

EUPHORBIACEAE

by

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Herbs, stemsucculents or woody plants, sometimes with phylloclades, often containing lactiferous juice. Leaves mostly alternate, rarely opposite or verticillate, simple or compound. Stipules mostly present and sometimes with stipellae. Extrafloral nectaries often present. Indumentum various. Inflorescence various, the main branching often racemose, the following cymose. Flowers monoecious or dioecious, when monoecious the inflorescence of either male or female flowers or inflorescence of female flowers in the lower and male flowers in the upper portion; in *Euphorbia* and related genera the inflorescence a cyathium. Flowers with sepals and petals, the petals often reduced or wanting or the flowers naked. Disk often present, various in shape, in the male flowers either intrastaminal or extrastaminal. Stamens as many or twice as many as the sepals or numerous or reduced in number to only one; filaments mostly free. In the male flower a rudiment of the ovary often present. Ovary 3-locular, rarely 2—many-locular. In the female flower sometimes staminodia present. Styles usually 3, free or connate, often 2-partite. Ovules 1—2 in each locule, anatropous or epitropous, often provided with an obturator and a caruncula. Fruit mostly schizocarpous, the cocci opening by 2 valves, rarely a drupe or a berry. Seeds with endosperm. Embryo with broad cotyledons.

About 7500 species in 300 genera, worldwide but especially in the tropics.

Key to the genera:

1. Flowers, one female and several male, enclosed in a cup-shaped involucre (cyathium) forming a partial inflorescence..... 2
Flowers solitary or in various kinds of inflorescence or in clusters, but not enclosed in a gland-bearing involucre..... 3
2. Involucre regular, calyx-like..... *Euphorbia* (p. 272)
Involucre irregular, shoe-shaped, branches and leaves more or less succulent..... *Pedilanthus* (p. 283)
3. Ovules or seeds 2 in each carpel..... 4
Ovules or seeds 1 in each carpel..... 5

4. Monoecious herbs, shrubs or trees; disk-segments of the male flowers 4—6; stamens 2—4, free or connate; ovary 3-locular; styles bifid *Phyllanthus* (p. 233)
Dioecious shrubs or trees; disk of the male flowers annular; stamens 4, free; ovary (3—) 4—5-locular; styles divided. *Margaritaria* (p. 239)
5. Slender twiner with stinging hairs. 6
Erect herbs, shrubs or trees. 7
6. Leaves strongly serrate-dentate, unlobed; involucre bracts and a pair of stipellae at the apex of the petiole wanting. *Tragia* (p. 259)
Leaves often deeply 3—5-lobed; lateral lobes asymmetric ovate, serrate-dentate; usually with a pair of stipellae at the apex of the petiole; involucre bracts 3-lobed *Dalechampia* (p. 262)
7. Herbs, shrubs or rarely trees covered with stellate hairs, scales or medianly attached hairs. 8
Herbs, shrubs or trees not covered with stellate hairs, scales or medianly attached hairs 9
8. Herbs, shrubs or rarely trees usually covered with stellate hairs or with scales; stems often with coloured or resinous sap but never with milky latex.
. *Croton* (p. 240)
Herbs or shrubs usually covered with medianly attached hairs; tissue often stained with purplish pigment. *Argythamnia* (p. 250)
9. Leaves palmate, mostly (deeply) lobed. 10
Leaves not palmate nor lobed. 13
10. Petioles glandular at the junction with the blade. 11
Petioles without glands. 12
11. Stems and leaves covered with stinging hairs; leaves palmately veined or lobed, glandular at the junction with the blade; stamens 8—10. *Cnidocolus* (p. 266)
Stems and branches smooth; leaves peltate, palmately 7—11-lobed, patelliform glands at least at base and junction; stamens very numerous. *Ricinus* (p. 261)
12. Leaves angular or slightly to deeply 3—5-lobed; perianth biseriate; petioles glabrous or covered with glandular branched hairs; plant containing a coloured, but not milky juice. *Jatropha* (p. 263)
Leaves peltate or deeply 3—7-lobed; perianth uniseriate; petioles glabrous or puberulous; plant containing a milky juice. *Manihot* (p. 267)
13. Herbs or shrubs; petioles strigose, villous, pilose, tomentose or with glandular hairs; leafmargin crenate or serrate. 14
Shrubs or trees; branches glabrous or spinescent; leafmargin entire or slightly shallow serrate. 15
14. Female bracts foliaceous; indumentum of simple hairs or glands; leaf-blades 3—7-veined from the base or penninerved, the margin crenate or serrate.
. *Acalypha* (p. 255)

- Female bracts small; petioles strigose and often with two glands at the base of the blade, its margin serrate..... *Bernardia* (p. 252)
15. Branches often spinescent; leaves alternate or fascicled on short shoots, short petiolate; flowers clustered on cushions in the axils of the leaves *Adelia* (p. 254)
Branches glabrous; leaves alternate, shiny and long-petiolate with 1 or 2 glands at the junction with the blade; spikes terminal or pseudoterminal with female flower(s) at or near the base..... 16
16. Trees or shrubs with acrid poisonous milky juice; a dark, round, peltate gland at the junction of petiole and leafblade; bracts with paired glands; ovary 6—9-locular..... *Hippomane* (p. 270)
Large trees; biglandular above the base of the leafblade; ovary 5—20-locular and stigma lobed at the tip..... *Hura* (p. 271)

Phyllanthus Linnaeus, Spec. Plant. 981. 1753

Herbs, shrubs or trees; branching unspecialized or phyllanthoid (the leaves on the main axes reduced to cataphylls which sustend deciduous branchlets with alternate leaves). Leaves very variable in size, entire, glabrous, short-petiolate. Stipules present. Flowers small, solitary or in clusters in the axils of the leaves, bibracteolate. Petals wanting. Calyx 4—6-lobed, lobes free or nearly so. Disk present. Male flowers many together, pedicellate; stamens 2—15, mostly 3—6; filaments free or connate; disk usually divided; rudiment of ovary absent. Female flower: a few together or solitary, pedicellate or subsessile; calyx mostly 5—6-lobed; disk variable; ovary 3-locular; ovules 2 in each locule; styles variable. Capsule 3-coccus, sometimes carnose; columella persistent. Seeds generally 3-sided, without caruncle.

About 650 species, mostly in the tropics of both hemispheres.

Key to the species:

1. Branching phyllanthoid..... 2
Branching not phyllanthoid..... *Ph. botryanthus*
2. Branchlets transformed into leafless phylloclades..... *Ph. epiphyllanthus*
Branches with normal leaves (not greatly dilated)..... 3
3. Tree, up to 10 m tall; sepals and stamens 4, filaments free..... *Ph. acidus*
Herb, sometimes ligneous at the base, not more than 60 cm high; sepals 5; stamens 2 or 3, filaments connate..... 4
4. Perennial herb, 2—30 cm high; male flowers in the upper part of thyrsoid racemes; female flowers in the lower part, solitary in the axils of the leaves; stamens 2; styles connate at the base..... *Ph. pentaphyllus*
Annual, 10—60 cm high; one male and one female flower in the axils of the leaves; stamens 3; styles free..... *Ph. amarus*

Phyllanthus botryanthus Muell.-Arg.

MUELLER-ARG., in DECANDOLLE, Prodr. 15(2): 323. 1866; WEBSTER, Journ. Arnold Arb. 39: 51, t. 24, figs A—B. 1958: — *Phyllanthus euwensii* BOLDINGH, Fl. Ned. W. Ind. Eil. 243. 1913; Fl. D.W. Ind. Isl. 2: 50, pl. 4. 1914; ARNOLDO, Zakflora 73. 1954; Zakflora 130. 1964.

Monoecious shrub up to 4 m high, glabrous; branches slender, furrowed, reddish-brown, 1.5—4 mm thick. Leaves alternate, petiolate; blades ovate, broad-acute, obtuse or emarginate at the apex, obtuse or rounded at the base, 3—7 cm long and 2—5 cm wide, membranaceous-chartaceous, shining and darkening in drying above, midvein and lateral veins slightly raised, more or less pruinose beneath, margin entire. Stipules triangular, mostly 1 mm long and 0.5 mm wide, acute, reddish to blackish-brown, more or less entire; petioles 2—4 mm long, dark, sulcate above. Flowers mostly in bisexual cymes in leafless thyrses in the axils of the upper leaves; female flowers usually 1 or 2, males 3—6 per cymule, or the sexes more or less segregated into different thyrses. Male flowers on capillary, 0.5—2 cm long pedicels; sepals 6, elliptic-oblong, 1—2 mm long and to 1 mm wide, obtuse, purplish, narrowly white-margined; disk-segments 6, cylindrical, very thick, foveolate, 0.3—0.4 mm wide; stamens 3; filaments connate into a c. 0.4 mm high column; anthers sessile, triangular, acute, about 0.3 mm long and 0.4 mm wide, its cells divergent and the slits not confluent, dehiscing transversely. Female flowers on 0.5—1 cm long capillary pedicels; sepals 6, triangular-oblong, about 1.5 mm long and 1 mm wide, acute, purplish with narrow white margins; disk convex, annular, massive, slightly 6-lobed, irregularly foveolate; styles erect, connate or coherent into a column 0.3—0.5 mm high, slightly dilated and merely truncate-emarginate at the apex. Capsule oblate, trigonous, 6 mm in diam. Seeds plano-convex, 2—3 mm long and 2.5—3 mm wide, light brown, smooth.

Coastal plain of northern Venezuela, northern Colombia, Aruba, Bonaire, and Curaçao.

Common in limestone and diabase areas.

Vernacular names: lokki lokki, liki loki, karkidaki (Leeward Group).

ARUBA: hills near Fontein (Boldingh 6442, fr. Jan.); slope of Hooiberg (Arnoldo) 109, fl. Dec.; Stoffers 2091, fl. Feb.); hills N.E. of Andicouri Plantation (Stoffers 1817, fl. Jan.; 1837, fl. & fr. Jan.); Franse Pas (Stoffers 2000, fl. & fr. Jan.); Kristal Berg (Suringar s.n., fl. Feb. [L]).

BONAIRE: neighbourhood of Rincón (Boldingh 7167, fl. & fr. Feb.); road from Slagbaai to Brandaris (Boldingh 7315, fl. & fr. Feb.); Slagbaai Plantation (Stoffers 743, fl. Nov.; 752, fl. Nov.; Suringar s.n., st. Feb. [L]); Coeroeboeroe (Stoffers 453, fl. Oct.); Dos Pos (Stoffers 573, fr. Nov.); Washington Plantation (Stoffers 869, fl. Dec.); Pos Bronswinkel (Stoffers 573, fl. Nov.); Brandaris (Stoffers 975, fl. Dec.); Hobau (Stoffers 1036, fl. Dec.); Angola (Stoffers 830, fl. Nov.).

CURAÇAO: calcareous hills near Malpais (Boldingh 4822, fr. Jan.); from Anthony Berg to the northern seashore (Boldingh 5121a, fl. Nov.); road near Anthony Berg (Boldingh 5141, fr. Nov.); hills near Wacao (Boldingh 5252, fl. Nov.); calcareous soil near San Pedro (Boldingh 5279, fl. Nov.; type of *Phyllanthus euwensii*); Knip Plantation (Boldingh 5456, fl. Dec.; Went 1354, defl. Jan.); Groot Santa Marta (Stoffers 122, fl. Sept.); Seroe Christoffel (Stoffers 242, fl. Oct.; de Wilde 31a, fl. Dec. [L]); Malpais (Stoffers 286, fl. Oct.); Hato (Stoffers 303, fl. Oct.; Suringar s.n., fl. Jan. [L]); saltpans near St. Willebrordus (Stoffers 342, fl. Oct.); near Willemstad (Suringar s.n., fl. Nov. [L]); without loc., rocky soil (Britton & Shafer 3108, fl. & fr. March).

Phyllanthus acidus (L.) Skeels

SKEELS, U.S. Dept. Agric. Bur. Plant. Ind. Bull. 148: 17. 1909; LEON & ALAIN, Fl. Cuba 3: 55. 1953; ARNOLDO, Gekw. en nutt. plant. Ned. Ant. 107. 1954; Gekw. en nutt. plant. Ned. Ant. 151. 1971; WEBSTER, Journ. Arnold Arb. 38: 66, pl. 15, figs D—F. 1957; ADAMS, Flowering plants of Jamaica 407. 1972; FOURNET, Fl. Guadeloupe & Martinique 1548, fig. 728. 1978; — *Averrhoa acida* LINNAEUS, Spec. Plant. 428. 1753; — *Cicca disticha* LINNAEUS, Mantissa 1: 124. 1767; GRISEBAEH, Fl. Br. W. Ind. Isl. 32. 1859 ['1864']; BRITTON & MILLSAUGH, Bahama Fl. 219. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 475. 1924; QUESTEL, Fl. Isl. St. Bartholomew 133. 1941; — *Phyllanthus distichus* (LINNAEUS) MUELLER-ARG., in DECANDOLLE, Prodr. 15(2): 413. 1866; URBAN, Symb. Ant. 4: 339. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 349. 1909; Fl. Ned. W. Ind. Eil. 243. 1913; URBAN, Symb. Ant. 8: 259. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 259. 1920.

Monoecious tree, up to 10 m tall, lenticellate; branching phyllantoid, older branches leafless, younger branches leafy. Leaves alternate, 20—40 at a branchlet; blades petiolate; lower leaves orbicular-ovate, upper leaves ovate to elliptic, acute at the apex, obtuse or truncate at the base, 2.5—9 cm long and 2.5—4 cm wide, chartaceous, margin entire, upper surface olivaceous, pale greyish-brown beneath; petioles 2.5—4 mm long, more or less rugose. Stipules appressed, triangular, acuminate, dark brown. Flowers in bisexual thyrses in the axils of fallen leaves on the older branches and in cymes at the top of the young leafy branchlets. Bracts of the cymules brown with fimbriate margin. Male flowers on short, 1.5—3 mm long pedicels; sepals 4, elliptic to ovate, 1—1.5 mm long, entire, midvein not branched; disk-segments 4, more or less orbicular; stamens 4; filaments free; anthers with longitudinal dehiscence. Female flowers on 1.5 mm long pedicels, enlarging to 6 mm in fruit, sepals 4, ovate to elliptic; disk annular, 4-lobed; ovary 3—4-locular; styles connate at the base, deeply 2-fid; staminodia 0—2 in each flower, resembling the stamens but the filaments much shorter. Fruit drupaceous, 6—8-sulcate, 1—1.5 cm in diam. Seeds smooth.

Probably native to South America; cultivated in the tropics of both hemispheres.

Vernacular names: goose berry, ronde of kleine birambi.

BONAIRE: Fontein (Arnoldo 1005, st. Oct.).

SABA: The Bottom (Boldingh 1876, st. July); without loc. (Boldingh s.n., fl. July).

St. EUSTATIUS: on the slope of the cliff near Oranjestad (Boldingh 52, st. May); without loc. (Boldingh s.n., st.; van Groll-Meyer 148, st.).

St. MARTIN: top of the hill on the northern side of Cul de Sac (Boldingh 2992, st. Aug.).

Phyllanthus epiphyllanthus L.

LINNAEUS, Spec. Plant. 981. 1753; DUSS, Fl. phan. Ant. franç. 25. 1897; URBAN, Symb. Ant. 4: 339. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 107. 1909; Fl. Ned. W. Ind. Eil. 243. 1913; URBAN, Symb. Ant. 8: 349. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 261. 1920; LEON & ALAIN, Fl. Cuba 3: 58. 1953; WEBSTER, Journ. Arnold Arb. 39: 197, t. 31, figs X—Y. 1958; GOODING *et al.*, Fl. Barbados 258, fig. 16. 1965; FOURNET, Fl. Guadeloupe & Martinique 1547. 1978; — *Xylophylla falcata* SWARTZ, Prodr. 28. 1788; — *Phyllanthus falcatus* (SWARTZ) GMELIN, Syst. Nat. ed. 13 (2): 204. 1791; GRISEBACH, Fl. Br. W. Ind. Isl. 35. 1859 ['1864']; — *Xylophylla epiphyllanthus* (LINNAEUS) BRITTON, in SMALL, Fl. Florida Keys 76. 1913; BRITTON & MILLSAUGH, Bahama Fl. 220. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 476. 1924.

ssp. epiphyllanthus

Monoecious shrub up to 2.5 m high; stems slender, erect, sparsely to strongly branched, the branching phyllantoid; branchlets modified into leafless phylloclades; cataphylls persistent, reddish-brown becoming greyish, indurate, completely fused with stipules and blade into a broad deltoid scale. Phylloclades flexible to rigid, linear to oblanceolate, straight or falcate, green, 2.5—20 cm long and 0.3—2 cm wide, truncate to attenuate at the apex, with 7—30 nodes along the margin with clusters of persistent bracteoles; midvein prominent. Cymules at the nodes, usually bisexual. Male flowers on slender, 1—3 mm long pedicels; calyx-lobes spreading, reddish or pinkish, usually in 2 dissimilar whorls, the outer oblong to obovate, 0.5—1 (—1.5) mm long and 0.5—0.9 (—1.3) mm wide, the inner ovate to orbicular or broader than long, 0.7—1.5 mm; stamens 3; filaments partially to nearly completely united into a massive column; anthers stipitate or sessile on the top of the column, broadly deltoid, more or less emarginate, with transverse dehiscence. Female flowers on 0.5—2 mm long, curved pedicels, often thickened at the apex; calyx-lobes similar to the male, the outer 0.5—1 mm long and wide, the inner 0.8—1.3 mm long and wide; disk patelliform or shallowly cupuliform and enclosing the basal ¼ of the ovary; ovary rugulose to conspicuously tuberculate at least in the upper portion; styles nearly free or less common united into a column, the tips spreading, mostly dilated and irregularly lobed. Capsule oblate, trigonous, rugulose to conspicuously tuberculate, 3—4.5 mm in diam. Seeds asymmetric, trigonous, verruculose, dark reddish-brown.

West Indies from Bahamas to Trinidad.

Mostly on limestone rock, often near the sea.

ST. MARTIN: Cole Bay (George s.n., sub Boldingh 2502, fl. Aug.); Simson Bay Lagoon near Cul Piquard (Boldingh 2744, fl. Aug.); near Mullet Pond (Boldingh 2785, fl. Aug.); Point Simson Bay (Arnoldo 1280, fl. & fr. March); Low Lands (Arnoldo 3411, fl. Jan.; Le Gallo 844, fl. July; 929, fl. July; Stoffers 2681, fl. Ap.); airfield (Stoffers 2407, fl. March).

Phyllanthus amarus Schum.

SCHUMACHER, Danske Vid. Selsk. Afh. 4: 195. 1829; WEBSTER, Journ. Arnold Arb. 37: 7. 1956; 38: 313, t. 19, fig. I—K. 1957; ARNOLDO, Zakflora 162. 1964; ADAMS, Flowering plants of Jamaica 408. 1972; FOURNET, Fl. Guadeloupe & Martinique 1547, fig. 726A. 1978; — *Phyllanthus niruri* *B genuinus* MUELLER-ARG., in DECANDOLLE, Prodr. 15(2): 406. 1866 not *P. niruri* LINNAEUS, Spec. Plant. 981. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 34. 1859 [‘1864’]; DUSS, Fl. phan. Ant. franç. 23. 1897; URBAN, Symb. Ant. 4: 338. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 108. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 231. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 243. 1913; Fl. D.W. Ind. Isl. 2: 51. 1914; FAWCETT & RENDLE, Fl. Jamaica 4(2): 256. 1920; BRITTON & MILLSPAUGH, Bahama Fl. 220. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 477. 1924; QUESTEL, Fl. Isl. St. Bartholomew 133. 1941; ARNOLDO, Zakflora 149. 1954; GOODING *et al.*, Fl. Barbados 259. 1965; — *Phyllanthus swartzii* KOSTELETZKY, Allgem. Med. Pharm. Fl. 1771. 1836; LEON & ALAIN, Fl. Cuba 3: 55. 1953.

Monoecious, erect annual herb, 10—60 cm high, sometimes slightly woody at the base; stem simple or branched, terete, glabrous, smooth, stramineous or brownish; internodes 1—3 cm long. Stipules cataphyllary, broadly deltoid, 1.3—2.1 mm long and 0.6—1

mm wide, acuminate, entire, scarious brownish, blade subulate, acuminate, 1—1.5 mm long; branchlets 4—12 cm long, subterete, glabrous, with 15—40 leaves. Leafblade membranaceous or somewhat thickened, usually elliptic-oblong, 5—8 mm long, 3—5 mm wide, obtuse or rounded and often apiculate at the apex, obtuse or rounded at the base, bright green above and midvein raised, greyish or glaucous beneath and midvein and lateral veins raised and conspicuous, branching to form a reticulum; margin plane, entire; petioles short. Stipules lanceolate, acuminate, entire. Flowers: one male or one female flower in the axils of the leaves. Male flowers on 1 mm long pedicels; sepals 5, ovate or elliptic, about 0.5 mm long, acute, herbaceous with a white margin, 1-veined; disk-segments 5, small; stamens 3; filaments completely connate into a column; anthers sessile at the top of the column; anther-cells divergent. Female flowers on 1 mm long pedicels, enlarging to 2 mm in fruit; sepals 5, elliptic-oblong, 1 mm long, white margined, the green midstrip about one-third the width of the sepal, 1-veined; disk flat, 5-lobed, slightly unequal; styles free, short, shortly 2-cleft. Capsule oblate, obtusely trigonous, 1.5—2 mm in diam., smooth, stramineous, the veins almost or completely invisible. Seeds sharply trigonous, light brown with 5 or 6 straight parallel longitudinal lines on the back.

Native of America, nowadays a weed widely spread in the tropics.

Weed, also along roads.

ARUBA: hofje of Fontein (Arnoldo 323, fl. & fr. Dec.); Fontein Plantation (Stoffers 1714, fl. & fr. Jan.).

CURAÇAO: seashore near St. Jan (Boldingh 5645, fr. Dec.); Museum garden (Arnoldo 1957, fr. Feb.); Klein Santa Marta (Stoffers 108, fl. & fr. Sept.); hofje of Klein St. Michiel (Stoffers 5075, fl. & fr. Nov.).

SABA: lower part of the Bottom Mountain, 300 m (Boldingh 1429, fl. & fr. July); The Bottom (Arnoldo 547, fr. Aug.; Stoffers 2904, fr. Ap.); Hellsgate (Stoffers 3390, fr. May).

ST. EUSTATIUS: garden in Oranjestad (Boldingh 76, fr. May); along roads in Oranjestad (Boldingh 579, fr. May; Stoffers 3862, fl. & fr. July); along roads near Glass Bottle (Boldingh 871, fl. & fr. June); northern slope of The Quill (Stoffers 4007, fr. July); without loc. (van Groll-Meyer s.n., fl. & fr.).

ST. MARTIN: from Philipsburg to Guana Bay (Boldingh 2408, fl. Aug.); in a cotton plantation (Boldingh 3410, fl. & fr. Sept.); lower part of Milldrum Hill (Boldingh 3166, fl. & fr. Sept.); experimental garden Cul de Sac (Stoffers 2355, fl. & fr. March); airfield (Stoffers 2370, fl. & fr. March).

Phyllanthus pentaphyllus Wright

WRIGHT ex **GRISEBACH**, Nachr. Kgl. Ges. Wiss. Gött. 167. 1865

Monocious or rarely dioecious perennial herb, sometimes appearing annual, 2—30 cm high; stems sometimes woody at the base, glabrous, upright or spreading, stramineous or greyish becoming dark brown in age. Branching phyllantoid. Cataphyllary stipules deltoid, margin incised or sometimes entire, auriculate, dark reddish-blackish. Deciduous branchlets 0.5—3 (—6) cm long, smooth, furrowed, with 5—20 (—35) leaves; bla-

des obovate, obtuse and mostly apiculate at the apex, acute, obtuse or rounded at the base, membranaceous to subcoriaceous, smooth, deep green and midvein inconspicuous above, smooth, greyish or brownish, midvein prominent but lateral veins inconspicuous below, margin plane or slightly reflexed, sometimes somewhat thickened or curved inwards; petioles up to 0.4 mm long. Stipules subpersistent, lanceolate, 0.4—1 mm long, acuminate, entire, olivaceous or sometimes reddish. Inflorescences: male flowers many (5—25) in racemiform cymules; bracteoles yellowish-white, more or less persistent after fall of the flowers; female flowers in the lower part of the inflorescence. Male flowers on 0.5—1 mm long pedicels; calyx-lobes 5, subequal, obovate, 0.5—1 mm long and 0.5 mm wide, obtuse at the tip, entire, yellowish; disk-segments 5, roundish or more or less square; stamens 2; filaments connate into a 0.2—0.3 mm long column; anthers short-stipitate or sessile at the top of the column, anther-sacks divergent. Female flowers on 1—2.5 mm long pedicels; calyx-lobes 5, elliptic to mostly obovate, 0.8—1.2 mm long and c. 6 mm wide, subacute to rounded at the tip, entire, herbaceous with broad whitish margins; disk deeply 5-lobed or parted into 5 linear segments; styles connate at the base, spreading or somewhat ascending, parted for $\frac{1}{4}$ — $\frac{1}{2}$ of their length; the style-arms divergent with the tips recurving. Capsule obovate, 2 mm in diam. Seeds acutely trigonous, 0.8—1 mm long, 0.7—0.8 mm radially and tangentially light brown, with 6—8 indistinct longitudinal lines on the back.

ssp. *pentaphyllus*

BRITTON & MILLSAUGH, Bahama Fl. 221. 1920; LEON & ALAIN, Fl. Cuba 3: 56. 1953; ARNOLDO, Zakflora 130. 1964; WEBSTER, Journ. Arnold Arb. 38: 347, t. 21, fig. C—D. 1957; — *Phyllanthus polycladus* auct. non URBAN; BOLDINGH, Fl. Ned. W. Ind. Eil. 244. 1913; Fl. D.W. Ind. Isl. 2: 51. 1914; ARNOLDO, Zakflora 72. 1954; — *Phyllanthus niruri radicans* (MUELLER-ARG.) SMALL, Fl. S. E. Unit. States 692. 1903; — *Phyllanthus polycladus* var. γ *curassavicus* URBAN, Symb. Ant. 5: 384. 1908.

