

Phyllanthus amarus Schumach. & Thonn.

Standardized Common Name: *Phyllanthus amarus*

Other Common Name: Carry-me-seed

Family: Euphorbiaceae

Taxonomy: *Phyllanthus* is an enormously complicated genus, with at least 800 species, found in tropical and subtropical habitats worldwide, that range from small herbs to large trees. These are classified into numerous sections and subsections. Many subgroups and geographic areas have been inadequately studied, and the characters that distinguish species are often tiny, as the flowers are highly reduced. Most species share a derived form of branching (described below) in which short side branches with simple leaves appear very much like pinnately compound leaves. *Phyllanthus amarus* belongs to Section *Phyllanthus*, Subsection *Swartziani*; it is a cosmopolitan tropical weed.

Description: Erect annual herb, 10–50 cm high. Leaves alternate, stipulate, displaying phyllanthoid branching: leaves on main stem reduced to acuminate scales <2 mm long, secondary branchlets deciduous, extending at right angles, with regularly spaced distichous simple leaves, the whole resembling a pinnately compound leaf with flowers borne in apparent “leaflet axils.” Branchlets 4–12 cm long. Leaves 15–30 per branchlet, 5–11 mm long, elliptic to somewhat obovate; base obtuse or rounded, sometimes slightly oblique; apex obtuse or rounded, sometimes apiculate; margins entire; upper surface green with raised midrib, lower surface pale with prominent midrib and secondary veins. Inflorescences 1–2-flowered, axillary on secondary branchlets; flowers unisexual; the first 1–2 proximal axils of each branchlet with 1–2 male flowers, other fertile axils with 1 male and 1 female flower. Male flowers with pedicels to 1.3 mm long; calyx lobes 5(–6), ovate, acute, 0.3–0.6 mm long; floral disk inside calyx consisting of 5 rounded segments ca. 0.1 mm across; stamens 3 (2), filaments fused into column, 0.2–0.3 mm high. Female flowers with pedicels 0.6–2 mm long; calyx lobes 5(–6), obovate-oblong, to 1.1 mm long, with pale margins; floral disk inside calyx 5(–7)-lobed; ovary smooth; styles 3, free, 0.1 mm long, minutely bifid. Fruit a flattened spherical capsule, 3-loculed, 1.9–2.1 mm broad; seeds usually 2 per locule, 1 mm long, light brown, triangular, with 5–7 longitudinal ribs and with fine lines on back.

Parts in Commerce: Whole herb

Identification:

Stems and leaves

- Phyllanthoid branching, with secondary branchlets resembling compound leaves; leaves on main stem reduced to scales
- Stems of branchlets not strongly angled or winged in cross-section

