

ANNONACEAE

by

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Trees or shrubs. Leaves alternate, deciduous or persistent, simple, entire. Stipules wanting. Inflorescence terminal, axillary or opposite the leaves. Flowers hermaphrodite or rarely unisexual, actinomorphic, generally 3-merous. Sepals 3, free or united at the base, valvate or imbricate. Petals generally 6, in 2 series, valvate or imbricate, free or rarely united at the base, the inner ones often smaller, sometimes rudimentary or even wanting. Stamens usually numerous, spirally arranged, distinct but usually tightly packed; filaments short, thickened; anthers 4-celled, extrorse, sometimes locellate; connective broad and usually expanded in a more or less hoodlike disc above the anther. Gynoecium of few or numerous, separate or, in our species, cohering pistils; ovary superior, 1-celled, 1-carpelled; styles as many as the carpels and then short or stigmas sessile. Ovules 1-many, anatropous, parietal, sometimes seeming basal. Fruit a berry or follicle or, as in our genus, mature ovaries becoming connate and adnate to the floral axis, to form a single, fleshy, aggregate fruit. Seeds large, with or without an aril. Endosperm copious, wrinkled. Embryo minute.

About 850 species in about 80 genera in the tropics.

Annona Linnaeus, Spec. Plant. 536. 1753

Shrubs or trees. Flowers solitary or in few-flowered inflorescences, terminal or opposite the leaves or extra-axillary from the internodes. Flowers hermaphrodite, pedicellate. Sepals 3, small, valvate. Petals 6, free or connate at the base, 2-seriate; the outer petals fleshy, valvate, the inner ones smaller and imbricate or valvate or wanting. Stamens numerous; anthers not locellate; connective generally terminating in a swollen head- or hood-like process above the anther. Pistils numerous, often cohering. Ovules solitary, basal, erect. Fruit large, fleshy, formed by the confluence of the ovaries and the floral axis, usually areolate on the surface, the areoles indicating the ovaries, often gibbous or with a mucro or spine in the centre.

Over 100 species in tropical America; a few species also in tropical Africa.

Key to the species:

1. Leaves with minute pockets or pits in the angles between the midvein and the lateral veins on the lower side 2
Leaves without pockets or pits on the lower side 3
2. Fruit with long, curved spines; leaves rusty beneath . . . *A. muricata*
Fruit with small, straight spines; shortly greyish-sericeous but soon glabrescent beneath *A. montana*
3. Inner petals of approximately the same size as the outer ones, leaves completely glabrous *A. glabra*
Inner petals very small, young leaves pubescent or appressed hirsute beneath 4
4. Fruit tuberculate; inner petals very small *A. squamosa*
Fruit smooth *A. reticulata*

***Annona muricata* L.**

LINNAEUS, Spec. Plant. 536. 1753; DUNAL, Monogr. Anonac. 62. 1817 p.p.; GRISEBACH, Fl. Br. W. Ind. Isl. 4. 1859; DUSS, Fl. phan. Ant. franç. 2. 1897; URBAN, Symb. Ant. 4: 241. 1905; BOLDINGH, Fl. D. W. Ind. Isl. 1: 68. 1909; Fl. Ned. W. Ind. Eil. 192. 1913; Fl. D. W. Ind. Isl. 2: 30. 1914; FAWCETT & RENDLE, Fl. Jamaica 3(1): 195. 1914; URBAN, Symb. Ant. 8: 228. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virg. Isl. 5: 311. 1924; WILLIAMS, Fl. Trinidad & Tobago 1(1): 12. 1924; FRIES, Act. Hort. Berg. 10: 201. 1931; QUESTEL, Fl. Isl. St. Bartholomew 108. 1941; LEON & ALAIN, Fl. Cuba 2: 172. 1951; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 19, fig. 13. 1954; — *Anona bonplandiana* HUMBOLDT, BONPLAND & KUNTH, Nov. Gen. et Spec. 5: 58. 1821.