Leaves membranaceous to chartaceous, narrowly obovate, 1.7—2.5 times as long as wide, the lateral veins and tertiary reticulum usually prominent beneath; disk of female flowers deeply 5-lobed or parted in 5 linear segments; plants with usually more flexible, often spreading stems.

Bahamas, Cuba, Hispaniola, Aruba, Bonaire, and Curaçao.

On limestone plateaus.

BONAIRE: calcareous hills near Rincón (Boldingh 7052, fl. Feb.; 7053, fl. & fr. Feb.); calcareous plateau near the sea in vicinity of Tolo (Boldingh 7278, fl. Feb.); calcareous plateau near Rooi Samboe (Boldingh 7388, fl. Feb.); Lima Plantation (Stoffers 486, fl. Nov.); Fontein (Stoffers 562, fl. & fr. Nov.); coastal area near Spelonk (Stoffers 693, fr. Nov.; 695, fl. & fr. Nov.); east of Pos Kalbas (Stoffers 764, fr. Nov.); Santa Barbara Plantation (Stoffers 798, fr. Nov.); Montagne (Stoffers 887, fl. & fr. Dec.).

CURAÇAO: calcareous soil near San Pedro (Boldingh 5283, fl. Nov.); calcareous hills near Hato (Boldingh 5313, fl. Nov.); Grote Berg (Arnoldo 1932, defl. Nov.); limestone rock near Willemstad (Britton & Shafer 2945, fl. March); Ronde Klip (Stoffers 1256, fl. & fr. Dec.).

Margaritaria Linnaeus f., Suppl. pl. 66, 428. 1782

Deciduous shrubs or trees. Leaves short-petiolate, alternate, entire, subpersistent, the new leaves appearing together with the flowers. Stipules entire, subpersistent. Plants dioecious. Inflorescences axillary. Flowers clustered on short floriferous branches or in proximal axils of leafy branches or flowers sometimes solitary. Calyx usually 4-lobed. Petals wanting. Disk present, annular or urceolate, entire. Male flowers many together, long-pedicellate; stamens usually 4, filaments free. Female flowers on short pedicels, a few together in the axils of the leaves or solitary; ovary 3—5-locular; styles free or united below; ovules 2 in each locule. Fruit a 3—5-lobed capsule, irregularly dehiscent. Seeds angled, outer seedcoat dark blue, fleshy.

Probably only 4 species in tropical and subtropical America.

Margaritaria nobilis Linnaeus f., Suppl. pl. 428. 1782

LINNAEUS F., Suppl. pl. 428. 1782; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 5: 476. 1924; ADAMS, *Flowering plants of Jamaica* 410. 1972; FOURNET, *Fl. Guadeloupe & Martinique* 1550, fig. 729. 1978; WEBSTER, *Journ. Arnold Arb.* 60: 412. 1979; — *Phyllanthus nobilis* (L. f.) MUELLER-ARG., in DECANDOLLE, *Prodr.* 15(2): 414. 1866; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 108. 1909; *Fl. Ned. W. Ind. Eil.* 243. 1913; URBAN, *Symb. Ant.* 4: 339. 1905; FAWCETT & RENDLE, *Fl. Jamaica* 4(2): 259. 1920; — *Phyllanthus nobilis* (L. f.) MUELLER-ARG. var. *antillanus* (JUSSIEU) MUELLER-ARG., in DECANDOLLE, *Prodr.* 15(2): 415. 1866; URBAN, *Symb. Ant.* 8: 349. 1920; — *Phyllanthus antillanus* (JUSSIEU) MUELLER-ARG., in DECANDOLLE, *Prodr.* 15(2): 114. 1866; LEON & ALAIN, *Fl. Cuba* 3: 54. 1953; — *Cicca antillana* DE JUSSIEU, *Euph. gen. Tent.* 108, t. 4, f. 13b. 1824; GRISEBACH, *Fl. Br. W. Ind. Isl.* 33. 1859 ['1864']).

Tree, up to 12 m tall; branches glabrous, lenticellate. Leaves alternate, petiolate; blade elliptic or lanceolate-elliptic, acute, acuminate or cuspidate at the apex, obtuse at the base, 6—13 × 2—5.5 cm, membranaceous, glabrous; side-nerve 8—18, prominent beneath; petiole 2—5 mm long. Stipules subulate, 2—3 mm long, margin entire. Male flowers clustered on 0.5—1.5 cm long peduncles; pedicels 4—7 mm long; sepals 4, in 2 series, roundish or elliptic; disk annular, fleshy, adhering to the sepals; stamens 4; filaments free. Female flowers solitary or a few together in the leaf axils, on thick, 10—15 mm long pedicels; sepals as in the male flower but narrower and elliptic, 1—2.5 mm long; disk annular, narrow, adhering to the sepals; ovary 4—5-locular; styles thick, united below, shortly 2-cleft. Capsule subglobose, 7—13 mm in diam., pericarp at first fleshy, drying up and dehiscent afterwards. Steeds complanate, 3-sided, c. 3 mm long, reticulate, olivegreen.

West Indies, Panama, tropical South America from Guyana to Brazil.

Vernacular name: goose berry (Windward Group).

SABA: Gain Bay Gut (Boldingh 2074, fl. & fr. July).

ST. MARTIN: Naked Boy Hill (Boldingh 2735, fl. Aug.).

Herbs, shrubs or trees; stems often with coloured or resinous sap but not with milky latex, usually covered with stellate hairs of whitish scales. Leaves mostly alternate, petiolate; blades pinnately or palmately veined, sometimes lobed; petioles sometimes with distinct glands at the junction with the blade. Stipules present. Plants monoecious or in a minority of the species dioecious. Inflorescence consisting of spiciform racemes or thyrses, the female flowers in the lower portion solitary on a node, the male flowers in the upper portion and one to several at a node. Male flowers: calyx 5-lobed, imbricate to valvate; petals usually present and about as long as the calyx-lobes; disk entire or dissected into segments alternating with the petals; stamens generally 8—20; filaments free and usually inflexed in the bud; anthers extrorse; rudiment of pistil wanting. Female flower: calyx-lobes generally 5, sometimes accrescent; petals reduced or wanting; disk annular or dissected; staminodia sometimes present; ovary 3-locular; styles 3, free or nearly so, once to several times bifid or bipartite into slender tips; ovules one in each locule, anatropous, nucellus elongated into a slender beak. Fruit a capsule; columella persistent, usually slender. Seeds one in each locule, terete to compressed, with a caruncula.

Over 600 species, perhaps about 1000, widely distributed in the tropics and a few species in temperate America.

Key to the species:

1. Leaves deeply 3—5-lobed..... *C. lobatus*
Leaves entire..... 2
2. Leaves with shining silvery scales beneath; plants dioecious..... *C. niveus*
Leaves without shining silvery scales..... 3
3. Branches slender, dark reddish-brown; leaves very small; two short-stalked dish-shaped glands at base of the blade beneath..... *C. betulinus*
Branches not dark reddish-brown..... 4
4. Leaves small, oval, entire or crenate towards the apex..... *C. ovalifolius*
Leaves 2—10 cm long, ovate to lanceolate, not oval..... 5
5. Glands at the junction with blade present..... 7
Glands at the junction with blade wanting..... 6
6. Petioles canaliculate above, minute glands at the base; margin of the blade irregularly dentate-crenate; sepals of the female flowers glandular stipulate
..... *C. curassavicus*
Petioles with reddish stellate hairs; margin of the blade entire or slightly serrate-dentate; styles three times dichotomously branched..... *C. astroites*
7. Leaves irregularly serrate-crenate; two or more short-stalked dish-shaped glands at the base of the blade beneath, glandular on the margin; stamens about 10
..... *C. glandulosus*
Leaves entire to slightly serrate-dentate, minute or small cylindric glands at the junction with the blade; stamens 12—16..... *C. flavens*

Croton lobatus L.

LINNAEUS, Spec. Plant. 1005. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 42. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 33. 1897; URBAN, Symb. Ant. 4: 343. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 110. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 246. 1913; Fl. D.W. Ind. Isl. 2: 52. 1914; URBAN, Symb. Ant. 8: 356. 1920; BRITTON & MILLSAUGH, Bahama Fl. 224. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 483. 1924; QUESTEL, Fl. Isl. St. Bartholomew 134. 1941; LEON & ALAIN, Fl. Cuba 3: 65. 1953; ARNOLDO, Zakflora 135. 1954; Zakflora 126. 1964; GOODING *et al.*, Fl. Barbados 246. 1965; FOURNET, Fl. Guadeloupe & Martinique 1574. 1978; — *Oxydectes lobata* (L.) KUNTZE, Rev. Gen. Plant. 612. 1891.

Monococious, annual, herbaceous to suffrutescent herb, up to 1 m high; young stems and petioles sulcate, indument of stellate hairs with a long central branch and simple long hairs especially on the younger parts. Leaves alternate, the blade deeply 3—5-lobed; lobes 2—7 cm long and 1—5 cm wide, elliptic to elliptic-lanceolate or ovate, acuminate or caudate-acuminate at the apex, narrowed to the base, margin serrate, papillate with stellate hairs on the veins, sparsely strigose on both sides, membranaceous; petioles 3—10 cm long. Stipules subulate, dentate to incised, about 2—5 mm long. Inflorescence terminal or axillary, racemose, 6—12 cm long; female flowers in the lower portion, male flowers in the upper portion, axis sulcate, with stellate and simple hairs. Bracts lanceolate. Male flowers on 2 mm long pedicels; sepals 5, small, elliptic, glabrous; petals 5, small, lanceolate, glabrous; stamens 10—14, with glabrous filaments; receptacle glabrous. Female flowers subsessile; sepals 5, linear or lanceolate, acute, sparsely stellate and with simple long hairs, a few glanduliferous hairs on the margin; disk lobed; ovary 3-locular, covered with stellate and sparsely covered with long acicular hairs; styles 3, free or nearly so, 6—8-cleft near the apex; stigma slightly thickened. Capsule 6—8 mm long, globose-ellipsoid, with stellate and long acicular hairs. Seeds 5 mm long, 3 mm wide, cylindric, apiculate at the caruncle, surface marked by incomplete and more or less transverse ridges, ochre-coloured.

West Indies; continental tropical America, tropical Africa, and Arabia.

On waste and cultivated grounds.

Vernacular names: yerba krabo (Leeward Group)
lilac bush (Windward Group).

ARUBA: Fontein (Boldingh 6475, fl. & fr. Jan.; Suringar s.n., fl. & fr. Feb. [L]; Arnolde 331, fl. Dec.; Stoffers 1075, fl. & fr. Jan.).

BONAIRE: Fontein Plantation (Arnolde 499, fr. Ap.; Suringar s.n., fl. & fr. Feb. [L]).

CURAÇAO: road to Fort Nassau (Boldingh 4685, fl. & fr. Oct.); hofje near Jan Thiel (Nagelkerken 302, fl. Nov.); hofje near Weis Afo (Nagelkerken 121, fl. & fr. Feb.; 137, fl. & fr. March); Museum garden (Arnolde 1724, fl. & fr. Oct.); near Santa Cruz (Britton & Shafer 3006, defl. March); road to Piscadera Baai (de Wilde 64a, fl. & fr. Dec.); Choloma (Stoffers 12, fl. & fr. Sept.); Klein Santa Marta (Stoffers 83, fl. & fr. Sept.; 102, fl. & fr. Sept.); Santa Catharina (Stoffers 188, fl. & fr. Oct.); hofje of Cas Cora (Stoffers 420, fl. & fr. Oct.); Savonet (Suringar s.n., fl. & fr. Jan [L]); near top of Seroe Christoffel (de Wilde s.n., st. Feb. [L]); west of Willemstad (de Wilde 64a, fl. & fr. Dec. [L]); Zuikertuintje

Suringar s.n., fl. & fr. Feb. [L]; St. Jan (Suringar s.n., fl. & fr. Jan [L]); Veeris (Suringar s.n., fl. & fr. Jan [L]); Brakkeput (Suringar s.n., fl. & fr. Jan [L]).

SABA: The Bottom (Boldingh 1839, fl. & fr. July; 1843, fl. & fr. July; Arnoldo 733, fl. & fr. Aug.; Stoffers 2908, fl. & fr. Ap.).

ST. EUSTATIUS: in garden in Oranjestad (Boldingh 74, fl. May; 1276, fl. & fr. May); along roads near Oranjestad (Boldingh 964, fr. May; Stoffers 3880, fl. & fr. July); along roads in Cultuurvlakte (Stoffers 3801, fl. & fr. July); slope of The Quill near Glass Bottle (Stoffers 3849, fl. & fr. July); slope of The Quill (Suringar s.n., fr. Ap. [L]); Fairplay (Suringar s.n., fl. & fr. Ap [L]); Miss Rader's Ravine (Suringar s.n., fl. & fr. May [L]).

ST. MARTIN: along roads in Philipsburg (Stoffers 2303, fr. March); airport (Stoffers 2377, fr. March); Cole Bay Hill (Suringar s.n., fl. & fr. May [L]).

Croton niveus Jacq.

JACQUIN, Enum. Syst. Plant. Carib. 32. 1760; GRISEBACH, Fl. Br. W. Ind. Isl. 40. 1859 ['1864']; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 246. 1913; Fl. D.W. Ind. Isl. 2: 53. 1914; LEON & ALAIN, Fl. Cuba 3: 71. 1953; ARNOLDO, Zakflora 36. 1954; Zakflora 126. 1964

Dioecious shrub or small tree; branches sulcate, covered with small rusty shining silvery scales, especially in the younger parts. Leaves alternate; blade ovate, (4—) 6—12 cm long and 2.5—8 cm wide, cuspidate-acuminate at the apex, slightly cordate at the base, distant minute scales above, confluent shining silvery scales beneath, margin entire, pinnately veined and 5—7-veined from the base, prominent beneath; petioles 1—2 cm long. Stipules linear, 2—4 mm long, persistent. Male inflorescence up to 4 cm long, axillary and terminal racemes; peduncles, pedicels, bracts and bracteoles covered with shining silvery scales. Bracts acute, 1—1.5 mm long; bracteoles very small. Male flowers on 2 mm long pedicels; sepals 5, connate at the base, 2—2.5 mm long and 1.5 mm wide, acute, tomentose inside and on the outside covered with shining silvery scales; petals 5, white, elliptic, 2—2.5 mm long, about 1 mm wide, inside tomentose especially on the margins, obtuse; disk 5-lobed, the lobes alternating with the petals; receptacle pubescent; stamens about 20, the filaments free, inflexed in bud, 3—4 mm long. Female flowers solitary in the leaf-axils, white, on about 3 mm long pedicels; sepals 5, c. 5 mm long and 1.5—2 mm wide, acute, connate at the base, tomentose inside, outside covered with shining silvery scales; petals 5, elliptic, 2.5 mm long, c. 1 mm wide, acute, tomentose especially inside and on the margins; disk 5-lobed; staminodia 5; ovary 2—3.5 mm long, 2—3 mm wide, covered with shining silvery scales; styles 3, free or nearly so, each (6—) 8-cleft at the apex and covered with scales. Capsule obovoid, 9 mm long. Seeds 6 mm long and 4 mm wide.

Tropical continental America, Cuba, Jamaica, and some of the Lesser Antilles.

In shrubby and woodland vegetations especially on limestone.

Vernacular names: bara blancoe, kiviti, lumbrá blancoe (Leeward Group).

ARUBA: calcareous hill near Baikoerie (Boldingh 6341, st. Jan); slope of Hooiberg (Boldingh 6364, st. Dec.); slope of Miralamar (Boldingh 6451, st. Jan); Rooi Taki (Arnoldo 294, st. Dec.); Rooi Prins (Stoffers 2154, femfl. Jan.; 2161, st. Jan.).

BONAIRE: slope of Joewa (Boldingh 7206, male flb. Feb.); calcareous plateau of Soebi Rincon (Boldingh 7267, male flb. Feb.); road from Slagbaai to Brandaris (Boldingh 7317, male flb. Feb.); Seroe Largo (Arnoldo 353, male flb. Jan.; 510, male flb. Jan.); Colombia Plantation (Stoffers 521, male flb. Jan.).

CURAÇAO: Veeris Berg (Boldingh 4740, st. Oct., Arnoldo 90, male flb. Feb.); Seroe Christoffel (Boldingh 4993, male flb. Nov.); seashore near Hato (Boldingh 5122, male flb. Nov.); calcareous plateau near Siberië (Boldingh 5201, male flb. Dec.); slope on the northern part of Ronde Klip (Boldingh 5333, male flb. Nov.); coastal thicket near Caracas Baai (Britton & Shafer 3140, male flb. March); without loc. (Aschenberg s.n., flb.; s.n., male and fem. fl. & fr.).

***Croton betulinus* Vahl**

VAHL, *Symb. Bot.* 2: 98. 1791; DUSS, *Fl. phan. Ant. franç.* 32. 1897; URBAN, *Symb. Ant.* 4: 342. 1905; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 109. 1909; *Fl. Ned. W. Ind. Eil.* 245. 1913; URBAN, *Symb. Ant.* 8: 352. 1920; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 5: 482. 1924; LEON & ALAIN, *Fl. Cuba* 3: 67. 1953; FOURNET, *Fl. Guadeloupe & Martinique* 1575. 1978.

Monoecious shrub, up to c. 3 m high, strongly branched; branches slender, dark reddish-brown, terete-costate, covered with stellate hairs especially in the younger parts. Leaves alternate; blades ovate, obtuse or acute at the apex, rounded or slightly cordate at the base, 0.6–2 cm long and 0.6–1.2 cm wide, margin irregularly crenate-serrate, thickened, pinnately veined and 5-veined from the base, veins prominent beneath, regularly covered with stellate hairs above and densely covered with stellate hairs beneath, two short-stalked dish-shaped, less than 1 mm long glands at the base of the blade; petioles slender, 2–4 (–7) cm long, densely covered with stellate hairs. Stipules often wanting, linear, 2 mm long, with stellate hairs. Inflorescence consisting of terminal, short racemes, 1–2.5 cm long, densely covered with reddish stellate hairs, a few female flowers in the axils of the leaves and at the nodes in the lower portion, a larger number of male flowers in the upper portion. Bracts linear-ovate, 1–2 mm long, with stellate hairs especially near the apex. Male flowers on c. 1 mm long pedicels; sepals 5, ovate-oblong, connate at the base, about 1.5 × 1 mm, obtuse at the apex, ciliate and with stellate hairs on the outside; petals 5, more or less obovate, whitish, c. 1.5 × 1 mm, truncate at the apex, ciliate, villous especially near the margin of the lower part inside; disk with 5 horn-like appendages alternating with the petals; stamens 10–11; filaments c. 2 mm long, glabrous but villous near the base. Female flowers on c. 1 mm long pedicels; sepals obovate, 2–2.5 × 1.5 mm with 3 or more small dents at the apex, stellate hairs on inner and outer side; petals 5, strongly reduced; disk with 5 hornlike appendages alternating with the petals; ovary subglobose, 1–2 mm long, covered with reddish-orange stellate hairs; styles 3, each twice deeply dichotomously branched, stigmatic, near the middle yellowish-orange tufted. Capsule 3–4 mm high, about 4 mm wide, covered with orange stellate hairs. Seeds 3 mm long, 2 mm wide, light brown, 3-sided and convex at the back, caruncle substipitate.

Cuba, and from Puerto Rico to Martinique.

Common in secondary vegetations.

Vernacular name: black sage (Windward Group).

ST. MARTIN: slope of Fort St. Louis (Le Gallo 278, fl. & fr. Sept.; 1011, fl. & fr. Aug.; 1012, fl. & fr. Aug.); Simsonbay (Arnoldo 1291, fl. & fr. March); Simsonbay Lagoon near Cul Piquard (Boldingh 2739, fl. & fr. Aug.; 2743, fl. Aug.; 2746, fl. Aug.); road near Mari-got (Boldingh 2802, fl. & fr. Aug.); in pasture grounds near Bellevue (Boldingh 2826, fl. & fr. Aug.); along roads near Cole Bay (Boldingh 3015, fl. Aug.); Low Lands (Boldingh 3265, fl. Sept.); Tintamarre (Boldingh 3384, fl. & fr. Sept.).

Croton ovalifolius Vahl

VAHL, IN WEST, Bidr. St. Croix 307. 1793; GRISEBACH, Fl. Br. W. Ind. Isl. 41. 1859 [1864]; DUSS, Fl. phan. Ant. franç. 33. 1897; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 246. 1913; Fl. D.W. Ind. Isl. 2: 53. 1914; URBAN, Symb. Ant. 8: 355. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 280. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 481. 1924; ARNOLDO, Zakflora 72. 1954; Zakflora 126. 1964; ADAMS, Flowering plants of Jamaica 413. 1972; FOURNET, Fl. Guadeloupe & Martinique 1575. 1978.

Monoecious, shrubby, strongly branched plant, up to 30 (—60) cm high; branches slender, sulcate, covered with long stellate hairs. Leaves alternate; blades oval or oblong, varying in size but mostly 1—2.5 cm long and 0.5—1.3 cm wide, rounded or obtuse at the apex, cuneate to obtuse at the base, margin entire or crenate near the top, glabrous or sometimes sparsely covered with long stellate hairs above, covered with long stellate hairs beneath, pinnately veined, 3-veined from the base, glands near the base wanting; petioles mostly 0.5—1 cm long, covered with long stellate hairs. Stipules subulate, broad at the base, 1.5—3 mm long, denticulate, glandular. Inflorescence consisting of terminal, short racemes with 5—6 female flowers in the lower and 8 or more male flowers in the upper portion, all parts covered with long stellate hairs. Bracts subulate, broad at the base, 1.5—3 mm long, denticulate, glandular. Male flowers on very short pedicels; calyx lobes oblong-ovate, about 2 mm long and 1 mm wide, pellucid dotted, puberulous tufted at the apex; petals 5, white, lanceolate, 2 mm long, villous on the lower half inside; disk 5-lobed, the lobes alternating with the petals; stamens 10—12, filaments free, about 2 mm long, hairy near the base. Female flowers on 3—5 mm long pedicels; calyx-lobes 5, c. 4 mm long, increasing to 6 mm in fruit, linear-lanceolate, especially near the margin glandular-dotted; disk slightly 5-lobed; ovary 3—4 mm long, 3—4 mm wide, covered with long stellate hairs; styles 3, free or nearly so, each 4—6-parted. Capsule globose, 4—5 mm long. Seeds about 3 mm long, brownish, 3-sided, convex at back.

Jamaica, Hispaniola, Virgin Islands, Anguilla, Guadeloupe, islands off the Venezuelan coast, coastal regions of Colombia and Venezuela.

Especially in limestone vegetations and in open sites in the diabase area.

Vernacular names: yerba di seroe, yerba di chubatu (Leeward Group).

ARUBA: calcareous hill near Baicuri (Boldingh 6340, fl. & fr. Dec.); road near Ajó (Boldingh 6349, fl. & fr. Dec.; 6354, fl. & fr. Dec.); Rooi Taki (Arnoldo 259, fl. & fr. Dec.; Stoffers 1850, fl. Jan.); east of Savaneta Serveta (Stoffers 1396, fl. & fr. Jan.); Boca Mahos (Stoffers 1473, fl. & fr. Jan.); Seroe Pretoe (Stoffers 1673, fl. & fr. Jan.); Paloe Marca (Stoffers 1748, fl. & fr. Jan.); Andicouri (Stoffers 1809, fl. & fr. Jan.); hills N.E. of Andicouri Plantation (Stoffers 1838, fl. & fr. Jan.); Matavidiri, south-western slope (Stoffers

2018, fl. & fr. Feb.); Rooi Fluit, near Santa Cruz (Suringar s.n., fl. Feb. [L]); Jamanota (Suringar s.n., fl. Feb. [L]).

BONAIRE: neighbourhood of Rincón (Boldingh 7102, fl. & fr. Feb.); road from Fontein to Seroe Grandi (Boldingh 7352, fl. & fr. Feb.); Slagbaai Plantation (Stoffers 742, fl. Nov.); slope of Brandaris (Suringar s.n., st. Feb. [L]); Bolivia Plantation (Suringar s.n., fl. Feb. [L]); without loc. (Suringar s.n., st. Feb. [L]).

CURAÇAO: seashore near Caracas Baai (Boldingh 4788, fr. Jan.); calcareous hills near Ma-hoema (Boldingh 4820, fl. Oct.); hofje of Siberië (Boldingh 5035, fl. & fr. Dec.); calcareous hills near St. Patrick (Boldingh 5480, fl. & fr. Dec.); hofje of Knip (Boldingh 5536, fl. & fr. Dec.); Bonam (Arnoldo 3, fl. & fr. Dec.); Malpais (Arnoldo 1573, fl. & fr. Jan.); coastal hills near St. Patrick (Britton & Shafer 3070, fl. March); Siberië (Went 1357, fl. & fr. Jan.); Ronde Klip (Stoffers 428, fl. Oct.).

***Croton curassavicus* Bold.**

BOLDINGH, Fl. Ned. W. Ind. Eil. 245. 1913, as "curassavica"; Fl. D.W. Ind. Isl. 2: 51, plate 5. 1914; ARNOLDO, Zakflora 80. 1954; Zakflora 125. 1964.

