

STERCULIACEAE

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Herbs, shrubs or trees, usually with stellate indumentum, sometimes mixed with simple hairs. Leaves alternate, simple, usually lobed and toothed or sometimes entire. Stipules deciduous. Inflorescence various, axillary or terminal or sometimes cauline, rarely the flowers solitary. Flowers hermaphrodite, usually actinomorphic, sometimes heterostylous. Calyx persistent, 5-lobed, the lobes valvate. Petals 5, free or adnate to the base of the androecium, contorted in bud, often persistent after withering. Stamens 5 or more; filaments mostly more or less united at the base or beyond the middle into a cup or tube; anthers mostly 2-celled, extrorse, with longitudinal dehiscence. Staminodia present in some genera. Ovary superior, 5—1-locular, carpels more or less united; styles as many as the carpels, free or more usually connate or the styles simple. Ovules 1—several in each locule, anatropous, on axile placentas. Fruit a leathery or fleshy capsule or the carpels separating as dehiscent cocci or woody follicles. Seeds with or without endosperm. Embryo straight or curved.

About 1000 species in 70 genera, mostly tropical.

Key to the genera:

1. Androgynophore present; carpels follicular, twisted in fruit; petals flat, soon falling; shrub or small tree..... *Helicteres*
Androgynophore wanting; fruit not twisted..... 2
2. Trees; leaf-margin entire; inflorescence cauliflorous; fruit large, smooth, oblong, indehiscent..... *Theobroma*
Shrubs or herbs, very rarely trees; leaf-margin serrate or dentate; fruit capsular. 3
3. Ovary 1-locular; capsule bi-valved, 1-seeded..... *Waltheria*
Ovary 5-locular..... 4
4. Petals hooded, caducous; capsule prickly..... *Ayenia*
Petals flat, more or less persistent; flowers heterostylous..... *Melochia*

Helicteres Linnaeus, Spec. Plant. 963. 1753

Pubescent shrubs or trees; pubescence of stellate or branched hairs. Leaves broad. Stipules small. Inflorescence consisting of axillary or terminal clusters or the flowers solitary. Calyx tubular with 5-cleft or 5-toothed apex or somewhat 2-lipped. Petals 5, flat, unequal or equal-clawed, the claws auriculate. Androgynophore slender, longer than the calyx, curved, bearing 6—numerous stamens; filaments slightly united in pairs at the base; anthers 2-celled, diverging, sometimes confluent into one. Staminodes wanting. Ovary borne within the ring of stamens, 5-locular, 5-lobed; styles 5, cohering or free; stigmas small, capitate. Ovules many in each locule. Fruit spiral-formed or sometimes straight, 5-carpellary; carpels follicular, splitting open along the inner suture. Seeds small, ovoid, upper and lower side flattened by mutual pressure.

Thirty or more species of tropical distribution.

Helicteres carthaginensis Jacq.

JACQUIN, Enum. Syst. Carib. 30. 1760; Select. Stirp. Amer. Hist. Picta 237. 1763; ARNOLDO, Zakflora 74. 1954; Zakflora 200. 1964.

High shrub; twigs drooping; especially the younger parts densely tomentose. Leaves simple; blades ovate or cordate, acute to acuminate at the apex, cordate or sometimes rounded at the base, 3—5-veined, stellate-tomentose to densely stellate-tomentose, 5—15 × 4—10 cm, margin serrate or double-serrate. Stipules narrow, about 1 cm long. Petioles pubescent, 1—3 cm long. Inflorescence consisting of axillary racemes; peduncles 1.5—2 cm long, yellowish-white pubescent; pedicels 1—1.5 cm long, brown-yellowish pubescent. Calyx 15—20 mm long, densely brownish-tomentose, 5-toothed, somewhat 2-lipped and slightly inflated. Petals deep red, somewhat longer than the calyx. Androgynophore 6—8 cm long, enlarging in fruit to about 10 cm. Stamens many, small; filaments about 3 mm long; anthers about 1 mm long, reniform. Nectaries present. Staminodia wanting. Ovary 5-locular, about 3 mm long; style tubulate, about 5 mm long; stigma about 1 mm long, bi-lobed. Fruit oblong, straight, 3—4 cm long, with longitudinal prominent midveins, forming a cone-like septicidal capsule. Seeds brown, about 4 × 3 mm, oblong, angular.

Colombia; some plants have been found on Curaçao.

Mainly in deciduous forest.

CURAÇAO: Seroe Christoffel, 150 m (Arnoldo 52, fl. & fr. Feb.; 1922; fl. Feb; 1875, fr. Jan.; Stoffers 1274, fr. Dec.); id., 200 m (Stoffers 229, fl. & fr. Oct.; Arnoldo 5, fl. & fr. Nov.; 1152, fl. & fr. Jan.).