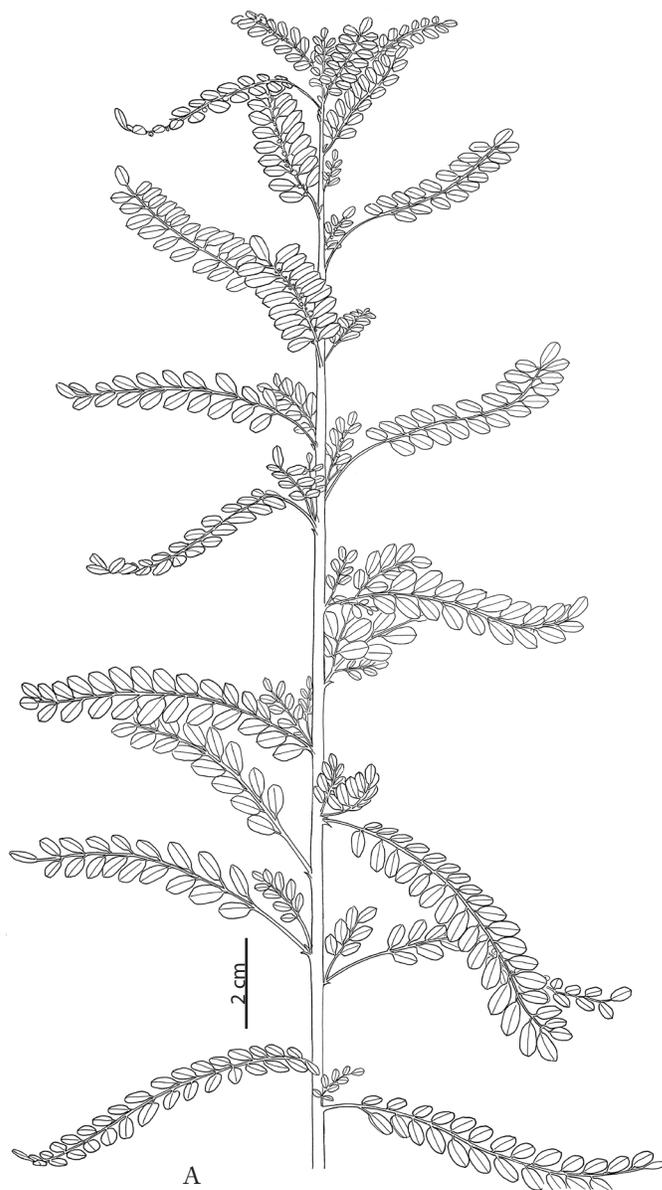


Figure 53: a, *Phyllanthus amarus* habit.

- Leaves on branchlets 15–30 per branch, elliptic-oblong to moderately obovate, 5–11 mm long
- Leaf bases rounded or obtuse, often slightly asymmetrical
- Leaf apices rounded or obtuse, often with small pointed tip
- Leaf margins entire
- Upper surface of leaf green, with midrib raised
- Lower surface of leaf pale, with midrib and secondary veins raised
- Taste bitter

Flowers and fruit

- Flowers minute, axillary; first two internodes of each branchlet bear single male flowers, remaining internodes bear one male and one female flower
- Calyx 5-parted, pale; lobes to 0.6 mm long in male flowers, 1.1 mm in female flowers, with acute apices, broad dry margins and green midribs
- Male flower with disk consisting of 5 round segments each 0.1 mm broad; stamens 3 (rarely 2), fused into a column 0.2–0.3 mm high
- Female flower with flat 5-lobed disk (rarely 6–7-lobed); ovary with 3 styles 0.1–0.15 mm long, erect, not fused
- Fruit a capsule, straw-colored, spherical, slightly flattened, about 2 mm in diameter, without conspicuous veins
- Seeds usually 2 per locule, triangular, light brown, to 1 mm long, with 5–6 parallel ribs on back and with inconspicuous transverse lines