Small tree, up to 8 m tall. Leaves petiolate; the petiole about 5 mm long; blade rather thin obovate-oblong, shortly acuminate at the apex, rounded-acute at the base, 8—20 × 3—8 cm, glabrous, green and lustrous above, more or less rusty and with pockets in the axils of the lateral veins beneath. Flowers solitary, terminal or opposite the leaves; pedicels 1.5—2 cm long, ferruginous-sericeous, articulate at the base. Bracts triangular-ovate, 2—3 mm long. Sepals triangular, acute. Petals yellow, the outer ones rounded-ovate, acuminate at the apex, 2.5—3.5 × 2—3 cm, the inner ones a little smaller, ovate, obtuse, shortly clawed. Stamens 4—5 mm long. Fruit large, 15—20 × 8—10 cm, ovoid to oblong-ovoid, dark green, provided with numerous, long, upward curved spines. Seeds elliptic-oblong, black or brown, 1.5 × 1 cm. Fruit edible, delicious.

Probably native of the West Indies; widely cultivated in the tropics.

Lower and middle elevations.

Vernacular names: zuurzak, sorsaka (Leeward Group).

soursop (Windward Group).

SABA: The Bottom (Boldingh 1844, st. July); lower part of Bottom Mountain, 300 m (Boldingh 1438, st. June); Spring Bay Gut (Boldingh 2078, st. June);

Compagnie's Gut (Stoffers 2996, st. Apr.); Fort Gut near Promised Land (Stoffers 3437, fl. May); Mary's Point (Suringar 22, st.).

ST. EUSTATIUS: road along the lower part of Signal Hill (Boldingh 121, st. May); slope of the cliff near Oranjestad (Boldingh 54, st. May); along roads in Oranjestad (Boldingh 1279, st. July); slope of The Quill near Bengalen, lower part (Boldingh 745, st. June); between Schotse Hoek and Little Mountains (Stoffers 3546, st. July); without loc. (v. Groll-Meyer 173, st.).

ST. MARTIN: from Philipsburg to Belvedere (Boldingh 2593, fl. Aug.); mountain between Mont des Accords and Sentry Hill (Boldingh 2880, st. Aug.); lower part of Mount Paradise (Boldingh 3354, st. Sept.); Princess Quarter (George s.n. sub Boldingh 2463, st. Aug.).

***Annona montana* Macf., emend. R. E. Fries**

MACFADYEN, Fl. Jamaica 1: 7. 1837, emend. R. E. FRIES, Acta Hort. Berg. 10: 206. 1931; GRISEBACH, Fl. Br. W. Ind. Isl. 4. 1859; URBAN, Symb. Ant. 4: 241. 1905; BOLDINGH, Fl. D. W. Ind. Isl. 1: 68. 1909; Fl. Ned. W. Ind. Eil. 192. 1913; FAWCETT & RENDLE, Fl. Jamaica 3(1): 195. 1914; URBAN, Symb. Ant. 8: 228. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 312. 1924; WILLIAMS, Fl. Trinidad & Tobago 1(1): 12. 1928; LEON & ALAIN, Fl. Cuba 2: 175. 1951; — *A. marcgravii* MARTIUS, Fl. Bras. 13(1): 5. 1841; — *A. sphaerocarpa* SPLITGERBER, Tijdschr. Nat. Gesch. 9: 96. 1842.

A small, glabrous tree, up to 5 m tall. Leaves petiolate; the petiole about 1 cm long; the blade chartaceous, obovate or elliptic, shortly and obtusely cuspidate at the apex, acute at the base and decurrent into the petiole, 10–12 × 4–8 cm, glabrous above, shortly greyish-sericeous but soon glabrescent beneath. Flowers solitary, terminal or opposite the leaves; pedicels about 1.5 cm long, glabrous or thinly strigose, articulate at the base. Bracts roundish-triangular, 2–3 mm long. Sepals triangular-rotundate, acute, retrorse, 5–6 mm long. Outer petals broadly ovate, cordate at the base, subacuminate at the apex, 3–3.5 × 2–2.5 cm, the inner ones a little smaller, roundish-elliptical. Stamens 4–5 mm long; connective disk broad, papillose. Fruit globose or ovoid-globose, up to 15 cm in diam., provided with short, straight prickles, edible. Seeds brown, about 2 × 1 cm.

West Indies to southern Brazil.

Thickets and Woodlands.

SABA: without loc. (Boldingh 1638, fl. & fr.).

ST. EUSTATIUS: near Bengalen (Boldingh 1188a, st.); Signal Hill (Suringar 21).

ST. MARTIN: Naked Boy Hill (Boldingh 2735a, st.).