Monoecious shrub, up to c. 50 cm high; branches, petioles, leaves and peduncles covered with long stellate hairs. Leaves alternate; blades ovate, acute at the apex, obtuse to cuneate or slightly cordate at the base, 2.5—8 cm long and 1.5—4 cm wide, margin irregularly serrate-crenate, glandular, glabrescent or sparsely covered with stellate hairs, especially on the veins and near the margin beneath, pinnately-veined and 5(—7)-veined from the base; petioles canaliculate above, 0.5—3.5 cm long, with minute glands at the base. Stipules subulate, broad at the base, denticulate, glandular, about 2 mm long. Inflorescence consisting of terminal, c. 5 cm long racemes, the female flowers in the axils of the leaves and solitary on the nodes in the lower portion, a large number of male flowers on the nodes in the upper portion. Bracts subulate, c. 2 mm long, broad, denticulate and glandular at the base. Bracteoles as the bracts, small. Male flowers on 1—1.5 mm long pedicels; sepals 5, ovate, 3 mm long, 1.5 mm wide, glandular dotted, puberulous, tufted at the apex; petals 5, white, 3 mm long, 1.5 mm wide, more or less spatulate, the top obsoletely ciliate; disk 5-lobed, fleshy; stamens 8—12; filaments 3 mm long, glandular; anthers 1 mm long. Female flowers on 2.5—3 mm long pedicels; sepals 5, connate at the base, lanceolate-oblong, 3.5 mm long and 1.5 mm wide, increasing to 5 × 2 mm in fruit, apex puberulous tufted, margin glandular, with stipitate glands on the teeth; petals 5, sometimes wanting, about 3 mm long, linear to more or less spatulate, acute at the apex, ciliate, puberulous, tufted at the top of irregular teeth; ovary c. 1.8 mm long and wide, glandular; styles 3, each twice dichotomously branched, the branches filiform, 5—6 mm long, stigmatic. Capsule globular, 4—5 mm long, glandular. Seeds 4.5 mm long and 3 mm wide, 3-sided, convex on the back, brownish.

Known from Curaçao only.

Mostly in open places.

CURAÇAO: calcareous hills near the road from Westpunt to Savonet (Boldingh 4955, fl. & fr. Nov.); hills near Barber (Boldingh 5179, fl. & fr. Nov. type!); hills near Choloma (Boldingh 5417, fl. & fr. Nov.; 5418, fl. & fr. Nov.); Seroe Christoffel (Arnoldo 20, fl. & fr. Dec.); slope of Seroe Christoffel (Arnoldo 1132, fl. & fr. Dec.; Stoffers 1280, fl. & fr. Dec.; 1282, fl. & fr. Dec.); id., 200 m (Burgers 34, fl. & fr. Dec.).

Croton astroites Dryand

DRYAND in AITON, Hort. Kew. 3: 375. 1789; GRISEBACH, Fl. Br. W. Ind. Isl. 42. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 33. 1897; URBAN, Symb. Ant. 4: 341. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 108. 1909; Fl. Ned. W. Ind. Eil. 245. 1913; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 481. 1924; QUESTEL, Fl. Isl. St. Bartholomew 133. 1941; FOURNET, Fl. Guadeloupe & Martinique 1577. 1978.

Monoecious shrub up to c. 3 m high or rarely a treelet; branches terete-costate; all parts of the plant covered with stellate hairs. Leaves alternate; blades ovate-oblong to ovate-lanceolate, varying in size, mostly 3—10 cm long and 2—5.5 cm wide, acute or acuminate at the apex, rounded or slightly cordate at the base, pinnately-veined and 5—7-veined from the base, veins prominent beneath, margin entire or slightly serrate-dentate, densely covered by stellate hairs beneath, glands near the base wanting; petioles 1—4 cm long, covered with stellate reddish hairs. Stipules 2—3 mm long, subulate, caducous. Inflorescence consisting of terminal racemes, 2—4 (—6) cm long, female flowers in the axils of the leaves, a few solitary at the lower nodes in the lower portion and many male flowers at the nodes in the upper portion. Bracts linear-subulate, 1—3 mm long, mostly covered with reddish-brown stellate hairs; bractlets of the basal female flowers leaf-like, to 7 mm long. Male flowers on c. 4 mm long pedicels; sepals 5, connate in the lower part, c. 3 mm long and 1.5 mm wide, ovate, acute, ciliate, especially in the upper part; petals 5, about 4 mm long and 1 mm wide, spathulate-lanceolate, acute or obtuse, whitish, ciliate, villous especially near the margin of the lower part inside; disk 5-lobed, fleshy; stamens about 16; filaments about 4 mm long, villous especially in the lower part. Female flowers on 3—4 mm long pedicels; sepals 5, ovate, acute, c. 5 (—8) mm long and 3.5 mm wide, with dark blodge in the lower part, both sides covered with mainly minute, stellate hairs; ovary c. 4 mm long and 3 mm wide; styles 3, each three times dichotomously branched, about 5 mm long, with stellate hairs. Capsule subglobose, c. 6 mm long and 5 mm wide, covered with minute stellate hairs. Seeds about 5 mm long and 2.5 mm wide, shining brown, convex at both sides, dark-mottled, caruncle substipitate.

From Puerto Rico to Guadeloupe.

Rather common in the drier parts of the islands.

Vernacular name: wild marrow (Windward Group).

ST. EUSTATIUS: slope of The Quill above White Wall, 350 m (Boldingh 2, fr. May); slope of The Quill, 380 m (Boldingh 269, fr. June); gut near Fort de Windt, 50 m (Boldingh 826, fl. & fr. June); along road near Bengalen (Boldingh 1194, fl. June); slope of Signal Hill (Boldingh 97, fl. May; 128, flb. May; 1047, fl. & fr. June; 1030, fl. & fr. June); Pangga (Suringar s.n., flb. Ap. [L]); hills near Concordia (Boldingh 949, fl. June); near Mary Glory (Boldingh 1147, fr. June); near Boven, 200 m (Boldingh 1239a, fl. & fr. June); along roads in Oranjstad (Boldingh 930, fl. June); Cultuurvlakte (Suringar s.n., flb. & fr. Ap. [L]); Sugar Loaf (Suringar s.n., fl. & fr. May [L]); without loc. (van Groll-Meyer 171, fl. & fr.).

ST. MARTIN: from Philipsburg to Guana Bay (Boldingh 2362, fl. Aug.); Fort William, 0—50 m (Boldingh 2536, fl. Aug.); foot of Experiment (Arnoldo 1262, fr. March); top of Mount William, 160 m (Stoffers 2548, st. March); hills along northern side of Cul de Sac, 70-100 m (Stoffers 2640, st. March).

Croton glandulosus L.

LINNAEUS, Syst. Nat. ed. 10. 1275. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 41. 1859 ['1864']; URBAN, Symb. Ant. 4: 343. 1905; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 246. 1913; Fl. D.W. Ind. Isl. 2: 52. 1914; URBAN, Symb. Ant. 8: 356. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 285. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 483. 1924; LEON & ALAIN, Fl. Cuba 3: 66. 1953; ARNOLDO, Zakflora 138. 1954; Zakflora 125. 1964; ADAMS, Flowering plants of Jamaica 413. 1972; — *Croton glandulosus* LINNAEUS var. *glabratus* URBAN, Symb. Ant. 1: 336. 1899.

Monoecious, shrubby herb, up to 80 cm high, branched; stems usually herbaceous, sometimes woody; branches mostly costate, especially the younger parts covered with long, stiff stellate hairs. Leaves alternate; blades broad-ovate, or ovate to elliptic, 2—3.5 (—7) cm long and 1—3 (—6) cm wide, obtuse or acute at the apex, obtuse at the base, irregularly serrate-crenate, densely covered with stellate hairs beneath, two or more short-stalked dish-shaped glands at the base and some near the margin beneath, 1 mm long or less, margin mostly glandular, pinnately veined and 5 (—7)-veined from the base; petioles 1—5 cm long, slender, mostly costate. Stipules linear, 3—8 mm long, with stellate hairs, eglandular, caducous. Inflorescence consisting of terminal racemes with several female flowers solitary at the lower nodes and several male flowers solitary at the nodes in the upper portion, 1.5—2 cm long, densely covered with long stellate hairs. Bracts linear, 1.5—3 mm long, usually small glands on each side at the base and covered with long stellate hairs. Male flowers on pedicels up to 1.5 mm long; sepals 5, connate at the base, oblong-elliptic, c. 2 mm long and 1 mm wide, acute, ciliate, stellate hairs outside; petals 5, about obovate, 2 mm long and 1 mm wide, white, acute, ciliate, villous inside in the lower part, puberulous outside; disk 5-lobed, fleshy; stamens about 10; filaments glabrous, about 2 mm long. Female flowers subsessile; sepals 5, unequal, spatulate, acute, dark coloured in the lower part, c. 3 mm long increasing to 5 mm in fruit, outside covered with long stellate hairs; petals minute; disk more or less lobed; ovary globose, 1—1.5 mm in diam., covered with stellate hairs; styles 3, 2-parted almost to the base, to 2 mm long, stigmatic. Capsule subglobose, c. 5 mm long, with small stellate hairs. Seeds 3—4 mm long, 2 mm wide, shining brown, dark-mottled, convex at both sides, caruncle substipitate.

Widely distributed in tropical continental America north to Mexico; Greater Antilles, Antigua, Guadeloupe, Martinique, Trinidad, Bonaire, and Curaçao.

Mainly on limestone and in the Christoffel area.

Vernacular name: yerba careta (Leeward Group).

BONAIRE: calcareous plateau Seroe Montagne (Boldingh 7410, defl. Feb.).

CURAÇAO: hills near Barber (Boldingh 5175, fl. & fr. Nov.; 5177, fr. Nov.); calcareous hills near St. Patrick (Boldingh 5482, fr. Dec.); hills from Klein Santa Marta to Dokterstuin (Boldingh 5627, fl. Dec.); hills between Santa Cruz and Seroe Christoffel (Boldingh 5606, defl. Dec.); Knip Plantation (Arnoldo 2159, fr. & defl. Jan.); calcareous soil near Knip Plantation (Boldingh 5566, fl. Dec.); hills to the east of Westpunt (Boldingh 5446, st. Nov.); Coppermine near Savonet (Suringar s.n., fl. Jan [L]); without loc. (Boldingh 5733, fr.).

Croton flavens L.

LINNAEUS, Syst. Nat. ed. 10. 1276. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 38. 1859 ['1864']; URBAN, Symb. Ant. 4: 342. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 109. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; Fl. Ned. W. Ind. Eil. 245. 1913; Fl. D.W. Ind. Isl. 2: 52. 1914; FAWCETT & RENDLE, Fl. Jamaica 4(2): 279. 1920; QUESTEL, Fl. Isl. St. Bartholomew 133. 1941; LEON & ALAIN, Fl. Cuba 3: 69. 1953; ARNOLDO, Zakflora 73, fig. 78. 1954; Zakflora 125, fig. 78. 1964; ADAMS, Flowering plants of Jamaica 415. 1972; FOURNET, Fl. Guadeloupe & Martinique 1578. 1978; — *Croton balsamiferum* JACQUIN, Enum. Syst. Plant. Carib. 32. 1760; GRISEBACH, Fl. Br. W. Ind. Isl. 38. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 31. 1897; GOODING *et al.*, Fl. Barbados 245. 1965; FOURNET, Fl. Guadeloupe & Martinique 1578. 1978.

Monoecious, aromatic shrub up to 3 m high; branches stiff and sometimes rather thick, densely covered with yellowish small stellate hairs. Leaves alternate; blades broadly ovate to ovate-lanceolate to narrowly ovate-lanceolate, strongly varying in size, 2—10 cm long and 1—6 cm wide, acute or acuminate and mucronate at the apex, rounded or slightly cordate at the base, margin entire to slightly serrate-dentate, often glandular, pinnately veined, the veins prominent beneath, both surfaces densely to sparsely covered with stellate hairs, small, often cylindrical glands near the base and/or on the top of the petiole; petioles 1—5 cm long, densely covered with yellowish stellate hairs. Stipules minute, caducous. Inflorescence consisting of terminal racemes, up to 14 cm long, with several female flowers solitary on the nodes in the lower portion and many male flowers in clusters at the nodes in the upper portion; all parts covered with yellowish stellate hairs. Bracts ovate to narrowly ovate, acute, 1—2 mm long, ciliate. Male flowers on 1—5 mm long pedicels; sepals 5, connate at the base, about 2 mm long, ovate-oblong, acute to obtuse, ciliate at the apex, outside covered with stellate hairs; petals white 2—2.5 mm long, lanceolate to obovate or spatulate, villous in the lower part; disk 5-lobed, fleshy; stamens 12—16; filaments c. 2 mm long, glabrous but villous at the base. Female flowers on 1—3 mm long pedicels; sepals 5, 2—3 mm long, narrowly ovate to linear, acute, especially outside covered with yellowish stellate hairs; petals threadlike, minute; disk 5-lobed, fleshy; ovary globular, c. 2 mm in diam., densely covered with yellowish stellate hairs; styles 3, to 5 mm long, each 2-parted, with yellowish stellate hairs in the lower part, stigmatic. Capsule subglobose, c. 5 mm in diam. Seeds 3.5—4 mm long and 2—2.5 mm wide, greyish, shining.

Yucatan, Greater Antilles and known from several islands of the Lesser Antilles.

Very common in shrubvegetations on limestone and diabase.

Vernacular names: wilde salie, welisali (Leeward Group)
yellow balsam, marrow (Windward Group).

ARUBA: road from Santa Cruz to Hooiberg (Boldingh 6359, fl. & fr. Dec.); foot of Hooiberg (Arnoldo 124, fl. & fr. Dec.); near Fontein (Stoffers 1361, fl. Jan.; 1374, fl. & fr. Jan.); Miralamar (Stoffers 1604, fl. Jan.); Seroe Pretoe (Stoffers 1660, fr. Jan.); hills N.E. of Andicouri Plantation (Stoffers 1831, fl. Jan.); Paloe Marca (Stoffers 1953, fl. Jan.).

BONAIRE: neighbourhood of Rincón (Boldingh 7087, fl. & fr. Feb.); calcareous plateau near Fontein (Boldingh 7340, fl. & fr. Feb.); Coeroeboeroe (Stoffers 454, fl. & fr. Oct.); west of Lac (Stoffers 478, fl. & fr. Nov.); Slagbaai Plantation (Stoffers 601, fl. & fr. Nov.);

755, fl. Nov.); Pos Bronswinkel (Stoffers 668, fl. Nov.; 819, fl. Nov.); Bolivia Plantation near Spelonk (Stoffers 699, fl. Nov.); Colombia Plantation (Stoffers 736, fl. Nov.); east of Pos Calbas (Stoffers 761, fl. & fr. Nov.); Angola (Stoffers 824, fl. & fr. Nov.); Seroe Grita Kabai (Stoffers 857, fl. & fr. Dec.); Washington Plantation (Stoffers 868, fl. & fr. Dec.); Montagne (Stoffers 878, fl. Dec.); Seroe Grandi (Stoffers 921, fl. Dec.); Brandaris (Stoffers 971, fl. & fr. Dec.); Playa Foenchi (Stoffers 987, fl. Dec.; 989, fr. Dec.); Hobau (Stoffers 1038, fr. Dec.); Seroe Caracao (Stoffers 1050, fr. Dec.; 1051, fr. Dec.); near Seroe Ventana (Stoffers 1060, fr. Dec.; 1064, fl. Dec.).

CURAÇAO: hill near Rif (Boldingh 4648, fl. Oct.); on rocks near Willemstad (Britton & Shafer 2954, defl. March); near Willemstad on coralbeach (Heldring-Talma s.n., fl. & fr.); Plantersrust (Went 839, fl. Feb.); calcareous slope near Piscadera (de Wilde 61a, fl. & fr. Dec.); Willemstad (Suringar s.n., fl. & fr. Jan. [L]; Went 1119, fl. Nov.); Fort Nassau (Went 1114, fr. Nov.); Hato (Stoffers 44, fr. Sept.); calcareous plateau near Montagne (Boldingh 4826, fr. Nov.); seashore near Hato (Boldingh 5121c, fl. Nov.); calcareous hills near Hato (Boldingh 5131c, defl. Nov.); Ronde Klip (Arnoldo 1111, fl. Dec.); Brakkeput Mei Mei (Stoffers 190, fl. Oct.); Santa Barbara Plantation near Tafelberg (Stoffers 390, fl. Oct.); Ronde Klip (Stoffers 1254, fr. Dec.); hofje near Weis Afo (Nagelkerken 149, fl. & fr. March); hofje near Jan Thiel (Nagelkerken 301, fl. Nov.; 321, st. Nov.); Zuurzak (Morton s.n., fl. Aug.); calcareous hills near St. Patrick Plantation (Boldingh 5475, defl. Dec.); without loc. (Aschenberg s.n., fl.).

SABA: along roads between The Bottom and Windwardside, 200 m (Boldingh 1321, fl. July); The Bottom (Arnoldo 569, fr. Aug.); Ladder Gut, 0—100 m (Stoffers 2813, fl. & fr. Ap.; Boldingh 1971, fl. & fr. July); Fort Gut (Boldingh 1627, fl. July; 1643a, fl. July); St. Giles Gut (Boldingh 1865, fr. July); Compagnie's Gut, 150—300 m (Stoffers 3008, fl. & fr. Ap.); between Promised Land and Thais Hill, 175—200 m (Stoffers 3425, fl. May); Jenkins Hill, 350 m (Stoffers 3155, fl. & fr. May); near Sulphur mines (Stoffers 3130, fl. & fr. May; Wagenaar Hummelinck s.n., fl. & fr. March).

ST. EUSTATIUS: slope of the cliff near Gallowsbay (Boldingh 61, fl. May); in deserted plantation near Bengalen (Boldingh 582, fl. & fr. June; 584, fl. & fr. June; 594, fl. June; 597, fl. June; 599, fl. June); between Oranjestad and Fort de Windt (Boldingh 775, fl. June; 778, fl. June; 785, fl. & fr. June; 792, fl. & fr. June; Stoffers 3511, fl. July); Fort de Windt (Boldingh 795, fl. June); along roads near Bengalen (Boldingh 1195, fr. June); along roads in Cultuurvlakte (Stoffers 3803, fl. Aug.); between Glassbottle and White Wall, 100—200 m (Stoffers 4090, fl. & fr. Aug.); slope of The Quill near Glassbottle (Burgers 188, fl. Feb.); near Venus Bay (Boldingh 968, fr. June); Gillboa Hill, 150 m (Boldingh 1124, fl. June); Little Mountains (Stoffers 3746, fl. July); near White Wall, 200 m (Stoffers 4749, fr. Aug.); without loc. (van Groll-Meyer s.n., fr.).

ST. MARTIN: from Philipsburg to Guana Bay (Boldingh 2351, fl. Aug.); Guana Bay (Boldingh 2431, fl. Aug.); east of Great Bay (Stoffers 2224, flb. March); Kanaal Rolandus (Stoffers 2255, fl. March; 2256, fl. March); along road from Philipsburg to Oyster Pond (Stoffers 2292, fl. March); Prince Quarter (George s.n., sub Boldingh 2469, flb. Aug.); Fort William (Boldingh 2531, fl. & fr. Aug.; 2543, fl. & fr. Aug.); near Fort William (Boldingh 2796, fl. & fr. Aug.); top of Mount William, 160 m (Stoffers 2552, flb. March); near Bethlehem (Boldingh 2662, fl. & fr. Aug.); between Mount Vernon and Orient Bay (Boldingh 2937, fl. & fr. Aug.); Fort Amsterdam (Stoffers 2334, fl. March; 2337, fl. March); along road in Cul de Sac (Stoffers 2457, fl. March); east of Naked Boy Hill, 100—250 m (Stoffers 2715, fl. Ap.); near Simsonbay village (Boldingh 3256, fl. & fr. Sept.); between Simsonbay village and Simsonbay Lagoon (Stoffers 2508, fl. March); Low Lands (Stoffers 2678, fl. Ap.); near Cul Piquard (Boldingh 2741, fr. Aug.); Tintamarre (Boldingh 3382, fl. Sept.).

Monoecious shrubs or herbs, usually covered with hairs attached by their middle; tissues often coloured with purplish pigments. Leaves alternate or clustered on short branches, short-petiolate; blades entire or serrate. Stipules not glandular. Inflorescence short, racemiform, bisexual, with one or few female flowers at the base, each solitary to a small bract, short-pedicellate; disk present. Male flowers: sepals (3—) 5, lobes valvate in bud; petals 4—5, more or less adnate to the base of the staminal column; disk-segments opposite the calyx-lobes; stamens 4—15, 1—2 (—3)-seriate, 1—5 filiform staminodes present at the top of the staminal column; filaments connate in the lower part forming the column; anthers ovoid, with longitudinal dehiscence; rudiment of ovary wanting. Female flowers: sepals 5, imbricate; petals 5, imbricate, entire, sometimes reduced; disk more or less dissected into 5, sometimes elongated, segments opposite the sepals; ovary sessile, 3—locular; styles free or connate at the base, bifid or twice bipartite; ovules solitary in each locule, anatropous. Fruit capsular, 3-coccos; cocci bivalved; columella persistent. Seeds globose, alveolate to reticulate, without a caruncle.

About 60 species in tropical and subtropical America.

Key to the species:

1. Leaves 1—3 cm long, fascicled on short twigs, entire; 3—5 terminal staminodes; seeds smooth..... *A. fasciculata*
Leaves 2—6 cm long, alternate, serrate; staminodia wanting; seeds not smooth 2
2. Leafblade minutely serrate; male flowers with 4 sepals, 4 petals, and 4 stamens; style twice bifid; petals of female flowers lanceolate..... *A. candicans*
Leafblade serrate; male flowers with 5 sepals, 5 petals, and 10 biseriate stamens; styles bifid; petals of female flowers spatulate or rhomboid.....
..... *A. argothamnoides*

Argythamnia fasciculata Muell.-Arg.

MUELLER-ARG., *Linnaea* 34: 146. 1865; LEON & ALAIN, *Fl. Cuba* 3: 84. 1953; — *Ditaxis fasciculata* VAHL apud JUSSIEU, *Euphorb. Tent.* 110, t. 7, fig. 24. 1824; URBAN, *Symb. Ant.* 4: 344. 1905; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 110. 1909; *Fl. Ned. W. Ind. Eil.* 247. 1913; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 5: 486. 1924.

Monoecious erect shrub to 1.5 m high with white bark; branches stiff, glabrous; young branches, petioles and stipules densely covered with hairs attached by their middle. Leaves fascicled on short twigs; blades 1—3 cm long and 0.5—1.5 cm wide, oblong-elliptic, obtuse or sometimes retuse or mucronate at the apex, obtuse to attenuate at the base, chartaceous, pinnately veined and 3-veined from the base, the veins prominent beneath, margins entire; young leaves densely covered with medianly attached hairs, older leaves glabrous; petioles 1—2 mm long. Stipules 0.5—1.5 mm long, subulate. Flowers clustered on the short-branches in the axil of small bracts; bibracteolate at the base. Male flowers short-pedicellate; pedicels 1—1.5 mm long; sepals 5, lanceolate, acute, 4—5 mm long, 1-veined, strigose; petals 5, obovate, 5 mm long, alternating with 5, about 1 mm long, glabrous disk-glands; stamens 10, in 2 whorls, monadelphous; staminodes 3—4, terminal. Female flowers: pedicels longer than the flower, up to 9 mm long in fruit;

sepals 5, lanceolate, acute, 4—5 mm long, 1-veined, strigose outside; petals 5, elliptic, 5 mm long, alternating with 5 diskglands; ovary densely strigose; styles connate to the middle, bifid; stigmas crenate. Capsule 3-coccos, 6 mm in diam., strigose; cocci 2-valved; columella persistent. Seeds globose, smooth.

Cuba, Puerto Rico, St. Thomas, St. Croix, St. John, St. Martin, Tortola, and Virgin Gorda.

In shrub vegetations.

ST. MARTIN: Prince Quarter (Boldingh 2457, st. Aug.); near Naked Boy Hill (Boldingh 2566, fl. Aug.); Naked Boy Hill (Boldingh 2733a, fl. Aug.); Pointe Blanche (Boldingh 3405, fl. & fr. Sept.).

Argythamnia candicans Sw.

SWARTZ, Prodr. 39. 1788; GRISEBACH, Fl. Br. W. Ind. Isl. 44. 1859 ['1864']; URBAN, Symb. Ant. 4: 344. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 110. 1909; Fl. Ned. W. Ind. Eil. 247. 1913 p.p.; URBAN, Symb. Ant. 8: 357. 1920; FAWCETT & RENDLE, Fl. Jamaica 4 (2): 287, fig. 92. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 487. 1924; QUESTEL, Fl. Isl. St. Bartholomew 134. 1941; LEON & ALAIN, Fl. Cuba 3: 83, fig. 20. 1953; INGRAM, Gentes Herb. 10: 21. 1967; ADAMS, Flowering plants of Jamaica 415. 1972; FOURNET, Fl. Guadeloupe & Martinique 1582, fig. 742. 1978. Misapplied name: Johnston, Proc. Bost. Soc. Nat. Hist. 34(7): 227. 1909; Boldingh, Fl. D.W. Ind. Eil. 2: 53. 1914.