Theobroma Linnaeus, Spec. Plant. 782. 1753

Trees. Leaves large, simple. Inflorescence cauliflorous or axillary, clustered or flowers solitary. Flowers small, pedunculate. Calyx 5-parted. Petals 5, hooded, concave, clawed, with a terminal spatulate appendage. Staminodes 5, episepalous, linear or lanceolate; anthers 2 or 3 together between the staminodes, the cells diverging. Ovary

5-locular; style terminating in a 5-cleft stigma. Fruit large, woody, indehiscent, pendulous, pulpy within. Seeds numerous.

About 12 species, natives of tropical America.

Theobroma cacao L.

LINNAEUS, Spec. Plant. 782. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 91. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 85. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 133. 1909; URBAN, Symb. Ant. 4: 406. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 284. 1913; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 574. 1924; FAWCETT & RENDLE, Fl. Jamaica 5(3): 160. 1926; LEON & ALAIN, Fl. Cuba 3: 283, fig. 181. 1953; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 133. 1954; GOODING *et al.*, Fl. Barbados 292. 1965; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 239, fig. 243. 1971; ADAMS, Flowering plants of Jamaica 480. 1972; FOURNET, Fl. Guadeloupe & Martinique 1525. 1978.

Small tree, up to 10 m tall; twigs slender, pubescent with stellate, simple and forked hairs, internodes 2—4 cm long. Leaves simple; blades thin, ovate or ovate-oblong, acuminate at the apex, obtuse or rounded, narrowed and somewhat unequal at the base, 18—43 × 7—12 cm, pinnately veined and reticulate, glabrous or with a few hairs on the veins especially on the upper surface; petioles 1—3 (—11) cm long. Stipules linear, acuminate, about 1 cm long. Inflorescence cauliflorous of many-flowered clusters on the trunk and older branches. Flowers almost sessile on the short, simple branches of a rudimentary inflorescence; pedicels very slender, 1—2.5 cm long. Calyx pinkish, pubescent, divided almost to the base, 5—7 mm long, the segments acute. Petals yellowish, hood 2.5 mm long, appendage 5 mm long, rhomboid-spathulate with a long claw with a knee-like band. Stamens 10, united into a cup at the base, 5 staminodial, the others bearing 2-celled anthers. Ovary 5-locular; style filiform, about 1.5 mm long, terminating in a 5-cleft stigma, 0.5 mm long. Ovules many in each locule. Only one flower of a cluster producing a fruit. Fruit oblong or subglobose, somewhat cucumber-shaped, 10—25 cm long, 5—10 cm wide, yellow or reddish, longitudinally ribbed, thick and warty, leathery and tough, not splitting when ripe, 5-locular. Seeds many, in a soft butter-like pulp of a pleasant sweetish-acid flavour. Seeds compressed, somewhat almond-shaped, 1 × 0.5 cm, with a thin, pale, reddish-brown, fragile skin or shell, covering an oily, aromatic bitter kernel which consists mostly of the crumpled cotyledons.

Cultivated and spontaneous in the West Indies and tropical continental America; introduced into the tropical regions of the Old World.

Vernacular names: cacao, cocoa, chocolate tree (Windward Group).

SABA: Windwardside (Boldingh 1937, st. July); gut near the Saddle, 300 m (Stoffers 4131, st. Aug.); slope of The Mountain, 600—800 m (Suringar s.n., st. Ap. [L]).

ST. EUSTATIUS: inner slope of The Quill, 350 m (Boldingh 1217, st. June); bottom of The Quill (Boldingh 446, st. June); The Quill (Suringar s.n., st. Ap. [L]); without loc. (van Groll-Meyer s.n., st. May).

Waltheria Linnaeus, Spec. Plant. 673. 1753

Herbs, shrubs or trees with stellate and simple hairs. Leaves alternate, irregularly toothed. Stipules narrow. Inflorescence consisting of terminal heads, racemes or panicles or the flowers clustered in the leaf-axils. Involucre of 3 deciduous linear or linear-

lanceolate bracts. Calyx 5-lobed. Petals 5, spathulate, marcescent. Stamens 5, epipetalous; filaments united at the base; anthers with 2 parallel cells. Staminodes wanting. Ovary 1-locular, sessile; style slightly lateral; stigma club-shaped or fringed. Ovules 2. Capsule 2-valved. Seed solitary, ascending.

About 60 species in the tropics, mainly in America.

Waltheria indica L.

LINNAEUS, Spec. Plant. 673. 1753; GOODING *et al.*, Fl. Barbados 291, fig. 20. 1965; BRIZICKY, Journ. Arnold Arb. 47: 73. 1966; ADAMS, Flowering plants of Jamaica 483. 1972; FOURNET, Fl. Guadeloupe & Martinique 1528. 1978; — *Waltheria americana* LINNAEUS, Spec. Plant. 673. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 95. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 87. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 132. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 237. 1909; URBAN, Symb. Ant. 4: 405. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 283. 1913; Fl. D.W. Ind. Isl. 2: 67. 1914; URBAN, Symb. Ant. 8: 431. 1920; BRITTON & MILLSAUGH, Bahama Fl. 278. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 573. 1924; FAWCETT & RENDLE, Fl. Jamaica 5(3): 167, fig. 63. 1926; WILLIAMS, Fl. Trinidad & Tobago 1: 102. 1928; QUESTEL, Fl. Isl. St. Bartholomew 153. 1941; LEON & ALAIN, Fl. Cuba 3: 282. 1953; ARNOLDO, Zakflora 75. 1954; Zakflora 201. 1964.

