surface of wet soil or peat is recommended. Plantations could be established using containerized seedlings, although no plantings have been reported.

**Benefits.**—Higuillo de limón is eaten by cattle after the more desirable grasses and forbs are gone. Infusions of the leaves are said to alleviate colic and intestinal gas. The roots are used as a diuretic and to treat water retention (Liogier 1990). The fully ripe fruits and their seeds have the same taste as black pepper, *Piper nigrum* L., and are sometimes used as a substitute for it, especially in Jamaica. The fruits are usually dried whole and ground as needed (Grieve 2001).

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