Shrub, up to 2 m high but usually lower and often straggling or nearly prostrate; branches slender, angular, white-barked; young branches, leaves and petioles densely covered with hairs attached by their middle. Leaves alternate, petiolate; blades elliptic to oblong, acute to acuminate at the apex attenuate to cuneate at the base, 2—6 cm long and 0.7—3 cm wide, membranaceous, margin minutely serrate, pinnately veined and 3-veined from the base, veins prominent beneath, often reddish; petioles 1—3 mm long. Stipules 1—1.5 mm long, narrow-lanceolate, acuminate. Inflorescence consisting of racemes, 6—10 mm long, rachis densely strigose, 1—4 female flowers in the lower portion, the male flowers in the upper portion. Bracts triangular-ovate, about 1 mm long, acuminate, strigose, ciliate. Male flowers on 1 mm long pedicels; sepals 4, lanceolate, acuminate, pilose, about 2 mm long; petals 4, ovate to obovate, obtuse, pilose, 1.5—2 mm long, alternating with 4 glabrous diskglands, adnate to the staminal column; stamens 4, epipetalous, longer than the calyx; filaments connate at the base into a short column. Female flowers on 1—2 mm long pedicels; sepals 5, obovate-lanceolate, acute, pilose, about 3 mm long, enlarging in fruit; petals 5, lanceolate, 0.5—1.5 mm long alternating with 5 diskglands or petals wanting; ovary densely pilose; styles 3, twice bipartite, almost free. Capsule 3-coccos, about 5 mm in diam., pilose. Seeds globose, 2—2.5 mm in diam., reticulate.

Widespread in the West Indies.

ST. MARTIN: Naked Boy Hill (Boldingh 2700, fl. & fr. Aug.); lower part of the hills between Mont Chambord and Mont Vernon (Boldingh 2959, fl. Aug.); Mount Paradise, 200—300 m (Boldingh 3317, fl. & fr. Sept.); Fort William, 0—50 m (Boldingh 4540, fl. Aug.); Cole Bay Hill (Stoffers 4504, fl. & fr. Aug.); Tintamarre (Boldingh 3401, fl. Sept.).

Argythamnia argothamnoides (Bert.) Ingram

INGRAM, Bull. Torrey Bot. Club 80: 423. 1953; — *Croton argothamnoides* BERTERO, in Sprengel, Syst. Veg. 16(3): 872. 1826; — *Argythamnia candicans* auct. non SWARTZ; BOLDINGH, Fl. Ned. W. Ind. Eil. 247. 1913 p.p.; Fl. D.W. Ind. Isl. 2: 53. 1914 p.p.; ARNOLDO, Zakflora 83. 1954; Zakflora 124. 1964; — *Argyrothamnia fendleri* MUELLER-ARG., Linnaea 34: 145. 1865; — *Ditaxis fendleri* (MUELL.-ARG.) PAX, in ENGLER, Pflanzenreich IV. 147. 6: 61. 1912.

Monoecious low shrub; branches angular; young branches, leaves and stipules densely covered with hairs attached by their middle. Leaves alternate, petiolate; blades elliptic or lanceolate, acute or acuminate at the apex, acute at the base, 2–6 cm long and 1–2.5 cm wide, membranaceous, pinnately veined, the veins prominent beneath, often reddish, margin serrate; petioles 1–3 (–5) mm long. Stipules lanceolate, 1–1.5 mm long, deciduous. Inflorescence consisting of short racemes, 4–7 mm long, rachis pubescent, one female flower in the lower portion and 3–5 male flowers in the upper portion. Bracts ovate or triangular, 1–2 mm long. Male flowers: sepals 5, lanceolate, 3–4 mm long, acute, 1-veined, strigose outside, subglabrous within; petals 5, elliptic, acute, 3–4 mm long, strigose outside, glabrous within, main vein incassate, hyaline, alternating with 5 glabrous, long, triangular disk glands, adnate to the staminal column; stamens 10, biseriate; staminodes 3–5 or wanting. Female flowers: sepals 5, 5–7 mm long, lanceolate, acuminate, with hairs on both surfaces, 3-veined; petals 5, spatulate or rhomboid, acute, 2–3 mm long, alternating with 5 disk glands; ovary densely strigose; styles connate to the middle, bifid. Capsule 3-coccos, reddish, strigose, 5 mm in diam.; cocci bivalved. Seeds globose, alveolate with acute apex, 2 mm long.

Florida, northern Colombia, northern Venezuela, and islands off the Venezuelan coast.

Mainly on calcareous soil.

ARUBA: slope of Jaboribari (Boldingh 6274, fl. & fr. Dec.); calcareous hill Baikurie (Boldingh 6334, fl. & fr. Dec.); hills near Ajó (Boldingh 6350, fl. & fr. Dec.); Fontein (Boldingh 6475c, fl. & fr. Jan.; Stoffers 1700, fl. & fr. Jan.; 1703, fl. & fr. Jan.); calcareous soil near San Nicolas (Boldingh 6495b, fl. & fr. Jan.); Playa (Arnoldo 181, fl. & fr. Dec.); Seroe Alejandro (Stoffers 1968, fl. & fr. Jan.); along road near Oranjestad (Stoffers 2045, fl. & fr. Feb.).

CURAÇAO: Wacao (Boldingh 5105e, fl. & fr. Nov.); calcareous hill near Hato (Boldingh 5131k, st. Nov.); rocky hills near Willemstad (Britton & Shafer 2963, fl. & fr. March); road near Willemstad (Stoffers 6108, fl. & fr. Feb.); Santa Barbara Plantation (Stoffers 396, fl. Oct.).

Bernardia Miller, Gard. Dict. Abr. ed. 4. 1754

Herbs or shrubs. Leaves alternate, serrate, often with two glands near the base, petiolate or sessile. Stipules present. Plants monoecious or dioecious. Male flowers in axillary spikes, with remote, dense clusters in the axils of bracts; calyx 3–4-lobed, valvate; petals wanting; stamens 3–25; filaments free, short; anthers 4-celled, subglobose; disk of small glands or rarely wanting; rudiment of pistil not present. Female flowers in a few-flowered, mostly short spike, terminal or in the axils of the upper leaves, more or less enclosed by 3 indurate bracts; sepals 6 (5–9); petals wanting; disk annular or

represented by separate glands; ovary 3-locular; styles short, 2-partite. Capsule 3-coccos; cocci 2-valved; columella persistent. Seeds triangular; caruncula wanting.

About 35—40 species. Natives of tropical and subtropical America.

Key to the species:

1. Shrub; leaves obovate to obovate-elliptic, often with 2 oval, roundish, flat glands at the base of the blade; stamens 6—9. *B. corensis*
Herb, somewhat woody at the base; leaves elliptic-lanceolate; glands at the base of the blade wanting; stamens mostly 5. *B. sidoides*

Bernardia corensis (Jacq.) Muell.-Arg.

MUELLER-ARG., *Linnaea* 34: 173. 1865; DUSS, *Fl. phan. Ant. franç.* 35. 1897; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 111. 1909; *Fl. Ned. W. Ind. Eil.* 247. 1913; *Fl. D.W. Ind. Isl.* 2: 53. 1914; URBAN, *Symb. Ant.* 8: 359. 1920; QUESTEL, *Fl. Isl. St. Bartholomew* 134. 1941; LEON & ALAIN, *Fl. Cuba* 3: 87. 1953; ARNOLDO, *Zakflora* 83. 1954; *Zakflora* 124. 1964; FOURNET, *Fl. Guadeloupe & Martinique* 1589. 1978; — *Acalypha corensis* JACQUIN, *Enum. Syst. Plant. Carib.* 32. 1762; *Select. Stirp. Amer. Hist.* 254, t. 161. 1763; — *Polyboea corensis* GRISEBACH, *Veg. Karaib.* 22. 1857; *Fl. Br. W. Ind. Isl.* 46. 1859 [‘1864’].

Monoecious or dioecious shrub; branches costate; young branches sparsely strigose. Leaves alternate; blades obovate to obovate-elliptic, acuminate or sometimes acute, obtuse or emarginate at the apex, obtuse at the base, 3—9 cm long and 1.5—4.5 cm wide, penniveined, membranaceous, glabrous or strigose on both sides, muricate above, midrib prominent beneath, lateral veins 7—9, prominent beneath, often with 2 oval-roundish glands near the base; petioles 2—3 mm long, strigose. Stipules 1.5 mm long, lanceolate, strigose. Male inflorescence consisting of axillary spikes, 1.2—4 cm long, flowerclusters distant, alternate, included in a cucullate bract; bracts 1—1.5 mm long and 1.5—2 mm wide, acute, strigose, muricate. Female inflorescences terminal, short, 3—7-flowered enclosed by 3 ovate, 3 mm long and 4—5 mm wide, acuminate, indurate bracts. Flowers apetalous. Male flower on 3 mm long pedicels; sepals 3, sparsely strigose, 1-veined, ovate to elliptic, 1 mm long; stamens 6—9, erect in bud; filaments c. 1 mm long; anthers laterally dehiscent; disk of small separate glands. Female flowers sessile; sepals 6, 2.5 mm long, imbricate, deltoid-ovate, acute, 7-veined, membranaceous; disk cupuliform, slightly lobed; ovary sessile, 3-locular; styles short, appressed to the ovary; ovules solitary in each locule. Capsule about 7 mm in diam. Seeds about 4 mm long, carinate.

Venezuela and known from several islands of the West Indies.

Rather common, in several types of vegetation.

BONAIRE: calcareous plateau of Bolivia (Boldingh 7373, fl. Feb.); calcareous plateau near Rooi Samboe (Boldingh 7386, fl. & fr. Feb.).

CURAÇAO: neighbourhood of Westpunt (Boldingh 4927h, fl. & fr. Nov.); from van Engelen to Waterloo (Boldingh 4931, fl. Nov.); Seroe Christoffel (Boldingh 5022, fl. & fr. Nov.; Arnolde 2208, fl. Dec.); hills near Knip (Stoffers 1105, fl. Dec.); Rooi Beroe (Stoffers 225, fl. Oct.); Jan Thiel (Stoffers 5023, fl. Nov.).

ST. EUSTATUS: top of The Quill, 400—450 m (Boldingh 195, fl. June; 226, fl. June; 398, fl. June; 404, fl. June; Stoffers 3695, fl. July); slope of The Quill near Bengalen, 100 m (Boldingh 665, fl. & fr. June); between Glass Bottle and White Wall (Stoffers 4099, defl. Aug.); Signal Hill, 200 m (Boldingh 1050, fl. June).

ST. MARTIN: Mount Paradise (Boldingh 3224, fl. & fr. Sept.; 3303, fl. Sept.).

***Bernardia sidoides* Muell.-Arg.**

MUELLER-ARG., *Linnaea* 34: 177. 1865-66; MUELLER-ARG. in DECANDOLLE, *Prodr.* 15(2): 924. 1866; — *Traganthus sidoides* KLOTZSCH in WIEGMANN, *Archiv* 7: 188. t. 9. 1841; in HOOKER, *Lond. Journ. Bot.* 2: 46. 1843.

Monoecious, annual, herbaceous, erect plant; branches costate, strigose. Leaves alternate; blades oblong-ovate to elliptic-lanceolate, 1.5—4.5 (—6) cm long and 0.8—1.8 (—3) cm wide, acute, obtuse or obtuse-attenuate at the base, crenate-serrate, strigose, especially on the veins and near the margins, penniveined and 3-veined from the base, veins prominent on both sides, membranaceous, muricate above, glands at the leafbase wanting; petioles very short, 1—5 mm long, strigose. Stipules to 1 mm long, subulate, caducous. Male flowers in axillary, short spikes; peduncle strigose; many male flowers clustered in the axil of a bract; bract cucullate, 1—1.5 mm long and c. 1.5 mm wide, especially near the margin strigose. Female inflorescence few-flowered, short, terminal or axillary in the upper leaves, enclosed by 3 bracts; bracts to 2 mm long and 1.5 mm wide, triangular-ovate, acuminate, strigose on the margin. Male flowers on c. 0.7 mm long pedicels; calyx-lobes 3, valvate, broadly ovate, acute, c. 0.5 mm long; stamens mostly 5; filaments free; anthers 4-celled, subglobose. Female flowers sessile; sepals 6, ovate, about 1 mm long and to 0.7 mm wide, acuminate, strigose on the margin; ovary 3-locular, strigose; styles 3, short, deeply 2-parted, strigose; ovules solitary in each locule. Capsule 3—5 mm long, 3-coccos; cocci 2-valved; columella persistent. Seeds triangular, smooth.

Brasil and Guyana; Curaçao.

CURAÇAO: near Santa Cruz (Arnoldo 4015, fl. BH).

Adelia Linnaeus, *Syst. Nat.* ed. 10. 1285, 1298. 1759 nom. conserv. 4397

Dioecious shrubs or trees; branches often spinescent. Leaves alternate or fascicled on short twigs, mostly deciduous, membranaceous, punctate, entire, short-petiolate. Flowers clustered on cushions in the leaf-axils. Male flowers: sessile or on short pedicels; sepals 5, valvate; petals wanting; disk mostly annular, adnate to the sepals; stamens 8—17; filaments free or united into a central column; rudiment of ovary 3-partite. Female flowers: pedicels longer than in the male flowers; sepals 5; petals wanting; disk adnate to the sepals; ovary 3-locular; styles 3, free, deeply laciniate. Fruit a capsule, 3-coccos; cocci 2-valved, columella persistent. Seeds subglobose, smooth, caruncula wanting.

About 10 species in tropical America.

Adelia ricinella L.

LINNAEUS, Syst. Nat. ed. 10. 1285, 1298. 1759; GRISEBACH, Fl. Br. W. Ind. Isl. 45. 1859 ['1864']; URBAN, Symb. Ant. 4: 346. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 111. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 227. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 247. 1913; Fl. D.W. Ind. Isl. 2: 53. 1914; URBAN, Symb. Ant. 8: 359. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 292, fig. 95. 1920; LEON & ALAIN, Fl. Cuba 3: 94. 1953; ARNOLDO, Zakflora 22. 1954; Zakflora 124, fig. 6. 1964; ADAMS, Flowering plants of Jamaica 418. 1972; FOURNET, Fl. Guadeloupe & Martinique 1592, fig. 745. 1978; — *Ricinella ricinella* (L.) BRITTON in WILSON, Bull. N. Y. Bot. Gard. 8: 395. 1917; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 488. 1924.

Dioecious shrub or small tree, up to 5 m high, branches with white bark, often with stemspines and shortshoots. Leaves alternate or fascicled on short-shoots; blade very diverse in habit, 2—5 (—10) cm long and 0.5—2(—4) cm wide, elliptic, elliptic-obovate or oblong-obovate to spatulate, acute, obtuse or retuse at the apex, truncate at the base, entire, punctate, membranaceous, sometimes pilose in the axils of the veins on the lower surface, sometimes sparsely ciliate, penniveined; petioles 1—5 mm long. Stipules wanting. Flowers in clusters on white cushion-shaped pubescent shortshoots. Male flowers: sessile or shortly to 5 mm long pedicellate; sepals 5, 2—3 mm long, unequal, ovate or lanceolate, acute, pilose on both sides, white; stamens 10—17, the filaments connate at the base; anthers ovoid; disk annular, pilose; pistillode filiform, 3-partite, puberulous. Female flower: pedicels 1—5 cm long; sepals 5, lanceolate, 3 mm long, pilose outside; disk annular, pilose; ovary tomentose; styles 3, free, deeply lacinate. Fruit a capsule, 6—8 mm in diam., pubescent, flattened globose. Seeds globose, 3 mm in diam., greyish, reticulate.

Venezuela and Antilles.

In woodlands, especially on limestone.

CURAÇAO: calcareous hills near Klein Santa Marta (Boldingh 4891, st. Dec.); neighbourhood of Westpunt (Boldingh 4925, st. Nov.); Anthonyberg (Boldingh 5161, st. Nov.); calcareous hills near Hato (Boldingh 5420, st. Nov.); hills near Rooi Behoenda (Boldingh 5510, st. Nov.; 5512, st. Nov.); calcareous hills near Malpais (Boldingh 5618, st. Jan.); Serro Christoffel (Arnoldo s.n., st. March).

ST. MARTIN: Philipsburg, near saltpond (Boldingh 2537, st. Aug.; Arnoldo 3394, fl. Jan.); top of Naked Boy Hill (Boldingh 2711, st. Aug.); Fort St. Louis (Le Gallo 841, st. July; 876, st. July; 921, st. July); near Lemoentuin Juliana (Stoffers 2237, fr. March); Vineyard Hill (Stoffers 4515, st. March); without loc. (Boldingh s.n., st. Aug.).

Acalypha Linnaeus, Spec. Plant. 1003. 1753

Herbs or shrubs; indumentum of simple hairs or glands. Leaves alternate, petiolate; blade entire, crenate or serrate, often punctate, 3—7-veined from the base or penniveined. Stipules present. Inflorescence spike-like or rarely paniculate, unisexual or bisexual, terminal or axillary. Flowers unisexual, apetalous; disk wanting. Male flowers: small, short-pedicellate; calyx closed in the bud, 4-partite, valvate; stamens 4—8; filaments free or connate at the base; anthers bilocular, pendent, more or less elongate and worm-shaped, opening at the apex; rudiment of ovary wanting. Female flowers solitary

or 2—3—together, sessile in the axil of a toothed or lobed foliaceous bract; sepals 3(—5), imbricate, small, mostly ovate; ovary 3-locular; styles 3, free or connate at the base, mostly laciniate. Capsule 3-coccos; cocci 2-valved. Seeds subglobose; caruncle distinct or obsolete.

About 400 species, mostly in the tropics of both hemispheres.

Key to the species:

1. Herbs, sometimes woody at the base; inflorescence terminal and axillary; bracts of the female inflorescence lobed..... 2
 Shrubs; inflorescence axillary; bracts of the female inflorescence denticulate 3
2. Glandular hairs wanting; leaves heteromorphic, the lower ones small, orbicular, the upper leaves longer; female bracts 2-flowered; styles laciniate.....
 *A. chamaedrifolia*
 Glanduliferous; leaves not heteromorphic; petioles about as long as the leaf-blade; female flowers solitary in the axils of the bracts; styles simple.....
 *A. poiretii*
3. Leafblade softly tomentose, long-acuminate; petioles densely pilose; inflorescence uni- and bisexual; female flowers sessile; sepals 3..... *A. cuspidata*
 Leafblade sparsely pilose, acuminate, hyaline; petioles sparsely pilose; inflorescence long-elongate, unisexual; female flowers pedicellate; sepals 5.....
 *A. villosa*

***Acalypha chamaedrifolia* (Lam.) Muell.-Arg.**

MUELLER-ARG., in DE CANDOLLE, Prodr. 15(2): 879. 1866; DUSS, Fl. phan. Ant. franç. 35. 1897; URBAN, Symb. Ant. 4: 347. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 111. 1909; Fl. Ned. W. Ind. Eil. 248. 1913; URBAN, Symb. Ant. 8: 361. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 297, fig. 98. 1920; BRITTON & MILLSPAUGH, Bahama Fl. 228. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 490. 1924; QUESTEL, Fl. Isl. St. Bartholomew 135. 1941; LEON & ALAIN, Fl. Cuba 3: 99. 1953; ADAMS, Flowering plants of Jamaica 423. 1972; FOURNET, Fl. Guadeloupe & Martinique 1585. 1978; — *Croton chamaedrifolius* LAMARCK, Encycl. 2: 215. 1786; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 228. 1909; — *Acalypha reptans* SWARTZ, Prodr. 99. 1788; Grisebach, Fl. Br. W. Ind. Isl. 48. 1859 [1864].

Monoecious perennial herb, suffrutescent, up to c. 30 cm high, much-branched from the base; branches villous, glandular hairs wanting. Leaves alternate; blades heteromorphic, 1—4 cm long and 0.5—2 cm wide, the lower ones small, orbicular-ovate, the upper ones larger, ovate, elliptic or lanceolate, acuminate at the apex, obtuse or truncate to broadly rounded at the base, membranaceous, pilose on both sides, pinniveined with 6—9 lateral veins, prominent beneath; margin crenate; petiole up to 1.5 cm long. Stipules 1—1.5 mm long, lanceolate, villous. Inflorescence terminal and axillary, 1—3 (—4) cm long, bisexual, pilose, with several female flowers near the base and male flowers in the upper portion. Male flowers pedicellate, very small, in dense clusters in the axil of a small bract, 0.5—1 mm long, lanceolate, ciliate, hairs 0.5—0.75 mm long; sepals 4, valvate, glanduliferous near the tip outside; stamens 8, more or less connate at

the base. Female flowers: bracts enclosing 2 flowers, one developing before the other, triangular, up to 5 mm long and 7 mm wide, 7—9-lobed, the lobes ovate, acuminate, punctate, glanduliferous and pilose outside; sepals 3, 1 mm long, lanceolate, ciliate; ovary hirsute, 3-lobed; styles 3, free at the base, lacinate, smooth. Capsule 3-lobed, smooth, 2 mm in diam. Seeds small, ovoid, usually c. 1 mm long, smooth, dark brown.

From southern Florida through the West Indies south to Martinique.

In grasslands and thickets, on rocky places and cultivated grounds.

Vernacular names: bastard nettle (Windward Group).

SABA: between The Bottom and Mary's Point, 100—200 m (Boldingh 1520, fl. & fr. July; 1540, fl. & fr. July); Ladder Gut (Boldingh 1962, fl. July); Windwardside (Boldingh 2334, fl. & fr. July).

ST. EUSTATIUS: along roads in Oranjestad (Boldingh 921, fl. & fr. May).

ST. MARTIN: in an orchard near Bellevue (Boldingh 2850, fl. Aug.); lower part of Milldrum Hill (Boldingh 3159, fl. & fr. Sept.).

***Acalypha poiretii* Spreng.**

SPRENGEL, Syst. Veg. 3: 879. 1826; BOLDINGH, Fl. D.W. Ind. Isl. 1: 111. 1909; Fl. Ned. W. Ind. Eil. 248. 1913; Fl. D.W. Ind. Isl. 2: 54. 1914; QUESTEL, Fl. Isl. St. Bartholomew 135. 1941; ARNOLDO, Zakflora 151. 1954; Zakflora 123. 1964; GOODING *et al.*, Fl. Barbados 244. 1965; FOURNET, Fl. Guadeloupe & Martinique 1586. 1978; — *Acalypha macrostachya* POIRET, in LAMARCK, Encycl. 6: 208. 1804; Grisebach, Fl. Br. W. Ind. Isl. 47. 1859 ['1864']; — *Acalypha hispida* WILLDENOW, Spec. Plant 4: 523. 1805; Britton & Wilson, Sci. Surv. Porto Rico & Virgin Isl. 5: 491. 1924.

Monoecious, annual herb, up to 35 cm high, somewhat woody at the base; stems, petioles, peduncles and leaves tomentose, pilose and with glandular hairs. Leaves alternate; blades ovate to narrowly ovate, acuminate at the apex, cuneate, obtuse or truncate at the base, 2—6 (—9) cm long and 1—4 (—5) cm wide, mostly twice as long as wide, margin crenate, membranaceous, pinnately veined and 5 (—7)-veined from the base, lateral veins 6—8, prominent beneath, pilose, especially on the midvein; petioles as long as or shorter than the leafblades. Stipules 0.5—2 mm long, pilose. Inflorescence consisting of terminal and axillary, bisexual, 0.5—3 cm long spikes; the spikes in the upper part of the stems for the greatest part with female flowers and a small part near the apex of the inflorescence with male flowers, the spikes along the lower part of the stems of male flowers and only a few female flowers in the lowest one or two bracts. Male flowers very small, short-pedicellate; pedicels hirsute, in dense clusters in the axils of small, hirsute bracts; sepals 4, valvate; stamens 8. Female flowers solitary in the axils of a cuneate 4 mm long and 6 mm wide, 7—11-lobed bract, the lobes acuminate, incised to about one-third, with glandular hairs, puberulous inside, pilose outside; sepals 3, imbricate, about 1 mm long, oblong, acuminate, ciliate; ovary 3-lobed, hirsute; styles 3, simple, smooth. Capsule c. 2 mm wide, hirsute and covered with rows of tubercles in the upper part. Seeds about 1 mm long, ovoid, muricate.

In tropical continental America from southern Mexico to Guatemala and from French Guyana to Argentina; several islands of the Antilles.

In shrub- and roadside vegetations.

ARUBA: calcareous hills and plateau near Belashi (Boldingh 6429, fl. & fr. Jan.); slope of Miralamar (Boldingh 6445, fl. & fr. Jan.); road near Savaneta (Boldingh 6519, fl. & fr. Jan.); Playa (Arnoldo 188, fl. & fr. Dec.); Rooi Taki (Arnoldo 221, fl. & fr. Dec.); along roads near Oranjestad (Stoffers 2065, fl. & fr. Feb.; 2075, fl. & fr. Feb.); Rooi Prins (Stoffers 2169, fl. & fr. Feb.).

BONAIRE: calcareous soil near Playa Grandi (Boldingh 7295, st. Feb.).

CURAÇAO: near Westpunt (Boldingh 4927, fl. & fr. Nov.); hofje of Hato (Boldingh 5341, fl. & fr. Nov.); calcareous hills near Santa Cruz (Boldingh 5591, fl. & fr. Nov.); Soto (Stoffers 8439, fl. & fr. Feb.); Seroe Christoffel (Stoffers 1194, fl. & fr. Dec.); near Hato (Stoffers 6082, fl. & fr. Jan.); rocks near Willemstad (Britton & Shafer 2955, fl. & fr. March); Fort Nassau (Suringar s.n., fl. Jan. [L]); Coppermines, Savonet (Suringar s.n., fl. Jan. [L]); without loc. (Aschenberg s.n., fl. & fr.).

SABA: The Bottom (Arnoldo 551, fl. & fr. Aug.).

ST. MARTIN: Grande Case (Boldingh 3092, fl. & fr. Sept.).