Shrub or undershrub, 60—150 cm high, all parts softly tomentose. Leaves simple; blades oblong, oblong-ovate or oblong-lanceolate, more or less obtuse or somewhat acute at the apex, subcordate, rounded or obtuse at the base, 1.7—7 × 0.7—4.3 cm, pinnately veined and somewhat reticulate, veins impressed on the upper surface and prominent below, woolly especially on the lower surface, the margin toothed; petioles 3—22 (—40) mm long. Stipules linear-lanceolate, 3—6 mm long. Inflorescence a dense, globose head in the axils of the leaves, sessile or on an about 15 mm long peduncle. Bracteoles 3—5 mm long. Calyx 3.5—5 mm long, the lobes linear-lanceolate, villous-hirsute, similar to the bracteoles. Petals yellow, nearly 6 mm long, oblong, claws slender. Staminal-tube 2 mm high, the free upper parts of the filaments very short; anthers 2-celled. Ovary hairy, 1—1.5 mm long; style one, 2 mm long; stigma small. Fruit a capsule, 2—3 mm long. Seeds obliquely obovoid, somewhat laterally compressed, dark brown to black.

Tropical and subtropical regions.

Fields, banks and hillsides at lower elevations.

Vernacular names: yerba di leba (Leeward Group)
mash mellow (Windward Group).

BONAIRE: neighbourhood of Rincón (Boldingh 7116, fl. & fr. Feb.); Fontein (Suringar s.n., fl. Feb. [L]); near saltponds in southern Bonaire (Boldingh 7502, fl. & fr. Feb.; Suringar s.n., fl. & fr. Feb. [L]); Witte Pan (Stoffers 466, fl. & fr. Oct.); Lima Plantation (Stoffers 492, fl. & fr. Nov.); airfield (Stoffers 778, fr. Nov.; 768, fl. & fr. Nov.).

CURAÇAO: hofje of Siberië (Boldingh 5057, fl. & fr. Dec.); calcareous hills near Santa Cruz (Boldingh 5603, fr. Dec.); hofje of Groot St. Joris (Boldingh 5426, fl. & fr. Nov.); Mundo Nobo (Arnoldo 1397, fl. & fr. Oct.); hofje of Montagne (Arnoldo 6, fl. & fr. Feb.); without loc. (Boldingh 5730, fl. & fr.).

SABA: between The Bottom and Mary's Point, 100—200 m (Boldingh 1528, fl. & fr. July); from Windwardside to Hellsgate (Boldingh 1685, fl. & fr. July); road to Mary's Point (Arnoldo 833, fr. Aug.).

ST. EUSTATIUS: between Oranjestad and Fort de Windt, on top of the cliff, 40 m (Boldingh 757, fl. & fr. June; 763a, fl. & fr. June); seashore near Oranjestad (Boldingh 37, fl. & fr. May); Bengalén (Boldingh 619, fr. June); Oranjestad (Boldingh 1273, st. July); along road from Oranjestad to Fort de Windt (Stoffers 3518, fl. & fr. July; 3499, fl. & fr. July); along roads in Cultuurvlakte (Stoffers 3793, fl. & fr. July; Suringar s.n., fl. May [L]); in garden in Oranjestad (Boldingh 1273, st. July); top of The Quill, 390 m (Boldingh 503, fl. & fr. June); slope of the lower part of The Quill near Bengalén (Boldingh 720, fl. & fr. June); slope of The Quill near White Wall (Stoffers 4755, fr. Aug.; 4757, fr. Aug.); slope of the Quill near Glass Bottle (Stoffers 3854, fl. & fr. July); northern slope of The Quill (Stoffers 4008, fl. & fr. July); slope of The Quill (Suringar s.n., fl. & fr. Ap. [L]); Pangga Hill (Suringar s.n., fl. Ap. [L]); without loc. (van Groll-Meyer 257, st.).

ST. MARTIN: in orchard near Bellevue (Boldingh 2844, st. Aug.); near Fort Willem (Boldingh 2794, fl. & fr. Aug.); near airfield (Arnoldo 1233, fl. & fr. March); Prince Quarter, 100 m (Arnoldo 3176, fl. & fr. March); hills along western side of Cul de Sac, north of Sentry Hill (Stoffers 2573, fl. & fr. March); Low Lands (Stoffers 2688, fl. & fr. Ap.); west of Simson Bay (Stoffers 2515, fl. & fr. March); airfield (Stoffers 2373, fl. & fr. March).

