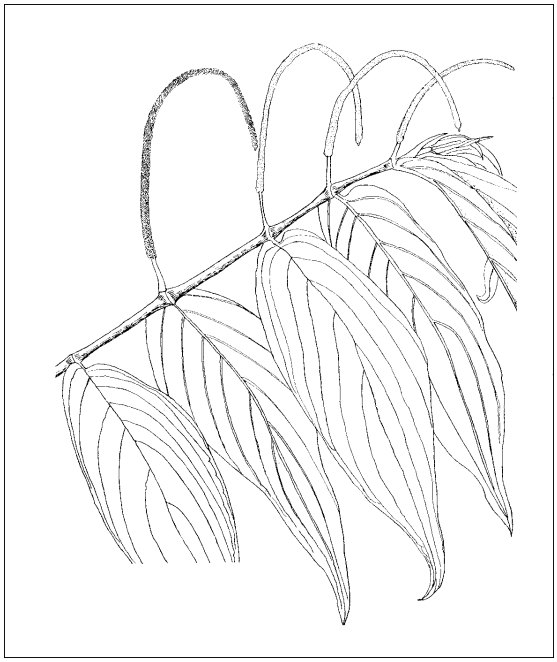
***Piper aduncum* L.** bamboo piper
PIPERACEAE

Synonyms: *Artanthe adunca* Miq.
Piper hebecarpum C. DC. in Urban
Piper martinicense C. DC. in Briq.
Piper stehleorum Trel. in Stehlé
Piper subrectinerve C. DC. in Urban



General Description.—Bamboo piper is also known as jointwood, spiked pepper, false kava, cow's foot, higuillo, higuillo de hoja menuda, cordoncillo, anisillo, guayayo, Santa María negra, aperta ruão, and matico. It is a multistemmed evergreen shrub or small tree 1 to 6 m in height and up to 10 cm or more in stem diameter. The wood is whitish, hard, and brittle with a thick, solid pith, and no annual rings. The stems have swollen nodes and bark that is smooth and gray or green. Plants are supported by abundant lateral roots and, at times, proproots arising from nodes near the base. The green twigs are not abundant. The alternate leaves have short petioles and elliptic to lanciolate blades 12 to 20 cm long. All plant parts have a peppery taste and odor. The cordlike spikes are borne opposite leaves and contain many, minute flowers that soon develop into numerous tiny, imbedded drupes with brown or black seeds (Howard 1988, Liogier 1985, Little and Wadsworth 1964, Stevens and others 2001).

Range.—Bamboo piper is native to the Greater and Lesser Antilles and on the mainland from Mexico to northern Argentina. The species has been widely planted as an ornamental and has spread by the movement of equipment between land masses. It has escaped and established itself in Florida, Southeast Asia, and a number of Pacific Islands (Instituto de Botánica Darwinion 2002, Howard 1988, Pacific Island Ecosystems at Risk 2002, Plant Protection Service 2001, Stevens and others 2001).

Ecology.—Bamboo piper grows in areas that receive from about 1500 to over 4000 mm of mean annual rainfall. It grows in Puerto Rico from near sea level to over 400 m in elevation. Most soils are colonized including fill dirt, but not salty soils and excessively well-drained soils at the dry end of the range. Disturbance, which is required for establishment, includes removal of the forest canopy to allow light to enter and the creation of a bare soil surface, although plants occasionally establish themselves on rotting logs and stumps. Bamboo piper is moderately intolerant of shade. It can survive and grow slowly under a moderate overstory but requires at least partial exposure to grow large and flower. The species commonly grows in clearcuts, tree-fall gaps, shade-grown coffee and other tree plantations, brushy pastures, roadsides, and landslides. Bamboo piper grows as individual plants or in thickets. As many as 2,632 plants/ha were reported in areas invaded in the Philippines (Philippine Council of Agriculture 2002).

Reproduction.—Bamboo piper flowers and fruits throughout the year (Little and Wadsworth 1964). Air-dried seeds from a Puerto Rican source averaged 0.000237 g/seed or 4.2 million/kg. Only 7 percent germinated when placed on moist filter paper (author's observation). The seeds are

dispersed by bats, birds, and possibly arboreal rodents (Plant Protection Service 2001). Seedlings are fairly common on disturbed ground. Established plants thicken into clumps by suckers arising from the root crown (Pacific Island Ecosystems at Risk 2002). Plants are established for agroforestry purposes in Papua New Guinea by shoving cuttings into moist soil (Bourke 1997).

Growth and Management.—The growth of bamboo piper is moderately rapid after the early seedling stage. Sprouts and suckers grow more than a meter in their first year. Producing seedlings by means of seed is difficult. Propagating plants with cuttings, which need no hormonal treatment, in the nursery or directly in the field, is recommended. Individual stems live 2 to several years; by sprouting, plants live much longer. Infestations of bamboo piper can be controlled by uprooting young plants and spraying older plants with broadleaf weed killers such as 2,4-D. Treated areas should be checked in a few weeks and treated again if regrowth has occurred (Plant Protection Service 2001).

Benefits.—Bamboo piper helps revegetate disturbed areas and contributes to the biodiversity and biomass of forests. It also is a source of food and cover for wildlife. Bamboo piper established in contour rows for soil erosion brakes helps facilitate agroforestry on steep land in Papua New Guinea (Bourke 1997). The wood is useful for fuel, stakes, fences, and rude construction (Philippine Council of Agriculture 2002). However, exposed wood rots quickly (Vélez and van Overbeek 1950). The species is planted as an ornamental. The peppery fruits have been used to season food (Little and Wadsworth 1964). Essential oil content of bamboo piper tissue (leaves and twigs), of which dillapiole is the major component, ranged from 1.2 to 3.4 percent (Maia and others 1998). Teas and other extracts of the leaves and roots of bamboo piper are used in herbal medicine as a tonic to ease diarrhea, dysentery, vomiting, ulcers, and to control bleeding (Liogier 1990). The chemical 2', 6'-dihydroxy-4'-methoxychalcone isolated from bamboo piper inhibited 98 percent of the growth of *Leishmania amazonensis* parasites *in vitro* with low host cell toxicity (Torres-Santos and others 1996). In addition, the essential oils have shown strong insecticidal, molluscicidal, and antibacterial effects (Gómez and others 1997, Ibrahim and others 1996, Orjala and others 1992).

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