***Acalypha cuspidata* Jacq.**

JACQUIN, Hort. Schoenbr. 2: 63, t. 243, 1797; GRISEBACH, Fl. Br. W. Ind. Isl. 48. 1859 ['1864']; BOLDINGH, Fl. Ned. W. Ind. Eil. 248. 1913; Fl. D.W. Ind. Isl. 2: 54. 1914; URBAN, Symb. Ant. 8: 361. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 299. 1920; LEON & ALAIN, Fl. Cuba 3: 98. 1953; ARNOLDO, Zakflora 82. 1954; Zakflora 123. 1964; ADAMS, Flowering plants of Jamaica 424. 1972.

Monoecious shrub, up to 1.5 m high; young branches, petioles and leaves tomentose and glandular-pubescent. Leaves alternate; blades ovate, long-acuminate at the apex, cordate or truncate at the base, 2—7 (—10) cm long and 1.5—4.5(—5.5) cm wide, margin crenate, membranaceous, usually softly tomentose and pilose on the veins and margin, 3—7-veined from the base, lateral veins 6—8 on each side; petioles 0.5—6 cm long. Stipules linear, to 5 mm long. Inflorescence axillary, 2.5—6 cm long, tomentose-pilose, glanduliferous, male, except for a few female flowers near the base and a sterile female flower at the top. Male flowers on tomentose, pilose, glanduliferous pedicels in distinct clusters, many flowers in the axil of a small subulate, pilose and glanduliferous bract. Female flowers sessile, 2—3 together in the axil of a reniform bract, the bract to 4 mm long and 6 mm wide, denticulate with about 15 small teeth, glanduliferous on both sides. Male flowers very small; sepals 4; stamens 8. Female flowers: sepals 3, ovate, glanduliferous; ovary densely glandulose, pilose; styles 3, (2—) 3.5—5 mm long, simple at the base, lacinate at the top. Capsule muricate at the apex, glanduliferous. Seeds c. 1.2 mm long, smooth-reticulate, reddish.

Colombia, Venezuela, Ecuador, and known from several islands of the Antilles.

In open vegetations.

ARUBA: hills near Ajó (Boldingh 6347, fl. & fr. Dec.); slope of Hooiberg (Boldingh 6368, fl. & fr. Dec.; Arnoldo 112, fr. Dec.; Stoffers 2107, fl. & fr. Feb.); near Santa Cruz (Stoffers 1741, fl. & fr. Jan.).

BONAIRE: slope of Macutacao (Boldingh 7121, defl. Jan.); slope of Joewa (Boldingh 7211, fl. & fr. Feb.); Angola (Stoffers 820, fl. & fr. Nov.).

CURAÇAO: Veeris Berg (Boldingh 4739, fl. & fr. Oct.); hills to the east of Westpunt (Boldingh 4934, fl. Nov.); calcareous part of Ronde Klip (Boldingh 5409, fl. Nov.); hills near Rooi Behoenda (Boldingh 5534, fl. & fr. Nov.); Seroe Christoffel, 200 m (Arnoldo 1773, fl. & fr. Dec.; Stoffers 222, fl. Oct.; 1220, fr. Dec.); Groot Santa Marta (Stoffers 117, fl. & fr. Sept; 119, fl. Sept.).

***Acalypha villosa* Jacq.**

JACQUIN, *Select. Stirp. Amer. Hist.* 254, t. 183, fig. 61. 1763; GRISEBACH, *Fl. Br. W. Ind. Isl.* 47. 1859 [‘1864’]; ARNOLDO, *Zakflora* 83. 1954; *Zakflora* 124. 1964.

Monococious shrub, up to 2 m high; branches thin, terete; all parts tomentose, pilose, and glanduliferous. Leaves alternate; blades 8—12 (—18) cm long and 5—9 (—12) cm wide, ovate or triangular-ovate, acuminate at the apex, subcordate to cordate at the base or truncate in young leaves, margin crenate and entire near the base, membranaceous, pinnately veined and 5 (—7)-veined from the base, glands warty, yellow; petioles 2—12 cm long. Stipules 1.5—3 mm long, subulate, pilose. Inflorescence axillary, unisexual. Male inflorescences filiform on distinct branches, 3—13 mm long, pilose, glanduliferous. Female inflorescences nearly always unbranched, laxiflowered, filiform, 3—11 cm long, pilose, glanduliferous. Male flowers very small, in dense clusters in the axils of minute triangular-ovate, pilose bracts, short-pedicellate; sepals 4, valvate, pilose, glanduliferous. Female flowers 2 or more together in the axil of a minute, toothed, cucullate, roundish bract, pedicellate, pedicels enlarging in fruit; sepals 5, lanceolate, ciliate, pilose outside; ovary densely muricate, glanduliferous; styles 3, 2—3 mm long, 5—8-cleft to the base, laciniate. Capsule c. 2.5 mm in diam., muricate. Seeds subglobose, c. 1 mm long.

Tropical continental America from Costa Rica to Peru and from Brasil to Paraguay, Curaçao.

CURAÇAO: Playa Hundu (Stoffers 6099, fl. & fr. Jan.).

***Tragia* Linnaeus, *Spec. Plant.* 980. 1753**

Monococious, climbing or twining perennial herbs or undershrubs, commonly hispid or rough with stiff stinging hairs. Leaves alternate, petiolate; blades mostly shallowly cordate, pinnately veined, with 1 or 2 veins on each side arising from the base, margin toothed. Stipules present. Inflorescence consisting of terminal, axillary or leaf-opposite racemes with the female flowers in the lower portion and the male flowers in the upper portion. Flowers usually solitary in the axils of bracts; calyx 3—6-lobed; petals wanting; disk wanting. Male flowers on articulate pedicels; calyxlobes closed in bud, the lobes valvate; stamens (1—)2—5(—8). Female flowers: ovary 3-locular; styles 3, united at least at the base, not lobed, often papillous; ovules one in each locule. Fruit a capsule separating into 3 bi-valved cocci. Seeds without caruncle.

Over 100 species mostly in the tropical regions of America and Africa, and in the southern states of North America.

Tragia volubilis L.

LINNAEUS, Spec. Plant. 980. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 48. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 36. 1897; URBAN, Symb. Ant. 4: 348. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 112. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 231. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 249. 1913; URBAN, Symb. Ant. 8: 362. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 305, fig. 100. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 492. 1924; QUESTEL, Fl. Isl. St. Bartholomew 135. 1941; LEON & ALAIN, Fl. Cuba 3: 102, fig. 29. 1953; GOODING *et al.*, Fl. Barbados 262. 1965; WEBSTER, J. Arn. Arb. 48: 376. 1967; Ann. Miss. Bot. Gard. 54: 291, fig. 14. 1967; ADAMS, Flowering plants of Jamaica 420. 1972; FOURNET, Fl. Guadeloupe & Martinique 1579, fig. 741. 1978.

Slender, twining vine, stems terete and up to c. 4 m long, rough with fine, more or less stiff, stinging hairs. Leaves alternate; blade triangular-ovate to oblong, acute at the apex, truncate to slightly cordate at the base, about rectangular on the petiole, up to 8.5 × 4.5 cm, two or three times as long as wide, margin strongly serrate-dentate, membranaceous, more or less hirsute with stinging hairs about 1 mm long, dark-green above, paler beneath; petioles slender, 0.5–2.5 cm long, shorter than the leafblades. Stipules lanceolate, 3–4 mm long and 1–1.5 (–2) mm wide, acuminate, entire, margin covered with stinging hairs. Racemes slender, 3–5 (–9) cm long. Bracts lanceolate, 1–1.5 mm long, persistent. Male flowers on short pedicels with an articulation in the middle, about 2 mm long, minutely hispidulous, each flower bracteate; sepals 3, valvate, oblong-ovate, about 1 mm long and 0.5 mm wide; stamens mostly 2–3; filaments short and thickish, connate at least at the base; anthers dehiscing longitudinally, extrorse; rudiment of the pistil wanting or rarely present and then very small. Female flowers on hispidulous pedicels, elongating in fruit to 1.5–3 cm, articulation near the apex; sepals 6, persistent, 2 mm long, about 0.5 mm wide, lanceolate, broad at the base; staminodia wanting; ovary about 1 mm high and 1.5 mm wide, hispid with stinging white hairs; ovules anatropous; nucellus not beaked. Capsule 3–5 mm long, 6–7 mm in diam., deeply 3-lobed; columella persistent, slender, with 3 apical, interocular dents. Seeds subglobose, 2.5 mm in diam., smooth or slightly roughened; endosperm fleshy.

Throughout tropical continental America and the West Indies, also in tropical western Africa.

Common in pastures, thickets and woodlands.

SABA: Ladder Gut (Boldingh 204, fl. & fr. July); id., 100–200 m (Stoffers 2799, fl. & fr. Ap.); between The Bottom and Mary's Point, 100–200 m (Boldingh 1467, fl. & fr. July); The Bottom (Arnoldo 543, fl. & fr. Aug.; Suringar s.n., fl. Ap. [L]); The Mountain, 300–600 m (Boldingh 1791, fl. & fr. July); along road from The Bottom to Crispine, 220–350 m (Stoffers 2977, fl. & fr. Ap.).

ST. EUSTATIUS: slope of The Quill, 300 m (Arnoldo 3191, fl. & fr. Dec.); id., near Bengalen 250 m (Boldingh 703, fl. June); top of The Quill (Boldingh 225, fl. & fr. June; 252, fl. June; 282, st.); inner slope of The Quill, 350 m (Boldingh 422, st. May); De Kant (Suringar s.n., fl. & fr. May [L]); Boven (Suringar s.n., st. Ap. [L]).

ST. MARTIN: Naked Boy Hill (Boldingh 2710, st. Aug.); mountain between Mont des Accords and Sentry Hill, 200–300 m (Boldingh 2894a, st. Aug.); Sentry Hill (Suringar s.n., st. May [L]); Mount Paradise (Boldingh 3308, fl. Sept.); top of Mount William, 160 m (Stoffers 2551, fl. & fr. March); French frontier (Suringar s.n., fl. May [L]).

Ricinus Linnaeus, Spec. Plant. 1007. 1753

Tall, glabrous, monoecious herb, the branches smooth. Leaves alternate, peltate; blade palmately 7—11-lobed, the lobes serrate; petioles elongated and provided with patelli-form glands at least at the base and at the junction with the blade. Stipules large, united and covering the bud. Inflorescence consisting of terminal, paniculate racemes with several male-flowered cymes on the nodes in the lower portion, and bisexual or female flowers in the upper portion. Bracts papery, glandular at the base. Male flowers: calyx globose in bud, valvate, 3—5-partite at anthesis; petals wanting; stamens numerous, up to 1000; filaments connate at the base, irregularly and repeatedly branched; anther-cells subglobose, separately attached to the connective, dehiscing longitudinally; rudiment of the pistil wanting. Female flowers: calyx as in the male flower, caducous; petals wanting; ovary 3-locular, spinose-muricate; styles 3, connate below, bifid; style-branches stigmatic; ovules solitary in each locule. Capsule smooth and spiny, splitting up into three 2-valved cocci, wing of the columella dilating near the top. Seeds somewhat compressed, smooth, usually mottled, caruncula present; endosperm oily and fleshy.

A monotypic genus, widely spread through the tropics, often cultivated; perhaps of African origin.

***Ricinus communis* L.**

LINNAEUS, Spec. Plant. 1007. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 37. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 30. 1897; URBAN, Symb. Ant. 4: 348. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 112. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 231. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 249. 1913; Fl. D.W. Ind. Isl. 2: 54. 1914; URBAN, Symb. Ant. 8: 363. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 306, fig. 101. 1920; BRITTON & MILLSAUGH, Bahama Fl. 230. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 492. 1924; QUESTEL, Fl. Isl. St. Bartholomew 135. 1941; LEON & ALAIN, Fl. Cuba 107, fig. 32. 1953; ARNOLDO, Zakflora 68, fig. 72. 1954; Gekw. en nutt. pl. Ned. Ant. 116, fig. 182. 1954; Zakflora 130, fig. 72. 1964; Gekw. en nutt. pl. Ned. Ant. 152, fig. 186. 1971; GOODING *et al.*, Fl. Barbados 260. 1965; WEBSTER, J. Arn. Arb. 48: 379, fig. 4. 1967; ADAMS, Flowering plants of Jamaica 417. 1972; FOURNET, Fl. Guadeloupe & Martinique 1586, fig. 743. 1978.

Erect herbaceous shrubby herb, up to 4 m high, more or less branched; stems becoming stout and sometimes tree-like with age. Leaves alternate, peltate; blade deeply palmately-lobed, 10—40 (—60) cm in diam, the lobes ovate-oblong or lanceolate, acute or acuminate, the margin irregularly glandular-toothed, glaucous, glabrous; petioles up to ca 60 cm long, as long as the blade or longer. Stipules fused into a caducous sheath, leaving a circumaxial scar. Flowers apetalous. Inflorescence consisting of large paniculate racemes. Bracts triangular, membranaceous. Male flower: calyx 6—12 mm in diam., its lobes triangular-ovate, acute, glabrous. Female flowers: calyx 4—8 mm long. Capsule 1.2—2.4 cm long, ellipsoid, spiny. Seeds ellipsoid, flattened, shiny, smooth, mottled with grey, brown and black, 10—22 mm long, 6—15 mm wide, and 4.5—9 mm thick, caruncula present.

Widely spread through the tropics and often cultivated; perhaps of African origin.

In waste places.

Vernacular names: karpata (Leeward Group)
castor oil plant (Windward Group).

ARUBA: south-western slope of Uti (Stoffers 2033, st. Feb.).

BONAIRE: south of debouchment of Goto-meer (Stoffers 1074, st. Dec.).

CURAÇAO: Klein St. Michiel (Stoffers 273, fl. & fr. Oct.); without loc. (Aschenberg s.n., fl.).

SABA: Booby Hill, 300 m (Boldingh 1586, fl. July); without loc. (van Groll-Meyer 266, fl. & fr.; 276, fl.; 258, fl. & fr.).

Dalechampia Linnaeus, Spec. Plant. 1054. 1753

Monoecious, often scandent shrub; branches twining, pubescent and often provided with stinging hairs. Leaves alternate; blade often 3—5-lobed, petiolate and usually with a pair of stipellae at the apex of the petiole. Stipules present. Inflorescence terminal or axillary, distinctly pedunculate and enclosed in a 2-leaved involucre; leaves of the involucre foliaceous, large, bi-stipulate and often coloured. Within the involucre a lower female, 3-flowered, 3-bracteolate cymule and a superior 4-bracteolate pleiochasium of which the bractlets are often urceolate-connate; pleiochasium of several 1—3-flowered cymules associated with a pulviniform nectary formed by modified bractlets of suppressed male cymules. Flowers without petals and disk. Male flowers: calyx globose in bud, splitting into 3—6 valvate segments at anthesis; stamens numerous; filaments connate into a stout column; anthers with longitudinal dehiscence. Female flowers: pedicellate or subsessile; sepals 5—12, imbricate, usually lobed or pinnatifid, often incrassating and indurating after flowering; ovary 3 (—4)-locular; styles connate into a long column, often dilated into a peltate compound stigma. Fruit capsular of 3 (—4) dehiscent cocci; columella persistent. Seeds globose to ellipsoid, without a caruncle.

About 125 species widespread in tropical America especially in Brasil; some species in Africa, Madagascar, and India.

Dalechampia scandens L.

LINNAEUS, Spec. Plant. 1054. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 51. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 40. 1897; URBAN, Symb. Ant. 4: 348. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 112. 1909; Fl. Ned. W. Ind. Eil. 249. 1913; Fl. D.W. Ind. Isl. 2: 54. 1914; URBAN, Symb. Ant. 8: 363. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 492. 1924; LEON & ALAIN, Fl. Cuba 3: 103, fig. 30. 1953; ARNOLDO, Zakflora 133. 1954; Zakflora 126. 1964; WEBSTER, Ann. Misso. Bot. Garden 54: 208. 1967; Fournet, Fl. Guadeloupe & Martinique 1579. 1978.

A slender, scandent shrub; branches terete or more or less obtusely angled, up to 3 m or more long, the young tips densely hispid-puberulent. Leaves alternate; blade deeply 3-(or rarely 5)-lobed, deeply cordate at the base, 3—10 cm long and 2.5—13 cm wide, membranaceous, usually 5-veined from the base, margin denticulate; middle lobe oblong to obovate, abruptly narrowed to a short acuminate tip, 1.2—8 cm long and 1—4 cm wide, the lateral lobes asymmetric ovate, abruptly acute or acuminate; petioles slender, 2—10 cm long hispid-pubescent and with stinging hairs like the branches. Stipules ovate-lanceolate, acute, 3—6 mm long and 1.5—3 mm wide, pubescent and ciliate. Stipellae lanceolate, 1—3 mm long, glandular at the base, pubescent and ciliate. In-

florescences on short axillary shoots, the axis usually 5—10 mm long, subtended by reduced leaves; peduncles up to 8 cm long in fruit. Involucral bracts 3-lobed, about half-way to the base, minutely glandular toothed along the margin, generally 5-veined from the base, (1.5—) 2.5—3.0 cm long and wide, pubescent with both crisped and stinging hairs; lobes acute or acuminate; the stipules asymmetric ovate or oblong-lanceolate, ciliate-pubescent on both sides, 4—7.5 mm long. Male inflorescence: involucre 2-lipped, glabrous, 2—4 mm high and 6—7.5 mm wide, mostly with 9—10 flowers in 3 cymules; ceriferous bractlets forming 2 laminate glandular masses; flowers short-pedicellate, 1 mm long or less; buds c. 2 mm in diam., glabrous or minutely hispidulous, splitting into 3—4 acute lobes at anthesis; stamens 25—35; filament tips free; anthers deeply 4-sulcate. Female inflorescence sessile, 3-flowered, the adaxial bractlets 2 or united into one, about 3—6 mm long, more wide than long; margins ciliate but not glandular; abaxial bractlets 4—6 mm long, more or less roundish; flowers short pedicellate; sepals (8—) 12, unequal, deeply fimbriate-lobed, gland-tipped, ciliate, nearly 1 cm in fruit with sharp pointed hairs; ovary minutely hispidulous, obovate; style cylindrical, 4—8 mm long, abruptly dilated into a peltate stigma about 1 mm in diam. Capsule obovate, more or less smooth or minutely hispidulous, 8.5—10 mm in diam., splitting into 2-valved cocci which are about 5 mm long and 6 mm wide. Seeds globose, smooth, mottled, about 4 mm in diam.

Continental tropical America and West Indies, tropical Africa, Madagascar, and India.

Mainly in woodlands and shrubby vegetations.

Vernacular names: treesdeede (Leeward Group).

BOINAIRE: neighbourhood of Rincón (Boldingh 7112, fl. & fr. Jan.); Dos Pos (Arnoldo 441, fr. Feb.).

CURACAO: hills near Savonet (Boldingh 4974, fr. Nov.); hills to the east of Westpunt (Boldingh 5064, fl. Nov.); Hato (Arnoldo 1593, fl. & fr. March); Seroe Christoffel (Stoffers 1191, fl. & fr. Dec.); Kleine Berg, on limestone (Stoffers 6055, fr. Jan.).

ST. EUSTATIUS: near Mary Glory, 150 m (Boldingh 1143, st. June); between Glass Bottle and White Wall, 240 m (Stoffers 4071, fr. Aug.).

ST. MARTIN: without loc. (Boldingh 2735, st. Aug.).

Jatropha Linnaeus, Spec. Plant. 1006. 1753

Monoecious herbs, shrubs or rarely trees. Leaves alternate, the blade entire, toothed or palmately lobed; petioles as long as the blade or longer. Stipules present, small or lacinate, often glandular. Inflorescence consisting of regularly forked, often long-pedunculate corymb-like panicles, the lower flowers female, the upper male. Calyx 5-lobed or 5-parted, imbricate or open in aestivation. Petals 5, imbricate to contorted, free or coherent but not connate. Male flower: disk of 5 glands; stamens 8—10, connate; pistillode or rudiment of the ovary wanting. Female flower: disk cupular or cushion-shaped; ovary (2—)3-locular, glabrous; styles united at the base, each style divided into 2 stigmatic lobes or branches; ovules one in each locule, anatropous. Fruit a capsule, splitting up into 2 or 3 bi-valved cocci; columella persistent. Seeds one in each locule, more or less ellipsoid, carunculate.

About 150 species, natives of the tropics, especially in America, extending also into North America and southern Africa.

Key to the species:

1. Leaves not or only slightly lobed, widely cordate at the base; glandular hairs wanting..... *J. curcas*
Leaves divided below the middle into 5—3 obovate-elliptic lobes, the margin, petiole and stipules glandular; stipules divided into threadlike segments
..... *J. gossypifolia*

***Jatropha gossypifolia* L.**

LINNAEUS, Spec. Plant. 1006. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 36. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 25. 1897; URBAN, Symb. Ant. 4: 350. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 113. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 230. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 250. 1913; Fl. D.W. Ind. Isl. 2: 54. 1914; URBAN, Symb. Ant. 8: 365. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 312. 1920; QUESTEL, Fl. Isl. St. Bartholomew 136. 1941; LEON & ALAIN, Fl. Cuba 3: 75, fig. 15. 1953; ARNOLDO, Zakflora 67. 1954; Zakflora 129. 1964; Gekw. en nutt. pl. Ned. Ant. 149. 1971; GOODING *et al.*, Fl. Barbados 254. 1965; WEBSTER, J. Agr. Arb. 48: 340. 1967; WEBSTER & BURCH, Ann. Miss. Bot. Gard. 54: 235, fig. 5. 1967; ADAMS, Flowering plants of Jamaica 416. 1972; FOURNET, Fl. Guadeloupe & Martinique 1582. 1978; — *Adenoropium gossypifolium* (L.) BRITTON & MILLSAUGH, Bahama Fl. 225. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 484. 1924.

Shrubby herb, 0.5—2 m high, sparingly branched; stem 1.5—5 cm thick, lenticellate; branches terete, longitudinally fissured. Leaves alternate; blade palmately 5—3-partite, 5—14 cm in diam., cordate at the base, lobes obovate-elliptic, acute or apiculate at the apex, margin dentate, bright green, glandular hairy on the margin, pubescent near the base on the upper side, sometimes on the veins on both surfaces; petioles mostly longer than the blade, rather often with branching, glandular hairs. Stipules cut into threadlike, glandular segments, 3—5 mm long. Inflorescence of compact, terminal corymb-like panicles, the flowers deep purple. Bracts linear-lanceolate, glandular-ciliate, 0.5—1.0 cm long. Male flowers on pedicels less than 2 mm long; sepals 5, 3—4 mm long, lanceolate, acuminate, glandular-ciliate; petals 5, obovate, c. 4 mm long, spreading, free or slightly cohering at the base, glabrous; disk of 5 roundish, free glands, c. 0.3 mm high and 0.4 mm broad; stamens 8 (—10); filaments united above the middle. Female flowers on pedicels less than 5 mm long; sepals 5, lanceolate to ovate, 4—5 mm long, glandular-ciliate, connate at the base; petals 5, free or slightly cohering at the base, 5 mm long, glabrous, spreading, deciduous; disk of 5 free, flat glands, c. 0.6 mm long and 0.9 mm broad; ovary 3-locular, more or less glabrous; styles 3, slender, connate at the base, c. 1 mm long; stigma 2-lobed. Fruit a capsule, about 1 cm long and wide, globular-oblong, truncate at both ends, glabrous, slightly 3-furrowed. Seeds greyish-brown, 7—8 mm long, 3—4 mm wide, slightly mottled.

Continental tropical America, Florida, Bahamas, and West Indies; introduced into the Old World tropics.

Common in dry waste places.

Vernacular names: flaira, tua-tua (Leeward Group)
physic nut (Windward Group).

ARUBA: calcareous soil near Oranjestad (Boldingh 6221, fl. Dec.); Companashi (Arnoldo 89, st. Dec.); Salina west of Tibushi (Stoffers 1351, fl. & fr. Jan.); near Spaans Lagoen, in aloë-field (Stoffers 1453, fl. & fr. Jan.); west of Kivarko (Stoffers 1996, fl. Jan.); along the road in vicinity of Oranjestad (Stoffers 2058, fl. Feb.); without loc. (Koolwijk s.n., sub Suringar s.n., fl. & fr. [L]).

BONAIRE: neighbourhood of Rincón (Boldingh 7166, fl. Feb.); Coeroeboeroe (Stoffers 452, fl. & fr. Oct.); Lima Plantation, near Lac (Stoffers 481, fl. Nov.); east of Pos Kalbas (Stoffers 760, fl. Nov.); airfield (Stoffers 766, fl. Nov.); Guatemala Plantation (Stoffers 803, fl. & fr. Nov.); Montagne (Stoffers 884, fl. & fr. Dec.); along road to Nikiboko (Stoffers 904, fl. Dec.); Seroe Caracao (Stoffers 1053, fl. & fr. Dec.).

CURAÇAO: hill near Rif (Boldingh 4649, fl. Oct.); southern slope of Veeris Berg (de Wilde 138a, fl. & fr. Dec.); Fort Nassau (Suringar s.n., st. Jan. [L]); Schottegat (Burgers 113, fl. & fr. Jan.); Willemstad (Went 1117, fl. & fr. Nov.); hofje near Weis Afo (Nagelkerken 168, flb., fl. & fr. March); hofje near Jan Thiel (Nagelkerken 304, fl. & fr. Nov.); Beekenburg (Lens 801, fl. Oct.); Hato (Stoffers 42, fl. Sept.); Klein St. Michiel (Stoffers 272, fl. & fr. Oct.); near St. Wilibrordus (Stoffers 343, fl. Oct.); limestone plateau east of Willemstad (Stoffers 380, fl. & fr. Oct.); Pareira (Stoffers 437, fl. & fr. Oct.); Savonet (Suringar s.n., fl. & fr. [L]); Savonet Baai (Suringar s.n., fl. Jan. [L]).