Ayenia Linnaeus, Sv. Vet. Akad. Handl. 17: 23, pl. 2. 1756

Herbs, shrubs or undershrubs, tomentose by stellate hairs, hirsute or glabrescent. Leaves alternate, serrate, petiolate. Inflorescence consisting of axillary clusters or cymes or the flowers solitary. Flowers small, pedicellate. Calyx 5-partite. Petals 5, limb hooded-concave, apex inflexed and adnate to the staminal tube with a very long, thread-like claw. Staminal-tube lobed by small staminodes alternating with the petals; anthers solitary between the staminodes, 3-celled. Ovary stipitate, 5-locular; style short, simple; stigma capitate or somewhat 5-lobed. Ovules 2 in each locule. Capsule subglobose, muciculate, splitting into 5 carpels, each 2-valved and 1-seeded, opening along the inner angle. Seeds rugose, oblong, narrowing to one end.

About 70 species, natives of tropical America.

Key to the species:

1. Shrubby herb, 1—2 m high; leaves ovate-cordate, acuminate, crenate-dentate, 2.5—10 × 1—6 cm; petals greenish; capsule 6—7 mm long and about 10 mm in diam..... *A. magna*
 Suffrutescent procumbent herb, 10—40 cm high; leaves oblong, lanceolate, roundish, 0.5—1.3 × 0.3—0.8 cm; petals purple; capsule 3 mm long and 4—6 mm in diam..... *A. pusilla*

***Ayenia magna* L.**

LINNAEUS, Syst. Nat. ed. 10. 1247. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 91. 1859 ['1864']; BOLDINGH, Fl. Ned. W. Ind. Eil. 283. 1913; Fl. D.W. Ind. Isl. 2: 67. 1914; FAWCETT & RENDLE, Fl. Jamaica 5(3): 160. 1926; ARNOLDO, Zakflora 151. 1954; Zakflora 200. 1964. BRIZICKY, Journ. Arnold Arb. 47: 68. 1966; ADAMS, Flowering plants of Jamaica 481. 1972.

Annual or short-living perennial shrubby herb, 1—2 m high; twigs, petioles, peduncles and pedicels distinctly hairy; internodes 3—5 cm long. Leaves simple; blades ovate, acu-

minate at the apex, cordate at the base and the lobes obtuse, 2.5—10 × 1—6 cm, 3—5-veined at the base, margin crenate-dentate, pubescent with stellate or simple hairs; petioles 1—4.5 cm long. Stipules small, about 1.5 mm, subulate, persistent at least in part. Inflorescence consisting of axillary, stalked, umbellate, 2—3-flowered cymes; peduncle 1—1.5 cm long. Flowers on 0.8—1.2 cm long pedicels. Bracts small, 0.5—1 mm long, acuminate. Calyx 2.5—3 mm long, divided to $\frac{3}{4}$ of the length; segments ovate-lanceolate, acuminate, puberulous outside. Petals white-yellow-greenish, slender clawed about 2 mm long, limb 0.8 mm long, 1.1 mm wide, glandless, kidney-shaped, hastate, cleft and 2-dentate at apex. Stamens 5, epipetalous; staminodes 5, episepalous, all connate into a more or less campanulate staminal tube, upper part of the filaments of fertile stamens distinctly reflexed, about 1 mm long, upper parts of staminodes distinct about triangular, recurved, about 0.8 mm long; anthers 0.2 mm long. Ovary sessile, about 1 mm long; style 0.5 mm long; stigma small, 5-lobed. Capsule 6—7 mm long, about 10 mm in diam., depressed globose, more or less covered with soft spines, 1—1.5 mm long. Seeds about 4 mm long, transversely wrinkled, with minute tubercles, dark-brown.

Northern South America, Bonaire, and Curaçao.

In dry thickets especially on limestone.

BONAIRE: Rooi Sangoe, near Dos Pos (Arnoldo 446, fl. & fr. Feb.); calcareous plateau of Montagne (Boldingh 7405, fl. & fr. Feb.); neighbourhood of Rincón (Boldingh 7099, fl. & fr. Feb.).

CURACAË: hills near Blein (Boldingh 4759, fl. Oct.); road from Cas Chiquito to Veeris Berg (Boldingh 4703, fl. Oct.); near Plantersrust (Suringar s.n., fl. & fr. Jan. [L]); hofje of Valentijn (Boldingh 5098, fl. & fr. Nov.); Savonet (Suringar s.n., fl. & fr. Jan. [L]); hofje of Santa Barbara (Stoffers 395, fl. Oct.); Cas cora (Stoffers 419, fl. Oct.); Rooi Beru (Stoffers 217, fl. & fr. Oct.; Arnoldo 1791, fl. & fr. Dec.); Bloementuin (Stoffers 424, fl. Oct.); Seroe Christoffel (Stoffers 1197, fl. & fr. Dec.); Malpais, on rocky hill (Britton & Shafer 3118, fr. March); without loc. (Aschenberg s.n., fl. & fr.).

Ayenia pusilla L.

