

Pimenta dioica

Allspice
Myrtaceae

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June, 2003

OVERVIEW

Pimenta dioica (allspice), native to the West Indies, southern Mexico, and Central America, is widely cultivated in warm regions of the world (Riffle 1998). *P. dioica* is spread by fruit eating birds and has escaped from cultivation in some areas, including Tonga and Hawai'i (PIER 2003). In Hawai'i, *P. dioica* has long been cultivated. It was recently published as naturalized for the islands of Kaua'i and Maui (Lorence et al. 1995, Wagner et al. 1999, Starr et al. in press). It is also spreading on O'ahu (Charles Chimera pers. comm.). *P. dioica* is currently documented from moist lowland disturbed scrub and secondary forests, where it forms a sub-canopy tree. It is not yet known from natural areas, but is still occasionally cultivated, and will likely continue to spread as it is planted. Island wide control would likely not be feasible at this time. Perhaps it could be discouraged from plantings in and near natural areas located near moist lowland areas, where *P. dioica* is most likely to become invasive.

TAXONOMY

Family: Myrtaceae (Myrtle family) (Wagner et al. 1999).

Latin name: *Pimenta dioica* (L.) Merrill (Lorence et al. 1995, Wagner et al. 1999).

Synonyms: *Pimenta officinalis* Lindl. (Bailey and Bailey 1976).

Common names: Allspice, pimento, Jamaican pepper (Bailey and Bailey 1976, Riffle 1998).

Taxonomic notes: The genus, *Pimenta*, is made up of about 2 to 5 species of aromatic trees in tropical America (Bailey and Bailey 1976). The family, Myrtaceae, is comprised of about 140 genera and over 3,000 species of tropical and subtropical origins worldwide and also temperate Australia (Wagner et al. 1999).

Nomenclature: The common name, allspice, refers to its spicy berries which are picked when green and dried creating a spice that resembles nutmeg, cinnamon, and cloves (Neal 1965).

Related species in Hawai'i: A related species of *Pimenta*, the bay or bay rum tree, *Pimenta racemosa* (Mill.) [syn. *Pimenta acris* Kostel., *Myrtus acris* Swartz], native to the West Indies, Venezuela, and Guiana, is similar to allspice and can be distinguished by having elliptic leaves with fine venation, slightly larger fruit, and 5 lobed calyx (allspice is 4 lobed) (Neal 1965, Bailey and Bailey 1976). In Hawai'i, *P. racemosa* is cultivated in at least Olu Pua Botanical Gardens, Kaua'i, Lyon Arboretum, O'ahu, and Hilo, Hawai'i, based on herbarium specimens housed at Bishop Museum. Seeds of *P. racemosa* are spread by birds and the tree is cultivated and sometimes naturalized in lowlands of Fiji and most of the southern group of the Cook Islands (PIER 2003).

DESCRIPTION

"Tree, to 40 ft.; leaves oblong-lanceolate, to 6 in. long, veins prominent beneath; flowers white, about 1/4 in. across, calyx 4-lobed; fruit globose, about 1/4 in. across, dark brown." (Bailey and Bailey 1976).

"*Pimenta dioica* is easily distinguished from all other Myrtaceae occurring in the Hawaiian Islands by the following characters: small tree 8-10 m tall with smooth, peeling bark; twigs flattened, often with low wings or ridges; leaves opposite, petiolate, blades narrowly elliptic or oblong, pinnately veined, with abundant oil glands and strong, spicy odor when crushed; plants dioecious; flowers in pilosulous axillary panicles, small, 3-4 mm in diam., sepals distinct in bud, petals and stamens white; fresh fruits 7-8 mm in diam., green, ripening purple-black; seeds 2, brown, 3-4 mm in diam., suborbicular, flattened unilaterally." (Lorence et al. 1995, Wagner et al. 1999).

BIOLOGY & ECOLOGY

Cultivation: *Pimenta dioica* is an economic crop of Jamaica which exports about 5,000 tons a year (Neal 1965). The spice is used to flavor food and in perfume. The strong wood can be used to make canes or other tools (Neal 1965). It is valued as a specimen or street tree with attractive peeling bark and fragrant leaves. On Maui, this species has long been cultivated and can be observed in estates and homes from the early 1900's. It is also currently planted in some botanical gardens, parking lots, and as a street tree, though it is not as common as other popular trees such as *Clusia rosea*.