SABA: along the road from The Bottom to Windwardside (Boldingh 1360, fl. & fr. July); Fort Gut, 0—150 m (Boldingh 1639, fl. & fr. July); Fort Bay (Stoffers 2897, fl. Ap.); Bay (Arnoldo 906, fl. & fr. Aug.); Ladder Gut, 0—100 m (Stoffers 2832, fl. & fr. Ap.); between Promised Land and Thais Hill, 175-200 m (Stoffers 3430, fl. May).

ST. EUSTATIUS: seashore near Oranjestad (Boldingh 19, fl. May; Suringar s.n., fr. Ap. [L]); along roads in Oranjestad (Boldingh 558, st. May; 570, fl. May; 1126, fl. & fr. May); in deserted plantation near Bengalen (Boldingh 589, fl. June); Cultuurvlakte (Suringar s.n., fl. [L]); without loc. (van Groll-Meyer 132, fl. & fr.; 133, fl. & fr.).

ST. MARTIN: lower part of Milldrum Hill (Boldingh 3113, fl. & fr. Sept.); Kanaal Rolandus (Stoffers 2267, fl. & fr. March); Mount William, 70 m (Stoffers 2527, fl. March).

***Jatropha curcas* L.**

LINNAEUS, *Spec. Plant.* 1006. 1753; GRISEBACH, *Fl. Br. W. Ind. Isl.* 36. 1859 [‘1864’]; DUSS, *Fl. phan. Ant. franç.* 25. 1897; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 113. 1909; JOHNSTON, *Proc. Bost. Soc. Nat. Hist.* 34(7): 230. 1909; BOLDINGH, *Fl. Ned. W. Ind. Eil.* 250. 1913; *Fl. D.W. Ind. Isl.* 2: 54. 1914; URBAN, *Symb. Ant.* 8: 364. 1920; FAWCETT & RENDLE, *Fl. Jamaica* 4(2): 310, fig. 103. 1920; QUESTEL, *Fl. Isl. St. Bartholomew* 136. 1941; LEON & ALAIN, *Fl. Cuba* 3: 76. 1953; ARNOLDO, *Gekw. & nutt. pl. Ned. Ant.* 82. 1954; *Gekw. en nutt. pl. Ned. Ant.* 149. 1971; GOODING *et al.*, *Fl. Barbados* 254. 1965; WEBSTER & BURCH, *Ann. Miss. Bot. Gard.* 54: 237. 1967; ADAMS, *Flowering plants of Jamaica* 416. 1972; FOURNET, *Fl. Guadeloupe & Martinique* 1581. 1978; — *Curcas curcas* (L.) BRITTON & MILLSPAUGH, *Bahama Fl.* 225. 1920; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 5: 484. 1924.

Shrub or small tree, up to 5 m high; branches thick, terete, glabrous, longitudinally fissured; pith chambered. Leaves alternate; blade roundish-ovate in outline, 5—15 cm long, mostly more broad than long, angular or slightly 3—5-lobed, widely cordate at the base, acute or acuminate at the apex, the lobes acute to rounded, entire, palmately 5—7-veined, glabrous or puberulous at the base at the lower side. Inflorescence a con-

tracted corymbose cyme, usually shorter than the leaves; male flowers many, female flowers few. Bracts lanceolate, 3—6 mm long, entire, not glandular. Male flower: sepals and petals reddish-veined; sepals 5, united at the base, narrowly elliptic, about 3 mm long, tomentellous; petals 5, yellowish, about 6.5 mm long, coherent as far as the middle or united into a 5-lobed corolla, elliptic, pubescent within; stamens 10 or fewer in two series; filaments of the inner series completely united or united in the lower half only, those of the outer series united at the base only; anthers with longitudinal dehiscence; disk of 5, free, entire glands, c. 1 mm long. Female flower: sepals and petals as in the male flower, enlarging in fruit; petals longer than the sepals, sometimes wanting; disk of 5 glands, free, flat, about 1 mm long and wide; staminodes present between the glands; styles 3, slender, short; stigmas 2-lobed. Ovary ellipsoid, 3-locular, glabrous. Capsule slightly fleshy, 2.5—4 cm in diam. Seeds oblong-ellipsoid, about 2 cm long, blackish, very poisonous.

Tropical continental America and West Indies; cultivated and subsontaneous in the Old World tropics.

Cultivated in the islands; naturalized in the islands of the Windward Group.

Vernacular names: schijtnoot, purgeer noot (Leeward Group)
grave physic nut (Windward Group).

SABA: The Bottom (Arnoldo 576, fl. Aug.; Suringar s.n., st. Ap. [L]).

ST. EUSTATIUS: between Oranjestad and Fort de Windt, on top of the cliff (Boldingh 771, fl. June); along roads near Glass Bottle (Boldingh 1209, fl. June); beach, western side (Suringar s.n., fl. Ap. [L]); Cultuurvlakte (Suringar s.n., fl. May [L]); without loc. (van Groll-Meyer s.n., fl.).

ST. MARTIN: from Philipsburg to Belvedere (Boldingh 2595, st. Aug.; 2601, st. Aug.); along roads from Grande Case to Marigot (Boldingh 3106, st. Sept.); Cul de Sac (Suringar s.n., fl. May [L]).

Cnidoscolus Pohl, *Plant. Brasil.* 1: 56. 1826

Monoecious herbs, shrubs or trees; all parts armed with stinging hairs; pith septate. Leaves alternate, palmately-veined and -lobed or sometimes almost compound; petioles usually long, glandular at the junction with the blade. Stipules entire to laciniate. Inflorescence consisting of terminal or pseudo-axillary dichasia. Female flowers at the lower nodes, the male flowers at the upper nodes; calyx corolla-like, usually white; petals wanting. Male flower: calyx with imbricate lobes; disk annular; stamens 8—25, the outer free, the inner connate or outer and inner connate; staminal column with or without terminal, filiform staminodia. Female flower: sepals not united, deciduous; disk annular; ovary 3—5-locular; styles more or less free, repeatedly bifid or laciniate, sometimes apically dilated; ovules one in each locule. Fruit capsular or drupaceous, the columella slender. Seeds carunculate.

About 50 species, widely distributed in warm and tropical America.

Cnidoscolus urens (L.) Arthur

ARTHUR, *Torreyia* 21: 2. 1921: — *Jatropha urens* LINNAEUS, *Spec. Plant.* 1007. 1753; JOHNSTON, *Proc. Bost. Soc. Nat. Hist.* 34(7): 230. 1909; BOLDINGH, *Fl. Ned. W. Ind. Eil.* 251. 1913; *Fl. D.W. Ind. Isl.* 2: 55. 1914; ARNOLDO, *Zakflora* 96, fig. 110. 1954; *Zakflora* 160, fig. 110. 1964.

Herb, up to 2 m high, the stinging hairs till 1 cm long. Leaves alternate, petiolate; blade irregularly 5-lobed or -partite, 6—18 cm in diam, more broad than long in outline, truncate or cordate at the base, lobes acute to acuminate, irregularly dentate, closely pubescent; petioles 10—20 cm long, puberulous. Stipules very small, laciniate. Inflorescence pedunculate, pubescent. Bracts about 2.5 mm long, puberulous, subulate-ovate, entire. Male flower: calyx white, corolla-like, c. 1 cm long, slender, 5-lobed; lobes imbricate, puberulous outside; stamens 8—10, the outer free and shorter than the connate inner ones, villous at the base; staminal column with 1—3 terminal filiform staminodia; connectives very small. Female flower: sepals 5, linear, about 7 mm long, acute, puberulous outside, deciduous. Disk associated with staminodia; ovary glabrous; styles 3, slender, connate at the base, 2—3 times bifid. Fruit a capsule, 10—13 mm long, covered with stinging hairs. Seeds 8 mm long and 5 mm wide, more or less flattened, greyish-brown, mottled, carunculate.

Tropical continental America from Mexico to Brasil; Antilles.

In low shrub vegetations and on open sites.

Vernacular name: bringamosa (Leeward Group).

ARUBA: slope of Hooiberg (Boldingh 6369, fl. & fr. Dec.); at the foot of Hooiberg (Arnoldo 107, fl. & fr. Dec.); Franse Pas (Kruyt 3, fl. & fr. Dec.); Rooi Prins (Stoffers 2180, fl. & fr. Feb.).

BONAIRE: slope of Caracao (Boldingh 7302, fr. Feb.).

CURAÇAO: calcareous hills near Mahoema (Boldingh 4829, fl. & fr. Oct.); hills near Savonet (Boldingh 4971, fl. & fr. Nov.); in thicket near Rif (Britton & Shafer 3091, fl. & fr. March); Knip Plantation (de Wilde 107a, fl. & fr. Ap. [L]).

Manihot Miller, *Gard. Dict. Abr. ed.* 4. 1754

Monoecious herbs, shrubs or rarely trees, often with tuberous roots; stems containing latex. Leaves alternate, long-petiolate; blades mostly palmately lobed. Stipules present, often very small. Inflorescence consisting of terminal or sometimes pseudo-axillary panicles; female flowers on several lateral, basal axes, male flowers more or less racemose along the central axis. Perianth uniseriate, often petaloid, lobed. Male flowers: calyx of connate sepals, more or less cyathiform, 5-lobed, the lobes more or less bifid; stamens 10, free, biseriate, the outer opposite the sepals, attached between the lobes or glands of the disk; anthers introrse, with longitudinal dehiscence; disk central, intrastaminal, cushion-shaped; rudiment of gynoecium present or wanting. Female flowers: calyx synsepalous but more deeply lobed than in the male flower; staminodia sometimes present; disk cushion-shaped; ovary 3-locular; styles 3, connate near the base; stigmas dilated and lacerate or multifid; ovules one in each locule. Capsule splitting up into

three 2-valved cocci, sometimes winged; columella dilated near the top, often persistent. Seeds smooth, carunculate, the coats thin and crustaceous.

About 150 species in tropical America, mostly in Brazil; a few species as far north as Mexico, one or two species cultivated in many tropical countries.

Key to the species:

1. Leaves peltate *M. glaziovii*
Leaves not peltate 2
2. Shrub; leaf-lobes entire, narrowed to the base and confluent to a disk of about 2 cm in diam.; stipules 5—7 mm long *M. esculenta*
Tree or tree-like shrub; leaf-lobes lyrate-sinuate; stipules 1—2 mm long
..... *M. carthaginensis*

Manihot glaziovii Muell.-Arg.

MUELLER-ARG., in Fl. Brasiliensia 11(2): 446. 1874

Tree, up to 14 m tall; branches herbaceous, glabrous. Leaves alternate; blade peltate, deeply 3—5-lobed, 12 cm long and 16—19 cm wide, the lobes 9—10 cm long and 4—5 cm wide, oblong-obovate or elliptic, broad-acuminate at the apex, entire, the rounded inward curve between the lobes narrowly separated, membranaceous, upper surface green, glaucous beneath; petioles 10—20 cm long, grooved. Stipules 4—6 mm long, lanceolate-ovate, acute, denticulate, pale green, deciduous. Inflorescence consisting of broad pyramidal, 7—9 cm long panicles. Bracts lanceolate, 2.5 mm long, the lower denticulate, the upper entire, deciduous. Flowers on c. 10 mm long pedicels, campanulate. Male flower: calyx 5-lobed, 9 mm long, green but violet at the base, glabrous inside and outside; stamens with glabrous filaments; anthers 2.5 mm long, hairy at the apex of the connective; disk glabrous. Female flower with 5-partite calyx, 10—11 mm long; ovary glabrous. Capsule globose, 20—22 mm in diam., grey, lengthwise rugose. Seeds flattened, 15 mm long, 10 mm wide, grey, brownish marbled.

Pantropic.

CURAÇAO: Hato (Stoffers 47, st. Sept.).

Manihot esculenta Crantz

CRANTZ, Inst. rei herb. 1: 167. 1766; LEON & ALAIN, Fl. Cuba 3: 108, fig. 33. 1953; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 150. 1971; ADAMS, Flowering plants of Jamaica 417. 1972; Fournet, Fl. Guadeloupe & Martinique 1588. 1978; — *Manihot utilisima* POHL, Pl. Bras. 1: 32, t. 24. 1827; URBAN, Symb. Ant. 4: 350. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 114. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 230. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 252. 1913; Fl. D.W. Ind. Isl. 2: 55. 1914; FAWCETT & RENDLE, Fl. Jamaica 4(2): 308, fig. 102. 1920; URBAN, Symb. Ant. 8: 366. 1920; QUESTEL, Fl. Isl. St. Bartholomew 139. 1941; — *Manihot manihot* COCKERELL, Bull. Torr. Bot. Club 19: 95. 1892; BRITTON & MILLSAUGH, Bahama Fl. 230. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 493. 1924; — *Jatropha manihot* LINNAEUS, Spec. Plant. 1007. 1753; — *Janipha manihot* KUNTH, in H.B.K., Nov. Gen. & Spec. 2: 108. 1817; GRISEBACH, Fl. Br. W. Ind. Isl. 37. 1859 [‘1864’]; DUSS, Fl. phan. Ant. franç. 28. 1897.

Shrub or sometimes arborescent, 2—3 m tall; roots tuberous, elongate, rich in starch and with juice which is often bitter and poisonous. Leaves alternate; blades deeply 3—7-parted, membranaceous, glabrous on the upper side, glaucous and minutely puberulous or glabrous along the nerves beneath; lobes 8—17 cm long and 1—5 cm wide, oblong or lanceolate or spatulate-lanceolate, entire, acute-acuminate at the apex, narrowed at the base and confluent in a disk of about 2 cm diam.; petioles generally longer than the blade, glabrous or puberulous. Stipules linear, acuminate, entire, 5—7 mm long, puberulous, deciduous. Inflorescence branching from the base; primary branches 3—5 cm long, slender. Bracts linear-lanceolate, entire, puberulous. Male flowers on 4—7 mm long slender pedicels; calyx 5-lobed, the lobes obtuse, glabrous outside, puberulous inside, 3—4 mm long or a little longer; filament of the stamens glabrous; anthers about 2 mm long with hairy tips; disk glabrous. Female flowers on 2—2.5 cm long pedicels; calyx 5-partite, 9—10 mm long, glabrous outside, puberulous within near the apex; ovary 6-ribbed, glabrous; styles broadening from the narrow base and cut along the narrow edge into numerous lobes. Capsule about 15 mm long, globose-ellipsoid, rough, narrowly 6-winged. Seeds about 12 mm long, grey mottled with dark splashes.

Native of Brazil; widely cultivated for food in all tropical and subtropical regions; sometimes escaped.

Vernacular name: cassave.

SABA: lower part of the Bottom Mountain, 250 m (Boldingh 1405, fl. & fr. July); The Mountain, 600 m (Boldingh 1760, fr. July); Windwardside (Boldingh 2328, st. July).

Manihot carthagenensis (Jacq.) Muell.-Arg.

MUELLER-ARG., in DE CANDOLLE, Prodr. 15(2): 1073. 1866; BOLDINGH, Fl. Ned. W. Ind. Eil. 251. 1913; Fl. D. W. Ind. Isl. 2: 55. 1914; ARNOLDO, Zakflora 28. 1954; Zakflora 129. 1964; Gekw. en nutt. pl. Ned. Ant. 150. 1971; — *Jatropha carthagenensis* JACQUIN, Hist. Stirp. Amer. 256, t. 162, fig. 1. 1763.

Tree or tree-like shrub, glabrous, 6 m tall or higher, little branched. Leaves alternate; blades 8—12 cm long and wide, deeply 3—5 (—7)-lobed, the lobes mostly 6—10 cm long and 2.5—4 cm wide, distinctly lyrate-sinuate, lanceolate or spatulate or also obovate, upper surface green, glaucous beneath, membranaceous; petioles almost as long as the blade. Stipules 1—2 mm long, subulate, entire, deciduous. Inflorescence slender. Bracts linear-lanceolate, 5—6 mm long, entire. Flowers petaloid, a little purple or sometimes white coloured. Male flowers on 4—6 mm long, slender, reflexed pedicels; stamens with 5 long and 5 short, glabrous filaments; anthers 2.5 times as long as wide. Female flowers on 2—2.5 mm long pedicels; calyx 5-partite, 10 mm long, glabrous, pruinose; ovary glabrous. Capsule c. 15 mm long, rough.

Tropical Central America from Mexico southward to Colombia and Venezuela.

Vernacular names: Bittere cassave, casabi di mondi, marihuri, yucca amara, cassabi marga, guma, yucca di mondi (Leeward Group).

BONAIRE: calcareous hills near Fontein (Boldingh 7332, defl. Feb.); calcareous hills of Rooi Samboe (Boldingh 7430, defl. Feb.); Colombia Plantation (Stoffers 526, fl. Nov.).

Hippomane Linnaeus, Spec. Plant. 1191. 1753

Trees containing an acrid, poisonous milky juice, in our region often pressed-down and shrubby by the wind. Leaves alternate, simple, pinnately-veined, long-petiolate and with a large, round, dark-red peltate gland at the junction with the blade. Stipules present. Inflorescence consisting of terminal stout spikes with female flowers in the lower and male flowers in the upper portion. Bracts distant from one another and provided with a peltate gland on each side of the base. Petals and disk wanting. Male flowers in clusters of (4—) 8—15; calyx small, 2—3-lobed, the lobes imbricate; stamens 2; filaments more or less united into a column; anthers exerted, extrorse; rudiment of ovary wanting. Female flowers sessile in the axils of the lowest 1 or 2 bracts or wanting; calyx small, with 3 segments, closely surrounding the ovary; ovary 6—9-locular, smooth; styles 6—9, spreading from a common centre like a star, stigmatic on the inner surface; ovules one in each locule, pendulous, anatropous. Fruit a drupe with thick flesh; endocarp thick and bony, 6—9-locular. Seeds flattened, without a caruncle.

Two or 3 species in Florida and the Keys, from Mexico to Venezuela, Bahamas, Cayman Islands, and Antilles; one species widespread, the other 2 endemic to Hispaniola (according to Webster, J. Arn. Arb. 48: 394. 1967).

Hippomane mancinella L.

LINNAEUS, Spec. Plant. 1191. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 50. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 37. 1897; URBAN, Symb. Ant. 4: 351. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 114. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 229. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 252. 1913; Fl. D.W. Ind. Isl. 2: 55. 1914; URBAN, Symb. Ant. 8: 368. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 327, fig. 110. 1920; BRITTON & MILLSAUGH, Bahama Fl. 231. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 494. 1924; QUESTEL, Fl. Isl. St. Bartholomew 136. 1941; LEON & ALAIN, Fl. Cuba 3: 118, fig. 39. 1953; ARNOLDO, Zakflora 34. 1954; Zakflora 128. 1964; GOODING *et al.*, Fl. Barbados 252. 1965; WEBSTER, J. Arn. Arb. 48: 393. 1967; WEBSTER & BURCH, Ann. Miss. Bot. Gard. 54: 328, fig. 23. 1968; ADAMS, Flowering plants of Jamaica 420. 1972; FOURNET, Fl. Guadeloupe & Martinique 1555, fig. 732, 1978.

Evergreen tree, up to 13 m tall; trunk up to more than 50 cm in diam.; bark silvery-to blackish-grey, lenticellate, longitudinally and transversely fissured; branches stout. Leaves alternate, petiolate; blade ovate to ovate-elliptic, acute or short-acuminate at the apex, rounded, truncate or subcordate at the base, 4—10 × 2.5—6 cm, coriaceous, glabrous, bright green and shining above, the margin serrulate, principal veins at nearly right angles on the midvein, veinlets delicately reticulate; petioles slender, usually somewhat shorter than the blades, 3—5 cm long. Spikes 5—10 cm long, dark purple. Bracts broader than long. Male flower: calyx-lobes 3, unequal, acute, about 1 mm long, entire. Female flower: calyx-lobes ovate to orbicular, 2.5—3 mm long; styles dark red. Fruit depressed-globose, about 3 cm in diam., yellowish-green and partly reddish when ripe, sweetish smelling.

From Florida and the Keys through Central America to Colombia and Venezuela, Bahamas, and Antilles.

Common tree along the seashore and on the lower limestone plateau, on the higher plateaus along the escarpments, in the diabase area especially in gullies.

Vernacular names: manzalina, manzanilla, manzalienja (Leeward Group)
manganeel tree (Windward Group).

ARUBA: seashore near Daimarie (Boldingh 6398, fl. Jan.).

BONAIRE: seashore near Playa Grandi (Boldingh 7175, st. Feb.).

CURAÇAO: coastal hills near Santa Cruz (Britton & Shafer 2981, st. March); Mahoema (Boldingh 4812, st. Oct.); Piscadera Baai (de Wilde 119a, st. March [L]; Lam s.n., male fl. Nov.); Hato (Suringar s.n., fr. Jan. [L]); without loc. (Suringar s.n., st. [L]; Aschenberg s.n., fl.).

SABA: seashore near Flat Point (Boldingh 2133, st. July).

ST. EUSTATIUS: seashore near Oranjestad (Boldingh 16, fl. May); Concordia Bay (Suringar s.n., st. Ap. [L]); without loc. (Boldingh 1014, fl. May).

ST. MARTIN: from Philipsburg to Guana Bay (Boldingh 2345, st. Aug.); without loc. (Boldingh s.n., st.).

Hura Linnaeus, Spec. Plant. 1008. 1753

Large trees. Leaves alternate, petiolate. Stipules present. Flowers apetalous and disk wanting. Male flowers in terminal, pedunculate, oblong, thick spikes, sessile, the membranaceous bract enclosing the flower entirely and opening irregularly at anthesis; calyx cupuliform, irregularly toothed; filaments and connectives connate into a thick column and the anther-cells distinctly attached in 2—5 whorls near its top, extrorse, longitudinally dehiscent; rudiment of ovary wanting. Female flowers pedicellate; calyx coriaceous, cupulate, truncate, entire, surrounding the ovary; ovary 5—20-locular; styles connate into a long carnosous column, infundibuliform at the apex; stigma radiate; ovules solitary in each locule. Capsule large, depressed in the centre, deeply sulcate into many 2-valved, woody cocci. Seeds laterally compressed, without a caruncula.

Species 2 or 3; natives of tropical America.

Hura crepitans L.

LINNAEUS, Spec. Plant. 1008. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 50. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 38. 1897; URBAN, Symb. Ant. 4: 352. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 115. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 230. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 253. 1913; Fl. D.W. Ind. Isl. 2: 56. 1914; URBAN, Symb. Ant. 8: 369. 1920; BRITTON & MILLSAUGH, Bahama Fl. 233. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 334, fig. 112. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 495. 1924; LEON & ALAIN, Fl. Cuba 3: 123, fig. 43. 1953; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 76. 1954; Gekw. en nutt. pl. Ned. Ant. 148. 1971; GOODING *et al.*, Fl. Barbados 253, fig. 15. 1965; ADAMS, Flowering plants of Jamaica 420. 1972; FOURNET, Fl. Guadeloupe & Martinique 1558, fig. 734. 1978.

Monococious, glabrous tree, usually up to 10 m tall, containing a whitish to light yellow poisonous juice; trunk up to 80 cm in diam.; crown of dense foliage, spreading symmetrical; trunk and branches usually with blackish spines; bark smooth, light brownish; twigs stout, green to brown. Leaves alternate, petiolate; blades orbicular or very broadly ovate, 6—20 × 6—20 cm, cuspidate-acuminate at the apex, cordate or rounded at the base, entire or slightly shallowly serrate, dark green and slightly shining above, gla-

brous or pilose along the veins beneath especially towards the base, papery-membranaceous, principal veins at nearly right angles to the midrib, veinlets delicately reticulate; petioles usually longer than the blades. Stipules linear-lanceolate, 1—1.5 cm long, pubescent, deciduous. Male inflorescences consisting of cylindric-ovoid, reddish-brown spikes, about 6 cm long and 2 cm wide; peduncles 5—8(—11) cm long; flowers dark red, about 4.5 cm long; calyx cup-like; anthers 8—20 in 2—3 whorls on the central column. Female flowers near the end of the twigs, dark red; pedicel stout, 2—3 (—5) cm long; calyx 6 mm long and wide; ovary c. 15-locular, styles fused into a long tube which ends in a flat violet-red disk with a toothed margin (the stigma), the whole about 3—4.5 cm long. Capsule 6—8 cm in diam., 3—4 cm long, concave at both ends by a flattened and sunken centre, deeply sulcate into many cocci; dehiscing explosively during dry weather into hard 1-seeded cocci. Seeds rounded, flattened, 2—2.5 cm in diam.

From West Indies and Costa Rica to Peru, Bolivia and northern Brasil; introduced into Florida, California, Bahamas, and the Old World tropics.

A rather rare tree in the islands of the Windward Group.

Vernacular names: zandkokerboom (Leeward Group)
 sandbox tree (Windward Group).

ST. EUSTATIUS: along roads in Oranjestad (Boldingh 546, st. May; Stoffers s.n., male & female fl., Aug.; van Groll-Meyer 142, st. May); slope of The Quill near Bengalen, 170 m (Stoffers 3759, st. June).

ST. MARTIN: from Philipsburg to Belvedere (Boldingh 2596, st. Aug.).

Euphorbia Linnaeus, Spec. Plant. 450. 1753

Monoecious or rarely dioecious, annual or perennial herbs, subshrubs, shrubs or trees, with milky latex in all parts. Leaves alternate, opposite or whorled, simple, petiolate or (sub)sessile; margin entire or toothed. Stipules present and then often united or wanting, sometimes glandular. Inflorescence a cyathium, this solitary or clustered in terminal or axillary cymes (cymules), sometimes arranged in panicles, dichasia or pleiochasia. Involucre cup-shaped, 5-lobed, with 4—5 glands, these often with petaloid appendages. Male flowers few to many, monandrous, naked; bracteoles adnate to the involucre or absent. Female flowers solitary, terminal, mostly naked; ovary on the top of the pedicel, often exserting the involucre, 3-locular; styles 3, free or united at the base, often bifid; ovules solitary in each locule. Fruit a capsule of three bivalved cocci, at maturity separating from the persistent columella. Seeds ovoid, terete or angular, smooth or sculptured, with or without a caruncle.