LINNAEUS, Syst. Nat. ed. 10. 1247. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 92. 1859 ['1864']; BOLDINGH, Fl. D.W. Ind. Isl. 1: 132. 1909; URBAN, Symb. Ant. 4: 406. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 284. 1913; URBAN, Symb. Ant. 8: 432. 1920; BRITTON & MILLSAUGH, Bahama Fl. 278. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl 5: 574. 1924; FAWCETT & RENDLE, Fl. Jamaica 5(3): 161, fig. 61. 1926; QUESTEL, Fl. Isl. St. Bartholomew 153. 1941; LEON & ALAIN, Fl. Cuba 3: 285. 1953; BRIZICKY, Journ. Arnold Arb. 47: 68. 1966.

A low shrub or suffrutescent perennial herb, usually much-branched at the base; the slender branches ascending, erect or prostrate, 10—40 cm high, puberulent. Leaves simple; blades lanceolate, ovate, oval or suborbicular, acute or obtuse at the apex, rounded or cordate at the base, margin sharply serrate, 0.5—1.3 × 0.3—0.8 cm, glabrate or puberulent, with stellate or simple hairs, especially on the veins of the lower surface, and there black-dotted, 3—5-veined from the base; petiole 3—4 mm long, pubescent. Stipules small, about 1 mm long. Flowers solitary or 2—3 together in the leaf-axils; pedicels 1.2—2 mm long. Calyx 1.5—2.5 mm long, divided nearly to the base, segments ovate-

lanceolate, acute or acuminate. Petals purple, the claw slender, about 2 mm long; limb 0.8 mm long, roundish-rhomboid, 2-cleft, with a stalked oblong gland on the back, much shorter than the limb. Staminal tube funnel-shaped above, tubular below, more or less united to the stalk of the ovary; lobes erect, submarginate, about 0.4 mm long; filaments about 1 mm long; anthers 0.1 mm long. Ovary stipitate, 0.4 mm long, the stalk 1 mm long; style 0.4 mm long; stigma small. Capsule 3 mm long, 4—6 mm in diam., globose, slightly flattened above, muricate. Seeds brown, slightly longer than 1.5 mm, tuberculate, transversely rough.

Continental tropical America; West Indies.
Only once collected.

ST. MARTIN: from Philipsburg to Point Blanche (Boldingh 3400a, fl. & fr.)

Melochia Linnaeus, Spec. Plant. 674. 1753

Herbs, shrubs or rarely trees with stellate, simple or forked hairs. Leaves narrow, ovate or broadly heart-shaped with serrate margins. Inflorescence axillary or terminal. Flowers heterostylous. Calyx 5-lobed or -toothed, campanulate, persistent. Petals 5, spatulate or oblong, narrowed and more or less adherent to the stamens below, withering without falling. Stamens 5, opposite the petals, united into a tube at the base; staminodes minute or wanting. Ovary 5-locular; styles 5, free or more or less united; stigmas clavate. Ovules 2 in each locule. Capsule 5-valved, 5—10-seeded. Seeds obovate, trigonal, tan-coloured.

About 25 species in tropical and subtropical regions.

Key to the species:

1. Capsule 5-lobed-globose, composed of 5 cocci at length separating; plant glabrous; inflorescence axillary; flowers subsessile in dense subglobose clusters *M. nodiflora*
Capsule pyramidal, 5-angled. 2
2. Plant glabrous, inflorescence opposite the leaves, fruit short-rostrate.
..... *M. pyramidata*
Plant woolly, whitish, inflorescence axillary, fruit long-rostrate.
..... *M. tomentosa*

Melochia nodiflora Sw.

SWARTZ, Nov. Gen. et Spec. Plant. 97. 1788; GRISEBACH, Fl. Br. W. Ind. Isl. 94. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 87. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 131. 1910; URBAN, Symb. Ant. 4: 405. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 282. 1913; URBAN, Symb. Ant. 8: 430. 1920; FAWCETT & RENDLE, Fl. Jamaica 5(3): 164. 1926; WILLIAMS, Fl. Trinidad & Tobago 1: 101. 1928; QUESTEL, Fl. Isl. St. Bartholomew 153. 1941; LEON & ALAIN, Fl. Cuba 3: 282, fig. 120. 1953; GOODING *et al.*, Fl. Barbados 289. 1965; GOLDBERG, Contr. U.S. Nat. Herb. 34(5): 271. 1967; ADAMS, Flowering plants of Jamaica 483. 1972; FOURNET, Fl. Guadeloupe & Martinique 1530. 1978.