***Annona squamosa* L.**

LINNAEUS, Spec. Plant. 537. 1753; DUNAL, Monogr. Anonac. 69. 1817; GRISEBACH, Fl. Br. W. Ind. Isl. 5. 1859; DUSS, Fl. phan. Ant. franç. 3. 1897; URBAN, Symb. Ant. 4: 242. 1905; BOLDINGH, Fl. D. W. Ind. Isl. 1: 68. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 211. 1909; BOLDINGH, Fl. Ned. W. Ind. Eil. 192. 1913; Fl. D. W. Ind. Isl. 2: 31. 1914; FAWCETT & RENDLE, Fl. Jamaica 3(1): 197. 1914; URBAN, Symb. Ant. 8: 229. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 312. 1924;

WILLIAMS, Fl. Trinidad & Tobago 1(1): 14. 1928; FRIES, Acta Hort. Berg. 10: 276. 1931; QUESTEL, Fl. Isl. St. Bartholomew 107. 1941; LEON & ALAIN, Fl. Cuba 2: 172. 1951; ARNOLDO, Zakflora 70, fig. 73. 1954; Gekw. en nutt. pl. Ned. Ant. 20, fig. 22. 1954; Zakflora 81, fig. 73. 1964; — *Annona glabra* FORSKÅL, Fl. Aeg.-Arab. 102. 1775.

A small tree or shrub, up to 7 m tall. Leaves petiolate; the petiole 5—12 mm long; the blade membranaceous, elliptic-lanceolate to oblong, acute or short-acuminate at the apex, narrowed or rarely rounded at the base, 5—15 × 3—6 cm, pubescent beneath but later on becoming nearly glabrous. Inflorescence opposite the leaves, 1- to few-flowered; pedicels glabrous or slightly pubescent, 1—2 cm long, articulate near the base. Sepals rotundate-triangular, acute, pubescent outside, 1.5—2 cm long. Outer petals linear-oblong, obtuse, narrowing toward the base, pubescent inside, purple-coloured at the base, 2 cm long and 4 mm wide; the inner petals reduced to minute scales, about 1 mm long. Stamens about 1 mm long. Fruit subglobose or ovoid, 5—9 cm in diam., composed of numerous, loosely cohering carpels, which are rounded at the back, greenish-yellow when ripe. Seeds oblong to oblong-elliptic, 1—1.5 cm long and 6.5—9 mm wide. Fruit edible, delicious.

Probably native of the West Indies; widely cultivated in the tropics.

Vernacular name: skopappel (Leeward Group).

ARUBA: Hofje of Fontein (Arnoldo 328, fr. Dec.).

SABA: Road to Mary's Point (Arnoldo 836, fl. Aug.); The Bottom (Boldingh 2256, st. July; 1848; fr. July); Fort Gut near Promised Land (Stoffers 3431, fl. May); without loc. (Lionarons s.n., st.).

ST. EUSTATIUS: seashore near Bengalen (Boldingh 595, fl. June); in garden in Oranjestad (Boldingh 525, st. June); Little Mountains, 60-120 m (Stoffers 3734, fl. July); without loc. (v. Groll-Meyer 91, fl.).

ST. MARTIN: Mount Paradise (Boldingh 3309, st. Sept.); mountain between Mont des Accords and Sentry Hill (Boldingh 2869, st. Aug.); between Belvedere and Oyster Pond (Boldingh 3049, st. Aug.); between Philipsburg and Guana Bay (Boldingh 2347, st. Aug.).

***Annona glabra* L.**

LINNAEUS, Spec. Plant. 537. 1753; DUNAL, Monogr. Anonac. 74. 1817; FAWCETT & RENDLE, Fl. Jamaica 3(1): 195. 1914; URBAN, Symb. Ant. 8: 228. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 312. 1924; WILLIAMS, Fl. Trinidad & Tobago 1(1): 13. 1928; FRIES, Acta Hort. Berg. 10: 224. 1931; LEON & ALAIN, Fl. Cuba 2: 172. 1951; — *A. palustris* LINNAEUS, Spec. Plant. ed. 2, 757. 1762; DUNAL, Monogr. Anonac. 65. 1817; GRISEBACH, Fl. Br. W. Ind. Isl. 5. 1859; DUSS, Fl. phan. Ant. franç. 3. 1897; URBAN, Symb. Ant. 4: 241. 1905; BOLDINGH, Fl. Ned. W. Ind. Eil. 192. 1913; Fl. D. W. Ind. Isl. 2: 30. 1914; FAWCETT & RENDLE, Fl. Jamaica 3(1): 197. 1914; ARNOLDO, Zakflora 40. 1954; Gekw. en nutt. pl. Ned. Ant. 19, fig. 16. 1954; Zakflora 81. 1964.