About 1500 species in temperate and warmer regions.

Key to the species:

1. Herbs, shrubs or trees, 1 m or more high; leaves distinctly petiolate. 9
 Prostrate or erect herbs or subshrubs, less than 1 m high; leaves subsessile. 2
2. Plants prostrate. 3
 Plants erect, ascending or procumbent. 6

3. Capsule pubescent; stem pubescent at least above..... 4
Capsule glabrous; stem glabrous..... *E. serpens*
4. Plant woolly pubescent especially at the nodes; involucre glands with large petaloid appendages..... *E. dioica*
Plants pubescent but not woolly; involucre glands without or with narrow appendages 5
5. Capsule pubescent along the angles only..... *E. prostrata*
Capsule pubescent all over..... *E. spec.*
6. Stem yellowish-pilose; capsule pubescent..... *E. hirta*
Stem nearly glabrous or sparingly pilose near the base; capsule glabrous... 7
7. Leaves somewhat fleshy, often folded, margin entire.....
..... *E. mesembrianthemifolia*
Leaves membranaceous, margin more or less serrate, at least at the apex... 8
8. Cyathia in almost leafless lateral and terminal glomerules; capsule depressed-globose, deeply lobed, less than 1.5 mm long..... *E. hypericifolia*
Cyathia in leafy lateral and terminal dichasia; capsule ovoid, 1.6—2 mm long
..... *E. hyssopifolia*
9. Leaves long-petiolate; petioles 1 cm or more long..... 10
Leaves short-petiolate; petioles about 2 mm long..... *E. articulata*
10. Shrubs or trees; leafblades 1—1.5 × as long as wide..... 11
Herb, leafblades 2—4 × as long as wide..... *E. graminea*
11. Leafblades 1—2 cm long..... *E. petiolaris*
Leafblades 3—8 cm long..... *E. cotinifolia*

***Euphorbia articulata* Burm.**

BURMAN, *Plant. Am.* 249, t. 251, f. 2. 1760; GRISEBACH, *Fl. Br. W. Ind. Isl.* 53. 1859 ['1864']; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 115. 1909; *Fl. Ned. W. Ind. Eil.* 254. 1913; URBAN, *Symb. Ant.* 4: 353. 1910; FOURNET, *Fl. Guadeloupe & Martinique* 1565. 1978; — *Euphorbia linearis* Retzius, *Obs.* 3: 32. 1783; DUSS, *Fl. phan. Ant. franç.* 41. 1897; — *Chamaesyce articulata* (BURM.) BRITTON, *Mem. N. Y. Bot. Gard.* 6: 574. 1916 (cited as *C. articulata* (Aubl.) Britton); BRITTON & MILLSAUGH, *Bahama Fl.* 239. 1920; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 5: 505. 1924.

Shrub or small tree, 1—6 m high; branches divaricate, with distinct nodes, greyish, glabrous, yielding abundant white latex; twigs slender with enlarged nodes, greenish becoming brown, glabrous or minutely hairy. Leaves short but distinctly petiolate; blade linear to linear-oblong, acute to obtuse and mucronulate at the apex, rounded or narrowed at the slightly oblique base, glaucous beneath, 2—4 (—6) cm long and 0.2—0.6 cm wide, margin entire; petiole up to about 2 mm long. Stipules interpetiolar, broadly deltoïd, ciliate. Cyathia single, terminal or axillary, with more or less winged peduncles; involucre turbinate, about 4 mm long, glabrous outside, minutely silky inside, with a

thickened margin, lobes wanting; glands cup-shaped with a white margin and a nipple-like projection on the inner edge; bracteoles very numerous, ligulate below, brush-like above; ovary glabrous, stigma 3-furcate. Capsule glabrous. Seeds pink-ashen, ovoid-quadrangular, 1.5 mm long, with transversely anastomose-rugose facets.

Bahamas, Puerto Rico, Lesser Antilles from St. Martin, Saba and Barbados to St. Vincent and the Grenadines.

Rocky and sandy coasts.

SABA: Green Island (Boldigh 2131, July st.).

ST. EUSTATIUS: near White Wall, 200 m (Stoffers 4747, fl. & fr. Aug.); Little Mountains (Stoffers 3748, fl. July); lower part of the hills near Concordia (Boldigh 976, fl. June); gut near Fort de Windt, 50 m (Boldigh 847, fl. June).

ST. MARTIN: Low Lands, level (Arnoldo 3412, fl. Jan.); along road near Bluff (Arnoldo 1337, fl. March).

Euphorbia cotinifolia L.

LINNAEUS, Spec. Plant. 453. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 52. 1859 ['1864']; BOLDINGH, Fl. Ned. W. Ind. Eil. 254. 1913; Fl. D.W. Ind. Isl. 2: 56. 1914; ARNOLDO, Zakflora 29. 1954; Zakflora 127. 1964; — *Aklema cotinifolia* (L.) MILLSAUGH, Field Mus. Bot. 2: 416. 1916.

Shrub or small tree, up to 6 m high; branches terete, articulate, with smooth whitish bark and abundant poisonous white latex, glabrous or nearly so. Leaves long-petiolate, mostly in whorls of three, sometimes opposite; blade rigidly membranaceous, broadly ovate or elliptic-ovate to nearly orbicular, acute to rounded at the apex, rounded, subcordate or notched at the base, lighter coloured and sometimes slightly hairy below, 3—8 cm long and 1.5—5 cm wide; margin entire; lateral veins 7—10; petiole slender, about as long as the blade or a little shorter or longer. Stipules obsolete. Cyathia in cymes, forming showy terminal and axillary corymbose panicles; involucre campanulate, about 2 mm long and 3 mm in diam., sparingly hirtellous outside, glabrous inside; lobes broadly ovate, truncate, laciniate; glands slightly plicate-bilabiate, transversally elliptic to suborbicular, appendages petaloid, subrotundate, dentate; interior bracts numerous, pubescent; ovary pedicellate, exserted from the involucre. Capsules hairy when young. Seeds 3, ovoid, wrinkled, surface pitted.

From Mexico to the Guianas, Brasil and Peru; introduced into the West Indies as an ornamental shrub.

Common on limestone and rare in the Seroe Christoffel area.

BONAIRE: calcareous plateau of Montagne (Boldigh 7402, fl. Feb.; 7415, st. Feb.).

CURAÇAO: hofje of Siberië (Boldigh 5051, st. Nov.); calcareous hills near Siberië (Boldigh 5260, st. Nov.); Seroe Christoffel, 100 m (Arnoldo s.n., st. March; Suringar s.n., st. Jan. [L]).

Euphorbia dioica Kunth

KUNTH, in H.B.K., Nov. Gen. & Spec. 2: 53. 1817; — *Chamaesyce dioica* (KUNTH) MILLSAUGH, Publ. Field Mus. Nat. Hist., Bot. Ser. 2: 384. 1914; — *Euphorbia adenoptera* auct. non BERTOLONI; BOLDINGH, Fl. Ned. W. Ind. Eil. 354. 1913; Fl. D.W. Ind. Isl. 2: 56. 1914; ARNOLDO, Zakflora 109. 1954; Zakflora 127. 1964.

Annual or mostly perennial herb; branches prostrate, forming mats, 5—25 cm long, rosette from a thick perennial taproot, pilose above. Leaves membranaceous, short petiolate, inaequilateral; blade ovate-elliptic to elliptic-oblong, mostly acute at the apex, strongly oblique at the base, acute at one half, obtuse to rounded at the other half, 3—10 × 2—5 mm, pilose or glabrescent, margin mostly manifestly serrate; petiole about 1 mm long, pilose. Stipules subulate, pilose, about 1 mm long. Cyathia sessile, solitary or in small cymes in the axils of the leaves on short condensed laterals, densely woolly pilose; involucre funnel-shaped, about 1.5 mm long, pilose, the margin with large transversely elliptic-oblong glands, alternated by inconspicuous ciliate subulate lobes; glands unequal in size, two larger and to smaller ones, with conspicuous petaloid appendages, two much larger than the other two, pink or white coloured, rarely small or nearly wanting; ovary densely pilose, style bifid, the branches bifid. Capsule subglobose, about 1.5 mm wide, pubescent but partly glabrescent. Seed ovoid-quadrangular, reddish, facets with 2—4 transverse ridges.

Tropical South and Central America.

Widely spread on the islands.

ARUBA: Miralamar (Stoffers 1609, 1619, fl. Jan.); Jamanota (Stoffers 1632, fl. & fr. Jan.); Seroe Blanco (Stoffers 1750, fl. & fr. Jan.); vicinity of Savaneta (Stoffers 1767, fl. & fr. Jan.) Seroe Largo (Stoffers 1873, fl. & fr. Jan.); Rooi Taki (Stoffers 1889, fl. & fr. Jan.; 1893a, fl. & fr. Jan.); southern slope of Matavidiri (Stoffers 2024, fl. & fr. Jan.); Belashi (Arnoldo 225, fl. & fr. Dec.); foot of Hooiberg (Arnoldo 110, fl. & fr. Dec.); Rooi Prins (Stoffers 2171, fl. & fr. Feb.); along road in Oranjestad (Stoffers 2079, 2138, fl. & fr. Feb.); Hooiberg, 100 m (Stoffers 2099, fl. & fr. Feb.); Andicouri (Stoffers 1813, fl. & fr. Jan.).

CURAÇAO: Caracas Baai (Britton & Shafer 3141, fl. & fr. March); Brakkeput (Burgers 165, fl. & fr. Feb.); seashore near Hato (Boldingh 5121, fl. & fr. Nov.); hofje of Groot St. Joris (Boldingh 5424, 5425, fl. & fr. Nov.); hofje of Siberië (Boldingh 5056, fl. & fr. Nov.); hofje of Malpais (Boldingh 4862a, fl. & fr. Oct.); road near Wacao (Boldingh 5103, fl. & fr. Nov.).

Euphorbia graminea Jacq.

JACQUIN, *Select. Stirp. Amer. Hist.* 151. 1763; ARNOLDO, *Zakflora* 118. 1954; *Zakflora* 128, f. 124. 1964; — *Euphorbia picta* JACQUIN, *Coll.* 3: 178. 1790.

Erect herb, branching from the base; stems terete, not articulate, up to 1 m or more long. Leaves alternate in the lower part, opposite in the upper part of the stem, long-petiolate; blades ovate to elliptic-oblong or lanceolate, acute at the apex, acute to obtuse at the base, 1—4 cm long and 0.5—2 cm wide, membranaceous, glabrous or minutely pubescent; petioles slender, to 2 cm long. Cyathia solitary at the top of thin peduncles, arranged in lax terminal dichotomous inflorescences; involucre funnel-shaped, circa 1 mm in diam.; glands minute, with two white appendages. Capsule broadly ovoid, glabrous, about 3.5 mm in diam. Seeds ovoid, 1.5 mm long, angular with numerous pits in longitudinal rows.

Southern Mexico to northern South America.

Weed.

ARUBA: Playa (Arnoldo 207, fl. & fr. Dec.).

CURAÇAO: Hofje near Mantancia (Nagelkerken 509, fl. & fr. Jan.).

Euphorbia hirta L.

LINNAEUS, Spec. Plant. 454. 1753; FAWCETT & RENDLE, Fl. Jamaica 4(2): 337. 1920; QUESTEL, Fl. Isl. St. Bartholomew 138. 1941; ARNOLDO, Zakflora 109. 1954; Zakflora 128. 1964; GOODING *et al.*, Fl. Barbados 249. 1965; ADAMS, Flowering plants of Jamaica 430. 1972; FOURNET, Fl. Guadeloupe & Martinique 1571, fig. 738. 1978; — *Chamaesyce hirta* (L.) MILLSPAUGH, Field Mus. Bot. 2: 303. 1909; BRITTON & MILLSPAUGH, Bahama Fl. 241. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 502. 1924; LEON & ALAIN, Fl. Cuba 3: 135. 1953; — *Euphorbia pilulifera* LINNAEUS, Spec. Plant. 454. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 54. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 116. 1909; URBAN, Symb. Ant. 4: 353. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 256. 1913; Fl. D.W. Ind. Isl. 2: 57. 1914; URBAN, Symb. Ant. 8: 370. 1920; — *Chamaesyce pilulifera* (L.) SMALL *ex* LEON & ALAIN, Fl. Cuba 3: 138. 1953.

Annual herb, erect or decumbent, sometimes prostrate or ascending, sparingly branching from the base, 10—60 cm high, densely yellowish pilose. Leaves short petiolate, rough, variable in shape and size; blade from ovate, elliptic or rhomboid to oblong-lanceolate or oblanceolate, acute at the apex, strongly oblique, cuneate and rounded at the base, 1—4 cm long and 0.5—1.5 cm wide, membranaceous, hirsute to glabrate, margin serrate, especially above the middle; petiole 1—2 mm long. Stipules triangular, about 1 mm long, hirsute. Inflorescence axillary; cyathia in dense pedunculate glomerules; involucre turbinate, strigose outside, nearly glabrous inside; lobes triangular, densely ciliate; glands 4, small, patelliform, suborbicular to transversely elliptic, to about 0.3 mm wide; appendages narrow or wanting, if present white; fifth gland minute; bracteoles present, often reduced; ovary 3-lobed, strigose, gynophore glabrous, shortly exserted and reflexed. Capsule depressed ovate-globose, 3-angled, shortly strigose, about 1 mm wide. Seeds reddish (pinkish), ovoid-quadrangular, facets with transverse ridges.

A pantropic weed.

On roadsides and fields.

ARUBA: along road in Oranjestad (Stoffers 2046, fl. & fr. Feb.); Playa (Arnoldo 191, fl. & fr. Dec.); Sivi-sivi (Boldingh 6315, fl.).

CURAÇAO: Gasparito (Lens 821, fl. & fr. Dec.); hofje of Valentijn (Boldingh 5368, fl. & fr. Nov.); Klein Santa Marta (Stoffers 110, fl. & fr. Nov.); hills of Knip Plantation (Stoffers 1166, fl. & fr. Dec.); hofje near Weis Afo (Nagelkerken, 172, fl. & fr. March); abandoned hofje near Jan Thiel (Nagelkerken 340, fl. & fr. Jan.); along the road to Westpunt (Stoffers 1327, fl. & fr. Jan.).

SABA: along the lower part of Fort Gut (Boldingh 1640, fl. & fr. July); Ladder Gut (Boldingh 1963, fl. & fr. July); The Bottom (Arnoldo 550, fl. & fr. Aug.); between The Bottom and Mary's Point (Boldingh 1459, fl. & fr. July); Hellsgate (Stoffers 3376, fl. & fr. May).

ST. EUSTATIUS: northern slope of The Quill (Stoffers 4004, fl. & fr. July); along roads in Cultuurvlakte (Stoffers 3800, fl. & fr. July; 3808, fl. & fr. July); along roads near Glass

Bottle (Boldingh 875, fl. & fr. June); along roads in Oranjestad (Boldingh 519, fl. & fr. June; 577, fl. & fr. June); in a garden in Oranjestad (Boldingh 75, fl. & fr. May).

ST. MARTIN: in an orchard near Bellevue (Boldingh 2840, fl. & fr. Aug.); along roads in Philipsburg (Stoffers 2327, fl. & fr. March).

***Euphorbia hypericifolia* L.**

LINNAEUS, Spec. Plant. 454. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 54. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 43. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 116. 1909; URBAN, Symb. Ant. 4: 354. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 255. 1913; Fl. D.W. Ind. Isl. 2: 56. 1914; URBAN, Symb. Ant. 8: 371. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 340. 1920; QUESTEL, Fl. Isl. St. Bartholomew 138. 1941; ARNOLDO, Zakflora 118. 1954; Zakflora 128. 1964; Fournet, Fl. Guadeloupe & Martinique 1568. 1978; — *Euphorbia glomerifera* (MILLSAUGH) L. C. WHEELER, Contr. Gray Herb. 127: 78. 1939; GOODING *et al.*, Fl. Barbados 248. 1965; ADAMS, Flowering plants of Jamaica 430. 1972; — *Chamaesyce hypericifolia* (L.) MILLSAUGH, Field Mus. Bot. 2: 302. 1909; BRITTON & MILLSAUGH, Bahama Fl. 240. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 501. 1924; — *Chamaesyce pilulifera* Auct. non SMALL; LEON & ALAIN, Fl. Cuba 3: 138. 1953.

Annual or sometimes perennial herb, erect or ascending, 10—50 (—80) cm high, glabrous or minutely puberulous when young. Leaves short-petiolate, varying in shape and size; blades elliptic or elliptic-oblong to narrowly oblong, lanceolate or oblanceolate, acute to rounded at the apex, obliquely truncate at the base, 1—3.5 cm long and 0.3—1.5 cm wide, margin serrulate; petioles 1—1.5 mm long. Stipules united or free, ovate to deltoid, about 1 mm long, ciliate, dentate or cleft. Cyathia in axillary and terminal clustered few to many-flowered cymes; involucre obconical about 1 mm long, glabrous except often the throat inside, lobes triangular, fringed; glands small, orbicular, long stalked, appendages white, orbicular to ovate, often much wider than the gland, sometimes narrower; fifth gland minute or wanting; bracteoles filiform at the base, divided above, mostly glabrous; staminate flowers 2—20 or sometimes wanting; gynophore glabrous; ovary glabrous, 3-lobed; styles bifid. Capsule depressed globose, 3-lobed, glabrous, 1—1.4 mm long. Seeds ovoid-quadrangular, reddish brown, the facets with transverse broken ridges.

From southern Florida and S. Texas to northern S. America, West Indies.

Common weed in waste and cultivated ground, on road sides etc.

ARUBA: San Nicolas, in garden (Stoffers 1947, fl. & fr. Jan.); Fontein Plantation (Stoffers 1713, fl. & fr. Jan.; Kruijt 9, fl. & fr. Dec.); hofje of Fontein (Arnoldo 329, fl. & fr. Dec.); plantation near Washington (Stoffers 1514, fl. & fr. Jan.).

BONAIRE: airfield (Stoffers 787, fl. Nov.); Fontein (Stoffers 546, fl. Nov.); hofje of Fontein (Arnoldo 501, fl. & fr. Ap.).

CURAÇAO: Cas Cora (Stoffers 247, fl. & fr. Oct.; Burgers 72, 76, fl. & fr. Jan.); Noordkant Plantation (Stoffers 128, fl. & fr. Oct.); hofje of Siberië (Boldingh 5054 m, fl. & fr. Oct.); seashore near San Pedro (Boldingh 5290, fl. & fr. Nov.); hofje van Engelen (Boldingh 5434c, fl. & fr. Nov.); Klein Santa Marta (Stoffers 81, fl. & fr. Sept.); Cholome (Stoffers 14, fl. & fr. Sept.); hofje near Weis Afo (Nagelkerken 134, fl. & fr. Feb.); near Piscadera Baai Club (de Wilde 34a, fl. & fr. Dec.); Museumgarden (Arnoldo 1722, fl. & fr. Oct.).

SABA: along roads in The Bottom (Stoffers 4614, fl. & fr. March); hill NW of The Bottom, 300—350 m (Stoffers 3307, fl. & fr. May); along road from The Bottom to Crispine, 220—350 m (Stoffers 2982, fl. & fr. Ap.); Ladder Gut, 100—200 m (Stoffers 2802, fl. & fr. Ap., strongly hairy specimen); The Bottom (Arnoldo 549, fr. Aug.); Ladder Gut (Boldingh 2008, fl. July); lower part of the Bottom Mountain, 250 m (Boldingh 1399, fl. & fr. July).

ST. EUSTATIUS: northern slope of The Quill (Stoffers 4002, fl. July); along roads near Glass Bottle (Boldingh 869, fl. & fr. June); Bengalen (Boldingh 602, fl. June).

ST. MARTIN: hills along western slope of Cul de Sac, north of Sentry Hill (Stoffers 2588, fl. & fr. March); Experimental Garden, Cul de Sac (Stoffers 2356, fl. & fr. March); from Marigot Hill to Marigot (Boldingh 2654, fl.).

***Euphorbia hyssopifolia* L.**

LINNAEUS, Syst. Nat. ed. 10, 2: 1048. 1759; URBAN, Symb. Ant. 4: 355. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 255. 1913; Fl. D.W. Ind. Isl. 2: 57. 1914; FAWCETT & RENDLE, Fl. Jamaica 4(2): 339. 1920; GOODING *et al.*, Fl. Barbados 249. 1965; ADAMS, Flowering plants of Jamaica 430. 1972; FOURNET, Fl. Guadeloupe & Martinique 1569. 1978; — *Euphorbia nirurioides* (MILLSPAUGH) FAWCETT & RENDLE, Fl. Jamaica 4(2): 338. 1920; — *Euphorbia hypericifolia* L. var. *hyssopifolia* (L.) GRISEBACH, Fl. Br. W. Ind. Isl. 54. 1859 ['1861']; — *Euphorbia preslii* auct. non Guss.; DUSS, Fl. phan. Ant. franç. 43. 1897; — *Chamaesyce hyssopifolia* (L.) SMALL, Flora SE. U.S. 712. 1903; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 501. 1924.

Annual or sometimes perennial herb; branches slender, erect or ascending, glabrous or rarely slightly pilose, 10—60(—120) cm high. Leaves short-petiolate to subsessile, very variable in shape and size; blade elliptic to elliptic-ovate, oblong, lanceolate, narrowly obovate or linear, 0.5—3.5 cm long and 0.2—1(—1.5) cm wide, often slightly curved or falcate, acute at the apex, obtuse to rounded and oblique at the base, entire or slightly dentate at the apex; petiole to 1 mm long. Stipules broadly deltoid, fringed or splitted into lacerate lobes. Cyathia in few-flowered cymes, sometimes solitary in the upper bifurcations; peduncles to 2 mm long; involucre obconic to obconic-campanulate, about 1 mm long, glabrous; lobes triangular, entire to lacerate; glands minute, stalked, circular to broadly transversely elliptic; appendages white or pink, glabrous, entire, suborbicular to reniform, from narrower to more than twice as wide as the glands, the fifth gland linear; bracteoles fimbriate; gynophore glabrous, exserted; ovary glabrous, strongly 3-lobed; styles bifid. Capsule glabrous, broadly ovoid, about 1.5—2 mm long. Seeds ovoid-quadrangular, 1—1.5 mm long, facets with three transverse ridges, chocolate-brown to greyish-white.

From the U.S.A. to temperate South America; West Indies; adventitious in the Old World.

Road sides, waste and cultivated grownds.

BONAIRE: hofje of Bacuna (Boldingh 7473 e, fl. & fr. Feb.); Rincón (Boldingh 7150, fl. Feb.).

CURAÇAO: along the road to Westpunt (Stoffers 1326, fl. & fr. Jan.); Pos Kajoeda (Stoffers 1321, fl. & fr. Jan.); Parera (Stoffers 38, fl. & fr. Sept.); St. Joris Bay (Britton & Shafer

3098, fl. & fr. March); Santa Cruz (Britton & Shafer 2996, fl. & fr. March); Siberië (Went 1351, fl. & fr. Jan.); Gasparito (Went 826, fl. & fr. Jan.); hills between Santa Cruz and Seroe Christoffel (Boldingh 5594, fl. Dec.); calcareous hills near Hato (Boldingh 5321, fl. & fr. Nov.); hofje of Barber (Boldingh 5222, fl. & fr. Nov.); near Wacao (Boldingh 5101, fl. & fr. Nov.); Mahoema (Boldingh 4816 a, fl. & fr. Oct.); Veeris Berg (Boldingh 4730, fl. & fr. Oct.); near Savonet (?) (Boldingh M 8, fl. & fr.); Ronde Klip (Stoffers 1266, fl. & fr. Dec.); Seroe Christoffel (Stoffers 2101, fl. & fr. Dec.); Santa Cruz (Stoffers 1173, fl. & fr. Dec.); Parera, Pasanggrahan (Stoffers 443, fl. & fr. Oct.); Choloma (Stoffers 31, fl. & fr. Sept.); Cas Cora (Burgers 71, fl. & fr. Jan.); abandoned hofje near Jan Thiel (Nagelkerken 300, 339, 373, fl. & fr. Jan.); hofje near Weis Afo, Nagelkerken 170, fl. & fr. March).

ST. EUSTATIUS: along road in Oranjestad (Stoffers 3879, fl. & fr. July).

ST. MARTIN: along western side of Great Salt Pond (Stoffers 2416, fl. & fr. March); airfield (Stoffers 2371, 2378, fl. & fr. March); along road in Philipsburg (Stoffers 2300, 2328, fl. & fr. March).

***Euphorbia mesembrianthemifolia* Jacq.**

JACQUIN, Enum. Syst. Pl. Carib. 22. 1760; GOODING *et al.*, Fl. Barbados 250. 1965; ADAMS, Flowering plants of Jamaica 429. 1972; FOURNET, Fl. Guadeloupe & Martinique 1566. 1978; — *Euphorbia glabrata* SWARTZ, Prodr. Veg. Ind. Occ. 76. 1788; — *Euphorbia litoralis* KUNTH, in H.B.K., Nov. Gen. & Spec. 2: 54. 1817; — *Euphorbia buxifolia* LAMARCK, Encycl. 2: 421. 1786; GRISEBACH, Fl. Br. W. Ind. Isl. 53. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 42. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 115. 1909; URBAN, Symb. Ant. 4: 353. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 254. 1913; Fl. D.W. Ind. Isl. 2: 56. 1914; URBAN, Symb. Ant. 8: 367. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 336. 1920; QUESTEL, Fl. Isl. St. Bartholomew 137. 1941; ARNOLDO, Zakflora 64. 1954; Zakflora 127. 1964; — *Chamaesyce mesembrianthemifolia* (JACQUIN) DUGAND, Phytologia 13: 385. 1966; — *Chamaesyce buxifolia* (LAMARCK) Small, Fl. SE. U.S. 711. 1903; BRITTON & MILLSAUGH, Bahama Fl. 237. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 504. 1924; LEON & ALAIN, Fl. Cuba 3: 333. 1953.