A low, spreading shrub, up to 1.5 m high, the younger parts pubescent by simple and forked hairs, internodes 1—3 cm long. Leaves simple; blades ovate, acute or acuminate at the apex, rounded or truncate at the base, 3—6 × 1.5—3.5 cm reticulate-veined, pubescent at the veins on the upper surface and with a few scattered hairs at the upper surface; petioles 0.5—2 cm long. Stipules linear-lanceolate, 4—6 mm long. Inflorescence consisting of dense, globose, axillary clusters. Flowers subsessile; pedicels 0—0.3 cm long. Calyx 3—4 mm long, covered with stellate, simple and glandular hairs, the lobes lanceolate, sinus between the calyx-teeth usually acute. Petals white with pink veins, spatulate, about 5 mm long. Stamens united, the tube about 2 mm long; anthers about 0.5 mm long. Ovary ovoid or globose, hirsute by simple hairs, about 1 mm long; styles free, about 1 mm long; stigma about 0.5 mm long. Fruit globose, 5-lobed, about 3 mm long and 3 mm in diam., hirsute, the 5 carpels separating septicidal when ripe. Seed one in each locule, 2—22 mm long, 1.1—1.4 mm wide, trigonal, brown or tan.

Continental America; West Indies.

Shrubby weed.

ST. MARTIN: top of the hill on the northern side of Cul de Sac, 200—300 m (Boldingh 2989, st. Aug.); Tintamarre (Boldingh 3392, fl. Sept.); Experimental garden (Arnoldo 1315, fl. March; Stoffers 2349, fl. & fr. March); hills on the western side of Cul de Sac, north of Sentry Hill (Stoffers 2571, fl. & fr. March); Philipsburg (Stoffers 2454, fl. & fr. March).

Melochia pyramidata L.

LINNAEUS, Spec. Plant. 674. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 93. 1859 [1864]; DUSS, Fl. phan. Ant. franç. 86. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 131. 1909; URBAN, Symb. Ant. 4: 404. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 282. 1913; Fl. D.W. Ind. Isl. 2: 67. 1914; URBAN, Symb. Ant. 8: 429. 1920; FAWCETT & RENDLE, Fl. Jamaica 5(3): 165. 1926; QUESTEL, Fl. Isl. St. Bartholomew 153. 1941; LEON & ALAIN, Fl. Cuba 3: 280. 1953; ARNOLDO, Zakflora 201. 1964; GOODING *et al.*, Fl. Barbados 290. 1965; GOLDBERG, Contr. U.S. Nat. Herb. 34(5): 337. 1967; ADAMS, Flowering plants of Jamaica 482. 1972; FOURNET, Fl. Guadeloupe & Martinique 1530. 1978; — *Melochia pyramidata* (L.) BRITTON, Mem. Brooklyn Bot. Gard. 1: 69. 1918; BRITTON & MILLSAUGH, Bahama Fl. 277. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 572. 1924.

var. *pyramidata*

A low undershrub, up to 1 m high; stems minutely hairy on the younger parts, hairs simple or forked, stellate and sometimes glandular, internodes 2—6 cm long. Leaves simple; blades ovate to lanceolate, acute to acuminate at the apex, wedge-shaped to truncate at the base, 2—5 × 0.5—2 cm, glabrous to sparsely pubescent, reticulate-veined, margin serrate; petioles 0.5—1.8 cm long. Stipules linear, 2—3 mm long, with simple hairs. Inflorescence cymose-umbellate, leaf-opposite, 3—10-flowered. Bracts hirsute, up to 0.5 cm. Flowers on 1 mm long pubescent pedicels, heterostylous. Calyx 4 mm long, pubescent, the lobes linear, about 2 mm long, the sinus acute to narrowly rounded. Petals 5 or rarely 6, purplish, with yellow near the base, about 4 mm long, more or less obovate, narrowed into a claw. Stamens about 4 mm long; filaments for about 2 mm free; anthers 0.5—1 mm long. Ovary 1—1.5 mm long, provided with stellate hairs; styles about 3 mm long, united in the lower part, hirsute; stigma 0.1 mm long. Ovules 1 or 2 in each locule. Fruit a pyramidal capsule, 5-angled, loculicidally dehiscent along the entire dorsal suture, 6—8 mm long. Seeds 1 or 2 in each locule, trigonal, brown, 1.5 mm long.

Continental tropical America; West Indies.

Rather common in dry vegetation types and on roadsides.

ST. EUSTATIUS: along roads in Oranjestad (Boldingh 1076, fl. & fr. June; Stoffers 3881, fl. & fr. July; 3858, fl. & fr. July); Oranjestad (Arnoldo 3202, fl. & fr. Dec.); along roads in Cultuurvlakte (Suringar s.n., fl. & fr. May [L]; Stoffers 3796, fl. & fr. July; 3810, fl. & fr. July); northern slope of The Quill (Stoffers 4010, fl. & fr. July); foot of The Quill (Suringar s.n., fl. May [L]); without loc. (van Groll-Meyer 39, fl. & fr.; Burgers 180, fl. & fr. Feb.).

ST. MARTIN: Simson Bay (Arnoldo 1290, fl. & fr. March); Philipsburg (Burgers 455, fl. & fr. March); Experimental garden Cul de Sac (Stoffers 2339, fl. March); airfield (Stoffers 2408, fl. & fr. March).

Melochia tomentosa L.