Tree, 5—10 m tall. Leaves petiolate; the petiole 1—2.5 cm long; the blade papyraceous, glabrous, oblong-elliptic to elliptic-ovate, acute or short acuminate at the apex, rounded or acute at the base, 7—18 × 3—8 cm, veins prominent on both sides. Flowers solitary, issuing from about the middle of the internodes;

pedicels rather stout, up to 2 cm long, glabrous, articulate. Bracts ovate, 1—1.5 mm long. Sepals rotundate, apiculate, 3—5 mm long, glabrous. Petals outside glabrous, the outer ones broadly ovate, 2.5—3.5 × 2—2.5 cm, cream-coloured or greenish-yellow, sometimes deep red at the base within, the inner ones ovate, 0.7—2.5 cm long, dirty-white on the back, inside blood-red at the base. Stamens 3—4 mm long; connective disk broad, papillose. Fruit ovoid or globose-ovoid, rounded at the top, 6—12 × 5—8 cm, smooth, areoles hardly obvious, yellow with brown blotches when ripe, edible. Seeds brown, about 1.5 × 1 cm.

From Mexico and the West Indies southwards to Ecuador and south Brazil; west coast of tropical Africa.

Vernacular name: kayuda (Leeward Group).

***Annona reticulata* L.**

LINNAEUS, Spec. Plant. 537. 1753; DUNAL, Monogr. Anonac. 72. 1817; GRISEBACH, Fl. Br. W. Ind. Isl. 5. 1859; Duss, Fl. phan. Ant. franç. 4. 1897; URBAN, Symb. Ant. 4: 242. 1905; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 211. 1909; BOLDINGH, Fl. D. W. Ind. Isl. 1: 69. 1909; Fl. Ned. W. Ind. Eil. 192. 1914; Fl. D. W. Ind. Isl. 2: 30. 1914; FAWCETT & RENDLE, Fl. Jamaica 3(1): 197. 1914; URBAN, Symb. Ant. 8: 229. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 5: 313. 1924; WILLIAMS, Fl. Trinidad & Tobago 1(1): 13. 1928; FRIES, Acta Hort. Berg. 10: 278. 1931; LEON & ALAIN, Fl. Cuba 2: 174. 1951; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 20. 1954; — *A. longifolia* Sessé et Moçino, Fl. Mexico 146. 1887; — *A. humboldtii* DUNAL, Monogr. Anonac. 64, t. 3. 1817; — *A. humboldtiana* HUMBOLDT, BONPLAND et KUNTH, Nov. Gen. et Spec. 5: 56. 1821; — *A. laevis* HUMBOLDT, BONPLAND et KUNTH, Nov. Gen. et Spec. 5: 60. 1821; — *A. excelsa* HUMBOLDT, BONPLAND et KUNTH, Nov. Gen. et Spec. 5: 59. 1821; — *A. riparia* HUMBOLDT, BONPLAND et KUNTH, Nov. Gen. et Spec. 5: 59. 1821.

Tree, up to 10 m tall. Leaves petiolate; the petiole 5—15 mm long; the blade membranaceous-chartaceous, oblong-lanceolate to oblong-elliptical, acute or rounded at the base, 10—20 × 2—5 cm, at first appressed-hirsute, especially on the veins, afterwards becoming glabrous. Inflorescence issuing from the middle of the internodes, rarely opposite the leaves, many-flowered; pedicels 1.5—2.5 cm long, thinly greyish-sericeous. Sepals triangular, acute, 2—3 mm long. Outer petals fleshy, linear-oblong, obtuse, greyish puberulous outside, keeled on the inner side, 1.5—2.5 cm long and 4—6 mm wide, usually purple-coloured and with a dark purplish blotch at the base; the inner petals very small, scale-like, ovate. Fruit subglobose, depressed at the stalked end, 9—10 cm in diam., smooth, reticulate-areolate, reddish or reddish-brown when ripe. Seeds oblong, brown, shiny, 12—15 × 7 mm. Fruit edible.

Probably native of the West Indies; widely cultivated in the tropics.

Vernacular name: custard apple (Windward Group).

SABA: Booby Hill (Boldingh 1632a, st. July); The Bottom (Boldingh 1842, st. July); without loc. (Lionarons s.n., st.).

St. EUSTATIUS: slope of The Quill, 350 m (Boldingh 1219, st. June).