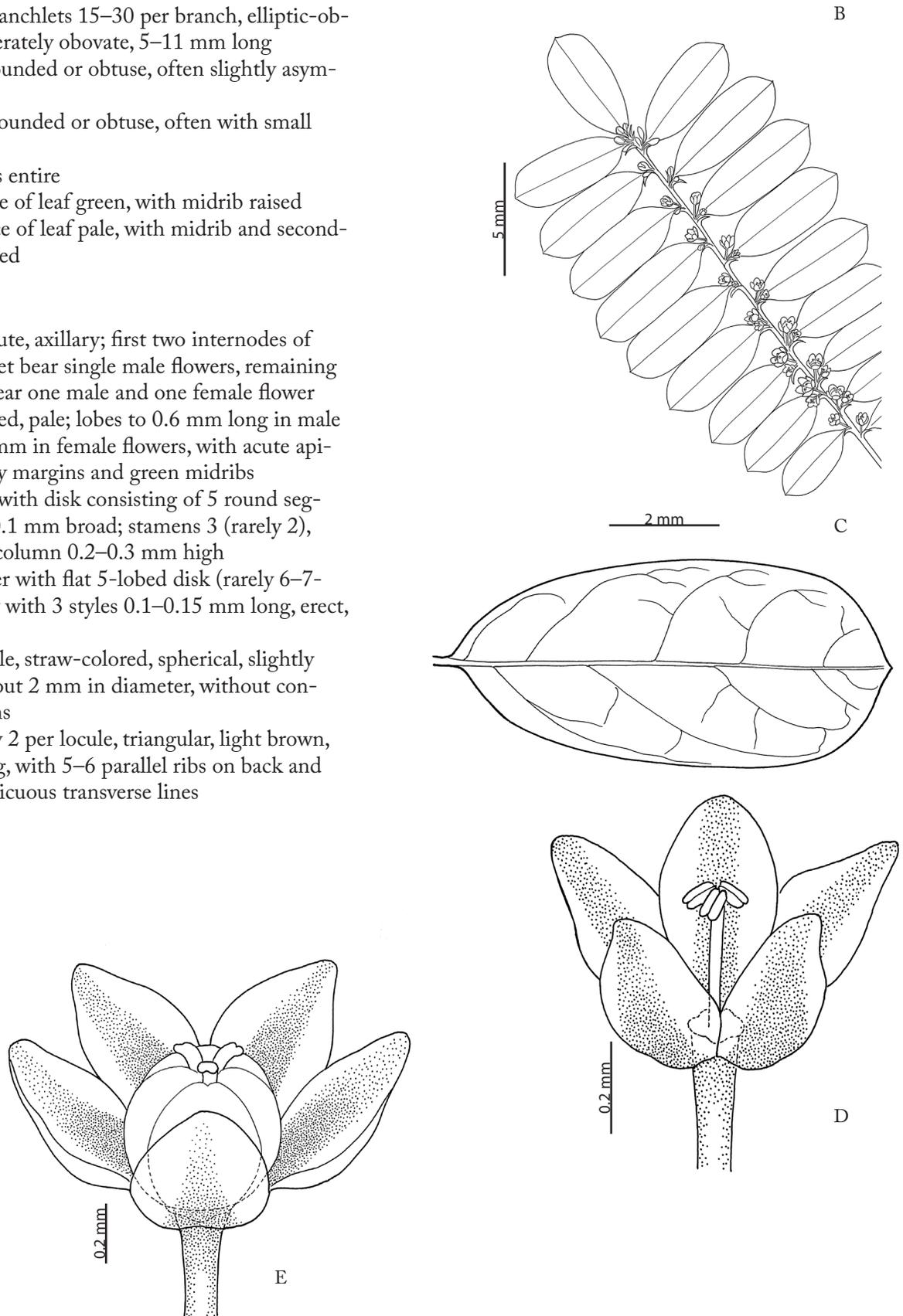


Figure 53: b–e, *P. amarus* branch, leaf, male flower, and female flower.

Adulterants: *P. amarus* is easily confused with other small weedy *Phyllanthus* species, some of which are used medicinally, including *P. fraternus* G. L. Webster (which is closely related), *P. niruri* L., and *P. urinaria* L. (see discussion of contaminants in the entry for these taxa). The North American endemic *P. abnormis* Baill. is also very closely related to *P. amarus* and would be a potential adulterant of material collected in the United States. It shares the unusual character of bisexual inflorescences, but its capsule is larger and the calyx of the male flower is 4-lobed. The most important features to observe in *P. amarus*, which together distinguish it from all of those species, include:

- Branchlets in cross-section not winged or sharply angled
- Most inflorescences consist of one male and one female flower
- Calyx with 5 acute lobes, not 4 or 6
- Styles not fused nor over 0.2 mm long

- Disk of female flower 5-lobed, flat; not an irregular cup shape nor angled
- Capsule <2.1 mm in diameter, without conspicuous veins or warts

Species such as *P. fraternus* and *P. urinaria* are also much less bitter-tasting than *P. amarus*.

References:

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Webster GL. A monographic study of the West Indian species of *Phyllanthus*. *J Arnold Arbor*. 1956–1958;37:91–122, 217–268, 340–359; 38:51–80, 170–198, 295–373; 39:49–100, 111–212.

Webster GL. A revision of *Phyllanthus* (Euphorbiaceae) in the continental United States. *Brittonia*. 1970;22:44–76.