Invasiveness: In Hawai'i, Lorence et al. (1995) first reported *Pimenta dioica* as naturalized on Kaua'i, where it was coming up in secondary forests and mixed forestry plantings. It is also known to be naturalized on O'ahu and Maui where it spreads from plantings (Starr et al. in press, Charles Chimera pers. comm.). On Maui, it is popular as an ornamental tree, seen here and there, usually in older estates as a specimen tree, and has recently been used as a street or parking lot tree. *P. dioica* is prolific near plantings in lowland moist disturbed areas where it readily naturalizes. Often, carpets of seedlings can be seen germinating beneath adult trees. Seeds are spread further by fruit eating birds (PIER 2003). *P. dioica* is documented as "very invasive" on 'Eua, Tonga (PIER 2003).

Pollination: Not known.

Propagation: *Pimenta dioica* is propagated from seeds (Riffle 1998).

Dispersal: Trees are distributed around the world in the horticulture trade. Seeds can be dispersed by fruit eating birds (PIER 2003). On O'ahu, the fruit is especially attractive to bulbuls (*Pycnonotus* spp.) (Meade 1996).

Pests and Diseases: None known.

DISTRIBUTION

Native range: *Pimenta dioica* is native to the West Indies, southern Mexico, and Central America (Riffle 1998). In its native range in Jamaica, *P. dioica* grows mainly in wet limestone forests, where average annual rainfall is approximately 60 in (152 cm), and average elevation is below 1,000 ft (305 m), but it does grow up to 3,500 ft (1,067 m) (Purseglove 1968).

Global distribution: *Pimenta dioica* is widely planted in warm regions of the world as an ornamental landscaping plant valued for its fragrance and attractive habit (Riffle 1998).

State of Hawaii distribution: In Hawai'i, Skolmen (1960) reported that forestry planted 200 trees in 1928 on Kaua'i; 2,432 trees from 1929 through 1950 on O'ahu; and a single tree in 1957 on Hawai'i. *Pimenta dioica* was recently published by Lorence et al. (1995) as a new naturalized record on Kaua'i, where it is "in the hills above Kalaheo below (SW of) the Alexander Reservoir, in secondary forest and mixed forestry plantings." On Maui, Starr et al. (in press) report *P. dioica* as naturalized in Ha'iku, Makawao, and Wailuku. On O'ahu, Chimera observed an infestation in Waimanalo where the *P. dioica* formed "dog hair thickets" occurring in all size classes, from recent seedlings to 30 ft. tall, sub-canopy trees.

Island of Maui distribution: On Maui, this species has long been cultivated and can be observed in estates and homes from the early 1900's. It is also currently planted in some botanical gardens, parking lots, and as a street tree, though it is not as common as other popular trees such as *Clusia rosea*. On Maui, *P. dioica* is spreading in lowland moist disturbed scrub and forest nearby plantings. Many seedlings and scattered juveniles were observed in a thicket of guava (*Psidium guajava*), elevation 400 ft (120 m), in Ha'iku, Maui, but it is also naturalized along Baldwin Ave. and in Wailuku (Starr et al. in press).

CONTROL METHODS

Physical control: Small *Pimenta dioica* seedlings can be pulled or dug up.

Chemical control: *P. dioica* is likely controlled by herbicide applications using frill or cut stump methods.

Biological control: None known.

Cultural control: The public could be discouraged from planting *Pimenta dioica* near natural areas in moist lowlands areas, where *P. dioica* is likely to spread and become invasive.

Noxious weed acts: None known.

MANAGEMENT RECOMMENDATIONS

Pimenta dioica is widely cultivated in warm regions of the world. In some areas, it has escaped from cultivation and is now spreading in Hawai'i and is considered invasive in Tonga (PIER 2003). Seeds are spread by fruit eating birds and plants readily naturalize

in moist lowland disturbed forests. In Hawai'i, *Pimenta dioica* has long been cultivated and is now documented as naturalized on Maui and Kaua'i (Lorence et al. 1995, Wagner et al. 1999, Starr et al. in press). It is also naturalized on O'ahu (Chimera pers. comm.). On Maui, *P. dioica* is not known from natural areas yet, but is weedy in some areas of lowland secondary forests. The full potential threat to native areas is not yet well known. Currently on Maui, *P. dioica* is fairly popular in landscaping and it is occasionally planted as a street tree. Perhaps the public could be discouraged from planting *P. dioica* near natural areas in moist lowland areas.

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