LINNAEUS, Syst. Nat. ed. 10. 1140. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 93. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 86. 1897; BOLDINGH, Fl. D. W. Ind. Isl. 1: 132. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 237. 1909; URBAN, Symb. Ant. 4: 404. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 283. 1913; Fl. D. W. Ind. Isl. 2: 67. 1914; URBAN, Symb. Ant. 8: 429. 1920; FAWCETT & RENDLE, Fl. Jamaica 5(3): 166. 1926; WILLIAMS, Fl. Trinidad & Tobago 1: 100. 1928; QUESTEL, Fl. Isl. St. Bartholomew 153. 1941; LEON & ALAIN, Fl. Cuba 3: 280. 1953; ARNOLDO, Zakflora 75. 1954; Zakflora 201. 1964; GOODING *et al.*, Fl. Barbados 290. 1965; GOLDBERG, Contr. U.S. Nat. Herb. 34: 327. 1967; ADAMS, Flowering plants of Jamaica 482. 1972; FOURNET, Fl. Guadeloupe & Martinique 1530. 1978; — *Moluchia tomentosa* (L.) BRITTON, Mem. Brooklyn Bot. Gard. 1: 69. 1918; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 571. 1924.

Shrub or subshrub, up to 4 m high, the young stems and petioles whitish-woolly pubescent, hairs stellate, internodes 0.8—5.5 cm long. Leaves simple; blades ovate to ovate-lanceolate, acute to rounded at the apex, rounded, subcordate or truncate at the base, 0.8—4 (—7) × 0.3—3 (—5) cm, veins impressed on the upper surface, prominent on the lower surface, woolly on both sides, margin irregularly crenate or crenate-serrate; petioles 0.3—2 cm long. Stipules deltoid, acute, nearly linear, 0.3—0.7 cm long, deciduous. Inflorescence usually axillary, sometimes terminal or leaf-opposite, umbellate, 2—10 (—20) flowers per umbel; peduncle 1—2.5 cm long. Bracts as the stipules. Flowers on 0.4—1 cm long, pubescent pedicels. Calyx 5—8 mm long, woolly outside, the lobes 4—6 mm long, narrow, the sinus acute to rounded. Petals 5, rosy-purple, 10—12 mm long, oblanceolate to obovate-cuneate or spatulate, narrowed into a claw, attached to the stamens for about 4 mm. Longistylous form: stamens about 5 mm long, the filaments free for about 3 mm, anthers up to 1 mm long; ovary ellipsoid to ovoid, about 2.5 mm long; style about 7 mm long, free for about 5 mm, pubescent with stellate and simple hairs; stigma about 0.5 mm long. Brevistylous form: stamens about 10 mm long, the filaments free for about 6 mm; anthers also about 1 mm long; ovary ellipsoid, about 2 mm long; style about 3 mm long, free for about 1 mm, also pubescent; stigma also about 1 mm long. Fruit a pyramid-shaped capsule, long rostrum, about 0.8 cm long, 0.9 cm wide, rostrum about 0.6 cm long; dehiscence loculicidal all along the dorsal and ventral sutures, eventually also septicial. Seeds 2—3 mm long, obovate, brown, 1 or 2 in each locule.

West Indies, continental tropical America, north to Texas and California.

Vernacular name: betoonika; basora corra (Leeward Group)
black toarch (Windward Group).

Key to the varieties:

1. Leaves medium-sized, blades typically 2—6 cm long, 0.7—4.0 cm wide, petiole often more than 1 cm long. var. *tomentosa*
Leaves small, blades typically 1—3 cm long, up to 2 cm wide, petiole less than 1 cm long; stems much more branched and canescent for a shorter distance from the apex than in the typical variety var. *frutescens*

var. *tomentosa*

GOLDBERG, Contr. U.S. Nat. Herb. 34: 327. 1967.

Plant usually robust. Leaves tomentose and canescent on both surfaces; blades typically 2—6 cm long and 0.7—4.0 cm wide, rounded at the apex, serrations relatively numerous and narrow; petiole often more than 1 cm long. Inflorescence often at many nodes and many-flowered.

Southern Florida, southern Texas to Nicaragua, from Venezuela and Colombia to north-eastern Brazil; West Indies.

Common shrub in several types of vegetation.

ARUBA: calcareous soil near San Nicolas (Boldingh 6498, fl. & fr. Jan.); calcareous soil near Oranjestad (Boldingh 6243, fl. Dec.); Arikok (Beaujon s.n., st.); slope of Miralamar (Boldingh 6461, fl.); Playa (Arnoldo 179, fl. & fr. Dec.); near Matoguera (Stoffers 1448, fl. Jan.); near Washington Plantation (Stoffers 1508, fl. & fr. Jan.); along road from Noord to Westpunt (Stoffers 1781, fl. Jan.); without loc. (Koolwijk s.n., sub Boldingh s.n., fl. June [L]).