Small shrub or perennial shrubby herb, erect, usually strongly branched and bushy, glabrous, (10—)20—50(—100) cm high, branches glabrous, with short internodes and slightly swollen nodes. Leaves sessile, crowded at the end of the branches, fleshy, greyish-green coloured, folded or wrinkled when dry; blade ovate to broadly oblong, acute at the apex, rounded to cordate and oblique at the base, 4—12 mm long and 2—8 mm wide, entire, glabrous; petiole to 1 mm long. Stipules triangular-ovate, about 1 cm long, more or less fringed, white. Cyathia solitary in the axils of the upper leaves; involucre campanulate, glabrous outside, pilose inside, about 1.5 mm long, peduncle 1.5—2 mm long; glands transversely elliptic, appendages a mere whitish bordering line. Capsule about 2 mm in diam., glabrous. Seeds white, ovoid-quadrangular, about 1 mm long, with blunt angles and inconspicuously marked facets.

Florida, Bermuda, Bahamas, West Indies; continental tropical America.

Sandy seashores and coastal rocks.

ARUBA: Palm Beach (Stoffers 1794, fl. & fr. Dec.); Pova Beach (Stoffers 1413, fl. & fr. Jan.); Boca Grandi (Stoffers 1387, fl. & fr. Jan.); San Nicolas, near beach (Arnoldo 275,

fr. & fl. Dec.); seashore near Savaneta (Boldingh 6554, fl. Jan.); Seroe Blanco (Boldingh 6511, fl. Jan.); Fontein (Suringar s.n., fl. Feb. [L]).

BONAIRE: seashore near Onima (Boldingh 7237, fl. & fr. Feb.).

CURAÇAO: Rif (Arnoldo 1987, fl. & fr. March; Suringar s.n., fr. Jan. [L]; s.n., fr. Feb. [L]; Stoffers 432, fl. Oct.); west of Willemstad, near seashore (de Wilde 172a, st. March); coral seabeach near Willemstad (Britton & Shafer 2933, fl. March); Savonet Baai (Suringar s.n., fl. Jan. [L]); Klein Curaçao (Arnoldo 1138, fl. & fr. Oct.); Ronde Klip (Arnoldo 1105, fl. & fr. Sept.); near the sea (Suringar s.n., fl. Feb. [L]).

ST. EUSTATIUS: seashore near White Wall (Boldingh 854, fl. June); White Wall (Boldingh 811, fl. June); Beach (Suringar s.n., fl. Ap. [L]); without loc. (Suringar s.n., fl. Ap. [L]).

ST. MARTIN: between Simson Bay and Simson Bay Lagoon (Stoffers 2503, fl. & fr. March); Low Lands (Stoffers 2693, fl. Aug.); Green Key (Boldingh 3361, fl. Sept.); Cole Bay (Boldingh 2517, fl. Aug.).

***Euphorbia petiolaris* Sims**

SIMS in CURTIS, Bot. Mag. 23: t. 883. 1805; BOLDINGH, Fl. D.W. Ind. Isl. 1: 116. 1909; URBAN, Symb. Ant. 4: 356. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 256. 1913; ADAMS, Flowering plants of Jamaica 428. 1972; — *Euphorbia verticillata* POIRET in LAMARCK, Encycl. Suppl. 2: 611. 1811; DUSS, Fl. phan. Ant. franç. 45. 1897; — *Aklema petiolare* (SIMS) MILLSPAUGH, Ann. Miss. Bot. Gard. 2: 43. 1915; BRITTON & MILLSPAUGH, Bahama Fl. 236. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 500. 1924; FOURNET, Fl. Guadeloupe & Martinique 1573. 1978.

Shrub or small tree, to 6 m high, branches glabrous, swollen at the nodes. Leaves whorled, often in whorls of three, long-petiolate, glabrous; blade ovate to orbicular, obtuse or sometimes slightly emarginate at the apex, truncate or rounded at the base, entire, membranaceous, 1—2(—2.5) cm long and 1—2 cm wide; petiole longer than the blade, up to 2.5 cm long. Stipules glanduliform. Inflorescence axillary or terminal; cyathia long-pedicellate, solitary or in cymes which are arranged in lax corymbs; involucre campanulate, about 3 mm long, smooth; lobes ovate, fimbriate; glands transverse-elliptic, stipitate with conspicuous appendages; bracteoles numerous, plumose; ovary long-stalked, exserted. Capsule depressed, trisulcate, glabrous, 4—5 mm wide. Seeds white, ovoid-globose, 3 × 2.5 mm, foveolate with numerous pits.

Bahamas, Hispaniola, Jamaica, Puerto Rico, Virgin Islands, Guadeloupe, Martinique, Marguerita, and St. Thomas.

ST. MARTIN: eastern slope of Naked Boy Hill, 100—250 m (Stoffers 2714, fl. & fr. Ap.); Mount William, 100 m (Stoffers 2538, fl. March); between Philipsburg and Oyster Pond (Stoffers 2294, fl. & fr. March); Philipsburg (Suringar s.n., fl. Ap. [L]); near Philipsburg (Boldingh 2341, fl. Aug.); near Lemoentuin Juliana (Stoffers 2234, fl. & fr. March); shore of Great Bay (Stoffers 2217, fl. & fr. March; Hummelinck s.n., fl. & fr. March); Middle Region, 100 m (Arnoldo 3396, fl. Jan.); road to Point Blanche (Arnoldo 1226, fl. & fr. March); along road from Cole Bay to Simson Bay (Boldingh 3253, st. Nov.); near Simson Bay village (Boldingh 3033, st. Aug.); Marigot Hill to Marigot, 200 m (Boldingh 2652, fl. & fr. Aug.); from Philipsburg to Belvedere (Boldingh 2567, fl. Aug., 2573 fl. Aug.); Cul de Sac (Suringar s.n., fl. May [L]); Vineyard Hill (Suringar s.n., fl. May [L]).

Euphorbia serpens Kunth

KUNTH, in HUMBOLDT, BONPLAND & KUNTH, Nov. Gen. & Spec. 2: 52. 1817; GRISEBACH, Fl. Br. W. Ind. Isl. 53. 1859 ['1864']; URBAN, Symb. Ant. 8: 372. 1920; GOODING *et al.*, Fl. Barbados 251. 1965; ADAMS, Flowering plants of Jamaica 429. 1972; FOURNET, Fl. Guadeloupe & Martinique 1567. 1978; — *Chamaesyce serpens* (KUNTH) SMALL, Fl. SE. U.S. 709. 1903; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 501. 1924; — *Euphorbia thymifolia* auct. non Linnaeus.

Annual herb, prostrate, branches slender, to 30 cm long, glabrous. Leaves small, subsessile; blades elliptic to broadly suborbicular, rounded at the apex, oblique at the base, margin entire or minutely dentate, glabrous. Stipules triangular, 1 mm long, denticulate, conspicuous, white. Cyathia axillary, solitary or few; involucre turbinate, glabrous; lobes triangular, ciliate; glands transversely oblong, appendages white, more or less distinctly 2—3-lobed. Capsule glabrous, c. 1 mm long. Seeds quadrangular, reddish, facets without conspicuous transverse ridges.

Widespread through tropical and subtropical America, introduced in S. Europe and Africa.

ST. MARTIN: Low Lands (Stoffers 2671, fl. & fr. Ap.); Guana Bay (Boldingh 2433, fl. & fr. Aug.); near Mulletpond (Boldingh 2776, fl. & fr. Aug.; 2780, fl. & fr. Aug.); Tintamarre (Le Gallo 1008, fl. & fr. March); Philipsburg (Stoffers 2299, fl. & fr. March).

Euphorbia prostrata Ait.

AITON, Hort. Kew. 2: 139. 1789; GRISEBACH, Fl. Br. W. Ind. Isl. 53. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 42. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 117. 1909; URBAN, Symb. Ant. 8: 372. 1920; FAWCETT & RENDLE, Fl. Jamaica 4(2): 341. 1920; GOODING *et al.*, Fl. Barbados 251. 1965; ADAMS, Flowering plants of Jamaica 429. 1972; FOURNET, Fl. Guadeloupe & Martinique 1567. 1978; — *Chamaesyce prostrata* (AITON) SMALL, Fl. SE. U.S. 713. 1903; BRITTON & MILLSPAUGH, Bahama Fl. 241. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Islands 5: 503. 1924; LEON & ALAIN, Fl. Cuba 3: 134. 1953.

Annual herb, prostrate, branches slender, spreading from a central taproot, forming small mats, 5—20 cm long, pubescent above. Leaves opposite, short but distinctly petiolate; blade mostly oblong or obovate-oblong, sometimes ovate or elliptic, obtuse at the apex, obtuse and oblique at the base, thin, slightly dentate toward the apex, 3—8 mm long and 2—5 mm wide, minutely pubescent or glabrous; petiole slender, about 1 mm long. Stipules deltoid or broadly deltoid, free or united, thin, ciliate. Cyathia axillary, often solitary, minute; involucre turbinate, less than 1 mm long, glabrous outside, lobes ciliate; glands 4, small, transversely elliptic with narrow appendages. Capsule globose, 3-lobed, about 1 mm long, glabrous except the three keeled edges. Seeds quadrangular, nearly 1 mm long, facets with about 6 distinct transverse wrinkled ridges, pale whitish-pink to reddish-brown.

Native of the New World, now widespread over the warmer regions of the world.

Weed of road sides, waste and cultivated grounds, preferring sandy places.

SABA: Windwardside (Arnoldo 765, fl. & fr. Aug.).

ST. EUSTATIUS: without loc. (van Groll-Meyer s.n., fl. & fr.).

ST. MARTIN: Low Lands near Cherry Cap (Boldingh 3259, fl. & fr. Nov.).

Euphorbia spec.

— *Euphorbia thymifolia* auct. non Linnaeus; BOLDINGH, Fl. D.W. Ind. Isl. 1: 117. 1909; Fl. Ned. W. Ind. Eil. 256. 1913; Fl. D.W. Ind. Isl. 2: 57. 1914; ARNOLDO, Zakflora 108. 1954; Zakflora 128. 1964.

Annual or perennial herb, branches prostrate, spreading from a central taproot, 5—30 cm long, often forming mats, pubescent or glabrate. Leaves small, subsessile; blades variable in shape and size, inaequilateral, from ovate-suborbicular or ovate-elliptic to elliptic-oblong or obovate, obtuse or rounded or sometimes acute at the apex, obtuse, rounded or subcordate at the base, membranaceous, strigose or glabrescent, margin serrulate-crenate, especially to the apex, sometimes nearly entire, 3—10 × 2—5 mm; petiole 0.5—1 mm long. Stipules linear, about 1 mm long. Cyathia subsessile, solitary or in small cymes in the axils of the leaves; involucre subcampanulate, about 1 mm long, glabrous or short strigose; glands unequal, suborbicular to broadly transversely elliptic, minutely stalked, alternated by inconspicuous linear, ciliate lobes, appendages narrow or mostly wanting; ovary hirsute. Capsule strigose, about 1 mm long. Seeds reddish, oblong quadrangular, with about 3 shallow transverse ridges.

ARUBA: Kudarebe (Stoffers 1315, fl. & fr. Jan.); dunes near Kudarebe (Stoffers 1334, fl. & fr. Jan.); salina west of Tibushi (Stoffers 1350, fl. & fr. Jan.); Boca Grandi (Stoffers 1386, fl. & fr. Jan.); Pos Calbas (Burgers 525, fl. & fr. March); vicinity of Boca Mahos (Stoffers 1490, fl. & fr. Jan.); Palm Beach (Stoffers 1797, fl. & fr. Jan.); hill NE of Andicouri Plantation (Stoffers 2827, fl. & fr. Jan.); Paloe Marca (Stoffers 1951, fl. & fr. Jan.); Seroe Alejandro (Stoffers 1966, fl. & fr. Jan.); road to Savaneta (Boldingh 6514 fl. & fr. Jan.); seashore near Fontein (Boldingh 6470 fl. & fr. Jan.); calcareous hill Seroe Blanco (Boldingh 6483 fl. & fr. Jan.); slope of Canashito (Boldingh 6381, fl.); Baikuri (Boldingh 6337, fl. & fr.); seashore near Manshebo (Boldingh 6283, fl. & fr.).

BONAIRE: along road from Kralendijk to Rincón (Stoffers 842, fl. Dec.); Seroe Grita Kabai (Stoffers 861, fl. Dec.); Montagne (Stoffers 894, fl. & fr. Dec.); Seroe Grandi (Stoffers 920, fl. Dec.); Lac (Stoffers 927, fl. & fr. Dec.); top of Brandaris (Stoffers 972, fl. & fr. Dec.); dunes south of Lac (Stoffers 983, fl. & fr. Dec.); near Seroe Ventana (Stoffers 1065, fl. Dec.); Karpata, south of debouchment of Goto-meer (Stoffers 1077, fl. & fr. Dec.); Santa Barbara (Stoffers 799, fl. & fr. Nov.); east of Pos Kalbas (Stoffers 765, fl. & fr. Nov.); road to Zoutpannen (Stoffers 706, 720, fl. & fr. Nov.); northern part of Lima (Stoffers 711, fl. & fr. Nov.); coast near Spelonk (Stoffers 692, 694, fl. Nov.); Boca Slagbaai (Stoffers 583, fl. & fr. Nov.); Oranjepan (Stoffers 475, fl. & fr. Oct.); near Willemstoren (Stoffers 472, fl. & fr. Oct.); Washikemba (Arnoldo 20, fl. Nov.); seashore southern Bonaire (Boldingh 7497, fl. Feb.); from Seroe Grandi to Lagoen (Boldingh 7453, fl. Feb.); calcareous hills near Rooi Samboe (Boldingh 7437, fl. Feb.); calcareous plateau of Bolivia (Boldingh 7368, fl. Feb.); Soebi Rincón (Boldingh 7260, fl. & fr. Jan.); seashore near Onima (Boldingh 7238, fl. & fr. Feb.); seashore near Fontein (Boldingh 7243, fl. & fr., Feb.); near Rincón (Boldingh 7179, fl. & fr. Jan.); seashore Playa Grandi (Boldingh 7174b, fl. & fr. Feb.); calcareous hills near Rincón (Boldingh 7044, fl. & fr. Feb.).

CURAÇAO: Koenoeokoe, foot Veeris Berg (de Wilde 141a, fl. & fr. Jan.); salt pans near St. Willebrordus (Stoffers 345, fl. & fr. Oct.); beach near salt pans near St. Willebrordus (Stoffers 361, fl. & fr. Oct.); Grote Berg (Stoffers 338, fl. & fr. Oct.); on rocks near Willemstad (Britton & Shafer 2950, fl. & fr. March); Santa Catharina (Stoffers 187, fl. & fr. Oct.); Groot Santa Marta (Stoffers 124, fl. & fr. Sept.); calcareous soil near San Pedro (Boldingh 5284, fl. & fr. Nov.); calcareous soil near St. Patrick (Boldingh 5469, fl. & fr. Nov.);

Kabrieten Berg (Boldingh 5404, fl. & fr. Nov.); calcareous hills near Hato (Boldingh 5131 f., 5317, fl. & fr. Nov.); Wacao (Boldingh 5102, fl. & fr. Nov.); Fort Nassau (Went 1107, fl. & fr. Nov.).

Pedilanthus NECKER ex POITEAU, Ann. Mus. Hist. Nat. Paris 19: 388. 1812; nom. cons. 4501

Monoecious trees or shrubs; branches and leaves more or less succulent with whitish to yellowish latex. Leaves alternate, distichous, persistent or deciduous; blades pinnately veined, entire, eglandular; petioles short. Stipules present. Inflorescence consisting of pseudanthia, the cyathium bilateral symmetric, the involucrel tube produced into a posterior spur containing 4 (or sometimes 2 or 6) glands; cyme bracts opposite, leaflike; flowers without perianth, disk not developed, the female flowers solitary in the cyathium, central; male flowers in 5 more or less bracteolate monochasia. Male flowers monandrous, simulating a stamen; filaments separated from the pedicel by an articulation; anther with longitudinal lateral dehiscence. Female flower pedicellate; ovary 3-locular; styles connate along most of their length into a slender column much longer than the ovary; style tips bifid; ovary angled or carinate; ovules solitary in each locule. Fruit capsular, splitting up into 3 bi-valved cocci; columella slender, expanded to the top. Seeds subterete; testa smooth or minutely tuberculate; caruncula wanting.

Species 14; natives of tropical America from Mexico to northern Brasil and the West Indies.

Pedilanthus tithymaloides (L.) Poit.

POITEAU, Ann. Mus. Hist. Nat. Paris 19: 390, t. 19. 1812; GRISEBACH, Fl. Br. W. Ind. Isl. 52. 1859 ['1864']; DUSS, Fl. phan. Ant. franç. 41. 1897; URBAN, Symb. Ant. 4: 357. 1905; BOLDINGH, Fl. D.W. Ind. Isl. 1: 117. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 231. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 256. 1913; Fl. D.W. Ind. Isl. 2: 57. 1914; URBAN, Symb. Ant. 8: 375. 1920; BRITTON & MILLSPAUGH, Bahama Fl. 233. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 497. 1924; QUESTEL, Fl. Isl. St. Bartholomew 139. 1941; LEON & ALAIN, Fl. Cuba 3: 126, fig. 45. 1953; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 103. 1954; Gekw. en nutt. pl. Ned. Ant. 151. 1971; ADAMS, Flowering plants of Jamaica 431. 1972; FOURNET, Fl. Guadeloupe & Martinique 1560. 1978; — *Euphorbia tithymaloides* LINNAEUS, Spec. Plant. 453. 1753.

Shrub, to 2 m or more high, succulent, branched. Leaves petiolate; blades glabrous to puberulent, ovate, elliptic or obovate, acute, obtuse or retuse at the apex, cuneate or obtuse at the base, midrib thickened beneath; petioles short. Stipules represented by small glands, spur-like, blunt or depressed. Inflorescences terminal and axillary. Bracts red. Involucrel tube glabrous, coloured, spur cucullate and containing glands. Bracteoles few or wanting, threadlike. Staminate flowers 14—34; anthers usually glabrous. Pistillate flower glabrous to puberulent; ovary trigonous; style tips shortly bifid.

From northern Mexico to Suriname; West Indies.

Vernacular names: parkiet, prikichi (Leeward Group).

Key to the subspecies:

1. Leaf-apex obtuse or retuse, if obtuse then the leaves usually obovate.
.....ssp. *padifolius*

Leaf-apex acute, or if obtuse the leaves ovate and somewhat attenuate to the apex
..... 2

2. Leaf-base obtuse to subcordate; leaves glabrate and glossy.. *ssp. parasiticus*
Leaf-base cuneate; leaves not markedly glossy..... *ssp. tithymaloides*

ssp. tithymaloides

DRESSLER, Contr. Gray Herb. 182: 138. 1957; ADAMS, Flowering plants of Jamaica 431. 1972; FOURNET, Fl. Guadeloupe & Martinique 1560. 1978; — *Euphorbia tithymaloides* LINNAEUS, Spec. Plant. 453. 1753.

Shrub to 3 m high; stems slender and woody or thick and markedly succulent, puberulent when young, glabrate in age. Leaves ovate, petiolate; blade elliptic or ovate-lanceolate, acute or narrowly obtuse at the apex, cuneate at the base, 1—16 cm long and 0.8—10 cm wide, glabrous to puberulent above, glabrate to densely puberulent beneath, midvein keeled beneath; petiole short. Stipules spur-like, blunt or depressed. Cymes terminal, axillary and on lateral branches, condensed; internodes glabrate to puberulent, 1—3 mm long. Bracts red, 4—12 mm long, 2—5 mm wide, ovate, ovate-lanceolate, attenuate, acute or obtuse, glabrate to crisped-puberulent. Involucral tube red, at the base green or greenish-yellow, glabrous; spur cucullate, 0.3—3.5 mm, containing 4 glands. Bracteoles none or few, threadlike, adnate to the involucral tube for about 3 mm, glabrous or puberulent. Staminate flowers 20—34; pedicels glabrous or terminally hispidulous to villous, 7—14 mm long; filaments glabrous or puberulent, 2.5—3 mm long; anthers glabrous or sparsely pilosulous. Pistillate flowers on 4—14 mm long glabrous pedicels; ovary oblong-obovate, trigonous; style 5—11 mm long, the tips shortly bifid. Capsule deeply 3-lobed in cross-section. Seeds with brown raphe.

From Mexico through Central America to southern Colombia and along the northern coast of South America to Suriname.

Widely cultivated.

ARUBA: in garden in San Nicolas (Stoffers 1925, st. Jan.; cult.); without loc. (Boldingh s.n., flb. Jan.; cult.).

ssp. padifolius (L.) Dressler

DRESSLER, Contr. Gray Herb. 182: 156. 1957; GOODING *et al.*, Fl. Barbados 256. 1965; — *Pedilanthus tithymaloides* (L.) POITEAU var. *padifolius* (L.) GRISEBACH, Fl. Br. W. Ind. Isl. 52. 1859 [‘1864’]; — *Pedilanthus padifolius* (L.) BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 496. 1924; — *Euphorbia tithymaloides* β *padifolius* LINNAEUS, Spec. Plant. 453. 1753.

Shrub, 1—3 m high; stems glabrous, slender to moderately succulent. Leaves short petiolate; blades 6.5—12.5 cm long, 2.5—7.5 cm wide, obovate, oblanceolate-obovate or elliptic, obtuse at the apex or sometimes retuse or acute, cuneate at the base and contracted into the petiole, midrib thickened and often carinate, glabrous. Stipules blunt, spur-like. Inflorescences terminal and upper axillary, occasionally on lateral branches. Bracts red and often tending to persistent, 8—11 mm long, obtuse, (broadly)acute or sometimes apiculate, the margins puberulent. Involucral tube yellow-green beneath or

red throughout, glabrous without except on the margins, internally inside sparsely pilose above and otherwise glabrous, 9.5—12 mm long, the spur cucullate, arising at about 3 mm from the peduncle and containing 4 subbasally glands. Bracteoles few, filamentous, glabrous or pilose, adnate to the involucre tube for about 1.5—3 mm at the base. Staminate flowers 14—28; pedicels glabrate at the base, villous terminal, 11—13 mm long; filaments glabrous, or puberulent, 2 mm long; anthers glabrous. Female flowers on 10—13 mm long, puberulent pedicels; ovary 2 mm long and 1.5 mm wide, oblong-ovoid; style tips bifid. Capsule subquadrate, about 7 mm long. Seeds 4—5 mm long and 2.5—3 mm wide, ovoid-oblong, slightly keeled; raphe brown.

Lesser Antilles including St. Croix, south to the isle of Ronde and probably Grenada; cultivated and naturalised.

ARUBA: in garden of San Nicolas (Stoffers 1941, fl. Jan.).

ST. EUSTATIUS: road along lower part of Signal Hill (Boldingh 123, fl. May); gut near Fort de Windt, 50 m (Boldingh 842, defl. July); along roads near Signal Hill (Boldingh 1128, fl. June); without loc. (Boldingh s.n., st.).

ST. MARTIN: from Philipsburg to Guana Bay (Boldingh 2377, st. Aug.); from Belvedere to Oyster Pond (Boldingh 3054, fl. & fr. Aug.).

ssp. parasiticus (Kl. & Gke) Dressler

DRESSLER, *Contr. Gray Herb.* 182: 148. 1957; ADAMS, *Flowering plants of Jamaica* 431. 1972; — *Pedilanthus parasiticus* Klotzsch & Garcke, *Abh. Akad. Berl. Phys.* 1859: 105. 1860.

Shrub, 0.8—2 m high, succulent; stem thick, straight or slightly zig-zag, sparsely crispid-puberulent when young, becoming glabrate. Leafblade 3—9 cm long and 2.5—6.5 cm wide, succulent and glossy, deltoid-ovate or broadly ovate, acute or acuminate at the apex, obtuse to subcordate at the base, glabrous or glabrate above, puberulent when young and becoming glabrate beneath. Stipules blunt, spur-like or depressed. Inflorescences terminal or axillary, the branches often partly monochasial by abortion. Bracts red. Involucre pink, entirely glabrous except for the margins, the tube 7.5—11 mm long, spur cucullate arising at 2—3 mm from the peduncle. Bracteoles wanting or very few, filamentous, up to 3 mm long. Male flowers 14—22; pedicels glabrous, 8—12 mm long; stamen filaments glabrous or sparsely pilosulous, 1—2 mm long; anthers glabrous. Female flowers glabrous; pedicels 4.5—11 mm long. Ovary ovoid, trigonous; style thick, 5.5—7 mm long, shallowly bifid, usually spreading. Fruit and seeds not seen.

(Description after Dressler, *Contr. Gray Herb* 1821: 148. 1957).

Widely cultivated and perhaps native in Mexico, apparently native in the Greater Antilles in Jamaica, Hispaniola, and perhaps Puerto Rico, also reported from Virgin Islands, Grand Cayman and Jamaica.

SABA: The Bottom (Boldingh 2250, st. July). Cultivated but probably nowadays escaped.