BONAIRE: calcareous plateau of Montagne (Boldingh 7418, fl. & fr. Feb.); neighbourhood of Rincón (Boldingh 7010, fl. & fr. Jan.); hills near Rincón (Boldingh 7287, fl. & fr. Jan.); Slagbaai Plantation (Stoffers 597, fl. Nov.); Pos Bronswinkel (Stoffers 813, fl. Nov.); airfield (Stoffers 772, fl. Nov.); from Rincón to Slagbaai Plantation (Suringar s.n., fl. Feb. [L]); Rooi Grandi near Fontein (Suringar s.n., fl. & fr. Feb. [L]).

CURAÇAO: calcareous soil near Knip (Boldingh 5565, fl. & fr. Dec.); hofje of Valentijn (Boldingh 5354, fl. Nov.); hofje of Zuurzak (Boldingh 5391, fl. Nov.); hills near Blein (Boldingh 4759c, fl. Oct.); Seroe Christoffel, 270—340 m (Burgers 24, fl. & fr. Dec.); fields near Willemstad (Britton & Shafer 2913, fl. March); Mundo Nobo (Arnoldo 1183, fl. & fr. Oct.); hofje near Weis Afo (Nagelkerken 108, fl. & fr. Feb.); abandoned hofje near Jan Thiel (Nagelkerken 345, fl. Jan.); Gasparito (Stoffers 814, fl. & fr. Dec.); Brakkeput Mei Mei (Stoffers 193, fl. Oct.; 204, fl. Oct.); Cas cora (Stoffers 260, fl. Oct.; 259, fl. Oct.); Noordkant Plantation (Stoffers 137, fl. & fr. Oct.); Ronde Klip (Stoffers 1247, fl. & fr. Dec.); Pareira (Stoffers 436, fl. & fr. Oct.); Klein St. Michiel (Stoffers 263, fl. & fr. Oct.); Malpais (Stoffers 288, fl. & fr. Oct.); Santa Barbara Plantation, near Tafelberg (Stoffers 387, fl. Oct.); St. Marie (Went 1324, fl. & fr. Dec.); Savonet (Suringar s.n., fl. & fr. Jan. [L]); Fort Nassau (Suringar s.n., fl. & fr. Jan. [L]); Hato (Suringar s.n., fl. & fr. Jan. [L]); Veeris Plantation (Suringar s.n., fl. Jan. [L]); foot of Veeris Berg (de Wilde 47a, fl. Dec. [L]); Plantersrust (Suringar s.n., fl. & fr. Jan. [L]).

var. *frutescens* (Jacq.) DC.

DECANDOLLE, Prodr. 1: 490. 1824; GOLDBERG, Contr. U.S. Nat. Herb. 34: 332. 1967; — *Melochia frutescens* JACQUIN, Obs. Bot. 2: 22, pl. 1767; GRISEBACH, Fl. Br. W. Ind. Isl. 93. 1859 [1864]; FOURNET, Fl. Guadeloupe & Martinique 1530. 1978; — *Moluchia frutescens* (JACQ.) MEDICUS, Malvenfam. 10. 1787.

Plant usually robust; stems strongly branched and canescent for a rather short distance from the apex. Leaves smaller than in the typical variety, 1–3 cm long, up to about 2 cm wide, acute at the apex, serrations relatively numerous and narrow; petiole less than 1 cm long. Inflorescence often at many nodes. Flowers less than in the typical variety. Petals up to 3.5 cm long.

Mexico, Venezuela, and Colombia; West Indies.

Not common.

ARUBA: north-east of Jamanota (Stoffers 1644, fl. Jan.); Seroe Pretoe (Stoffers 1667, fl. & fr. Jan.).

BONAIRE: Slagbaai Plantation (Stoffers 741, fl. Nov.); Seroe Caracao (Stoffers 1047, st. Dec.).

CURAÇAO: hills between Hieronymus Berg and Savonet (Boldingh 5130, fr. Nov.); from Veeris Berg to Piscadera (Boldingh 4743, fl. & fr. Oct.); hofje of Siberië (Boldingh 5192, fl. Nov.); Brakkeput (Burgers 172, fl. Feb.); hills near Knip (Stoffers 1140, fl. Dec.).

ST. EUSTATIUS: along roads in Oranjestad (Boldingh 924, fl. June); along road near Concordia (Boldingh 975, fl. June); slope of lower part of Signal Hill (Boldingh 102, st. May); Signal Hill, 200 m (Boldingh 127, st. May); Little Mountains (Stoffers 3747, fl. & fr. July).

ST. MARTIN: near Fort William (Boldingh 2795, st. Aug.); id., 0–50 m (Boldingh 2532, fl. Aug.; Stoffers 2530, fl. & fr. March; 2533, fl. & fr. March); from Philipsburg to Guana Bay (Boldingh 2354, st. Aug.); lower part of hills between Mount Chambord and Mount Vernon (Boldingh 2945, fl. Aug.); Low Lands (Stoffers 2694, fl. Ap.); Pointe Blanche (Stoffers 2560, fl. March); Naked Boy Hill, 0–100 m (Stoffers 2700, fl. Ap.); id. 100–200 m (Stoffers 2708, fl. & fr. Ap.; 2710, fl. Ap.).