
Jaltomata grandiflora (Solanaceae): A Rare Mexican Species

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ABSTRACT. *Saracha grandiflora* is transferred to *Jaltomata* as *J. grandiflora*. The species appears to be rare: only three collections are known, all from the same locality. A closely related species of *Jaltomata*, *J. procumbens*, is undergoing progressive domestication in Mexico, and this species expands the representation of the genus in the region.

The generic concepts of *Saracha* Ruiz & Pavón and *Jaltomata* Schldl. have long been confused, and although recent workers (Gentry, 1973; Davis, 1980) have clarified the separation of the two groups, some species that were described as *Saracha* remain to be transferred to *Jaltomata*. This paper makes one such transfer.

Our interest in this species stems from seed collected (Davis 1114) from Mexico that has been grown and propagated over several years. The earliest name we found for the species is now in *Saracha* and not in *Jaltomata*, where it should be placed. Because the species is hitherto unknown except for the brief original description, we provide an illustration and an amplified description made from our cultivated plants and the holotype.

Jaltomata grandiflora (Robinson & Greenmann)

D'Arcy, Mione & Davis, comb. nov. Basionym: *Saracha grandiflora* Robinson & Greenmann, Amer. J. Sci., ser. 3. 161. 1895. TYPE: Mexico. Michoacán: hills near Patzcuaro, 22 July 1892, Pringle 5273 (GH). Figure 1.

Sprawling perennial herb to 1 m long, the ultimate branchlets ascending, growth often plagiotropic and the stems appearing somewhat zigzagged; rootstock large (14 cm long × 3 cm wide or larger) and starchy; pubescence white, erect, simple, multicellular hairs, these sometimes exuding minute clear droplets (glandular). Stems subterete or somewhat

pentagonal, drying angled, sometimes with reddish longitudinal stripes, weak, becoming stout, the pith large, becoming hollow with age, villous-velutinous with persistent, erect, weak, whitish, sometimes glandular hairs ca. 1 mm long and occasional hairs to 2 mm long. Leaves alternate along the stems or subequal-paired in the flowering regions, the nodes mostly 1–5 cm apart; lamina ovate, mostly 4–8(–12) cm long, 3–5(–8) cm wide, apically broadly acute or obtuse, basally short-cuneate and winging the distal portion of the stems, the margins entire or 2–3 sinuate-lobed on each side, softly membranous, major veins ca. 5 on each side, slightly arcuate, bifurcating near the margins into one trace leading into a lobe, and another looping and anastomosing to form a weak, undulating submarginal vein, the venation pellucid, above fine and slightly impressed, beneath thick, elevated, and conspicuously white-strigulose, villous overall with weak erect hairs, more densely so proximally and above, ciliate, slightly discolorous, slightly shiny above, drying paler beneath; petioles 1–2.5(–5) cm long, longer and sometimes reddish beneath in age, flattened above, evenly pubescent. Inflorescences racemose, arising in the axils of a pair of leaves near the branch tips; (1–)2(–3)-flowered; peduncles terete, green, evenly pubescent, ca. 8 mm long; pedicels resembling the peduncles but slightly thinner, mostly 12–15 mm long, expanded slightly upward, hardly accrescent. Flowers all perfect, buds turbinoid, becoming flat-topped, prominently 5-angled; calyx green, 10–15 mm across, membranaceous, lobed about halfway, the lobes deltoid-obtuse, soon porrect, keeled, minutely puberulent inside, villous outside; corolla rotate, yellowish white with green maculae forming a star occupying the central ¼–½ of the limb, pentagonal, 25 mm across, pubescent on the veins outside and near the center within, ciliate, the costae evident, fine, elevated outside, the lobes deltoid-acute; sta-

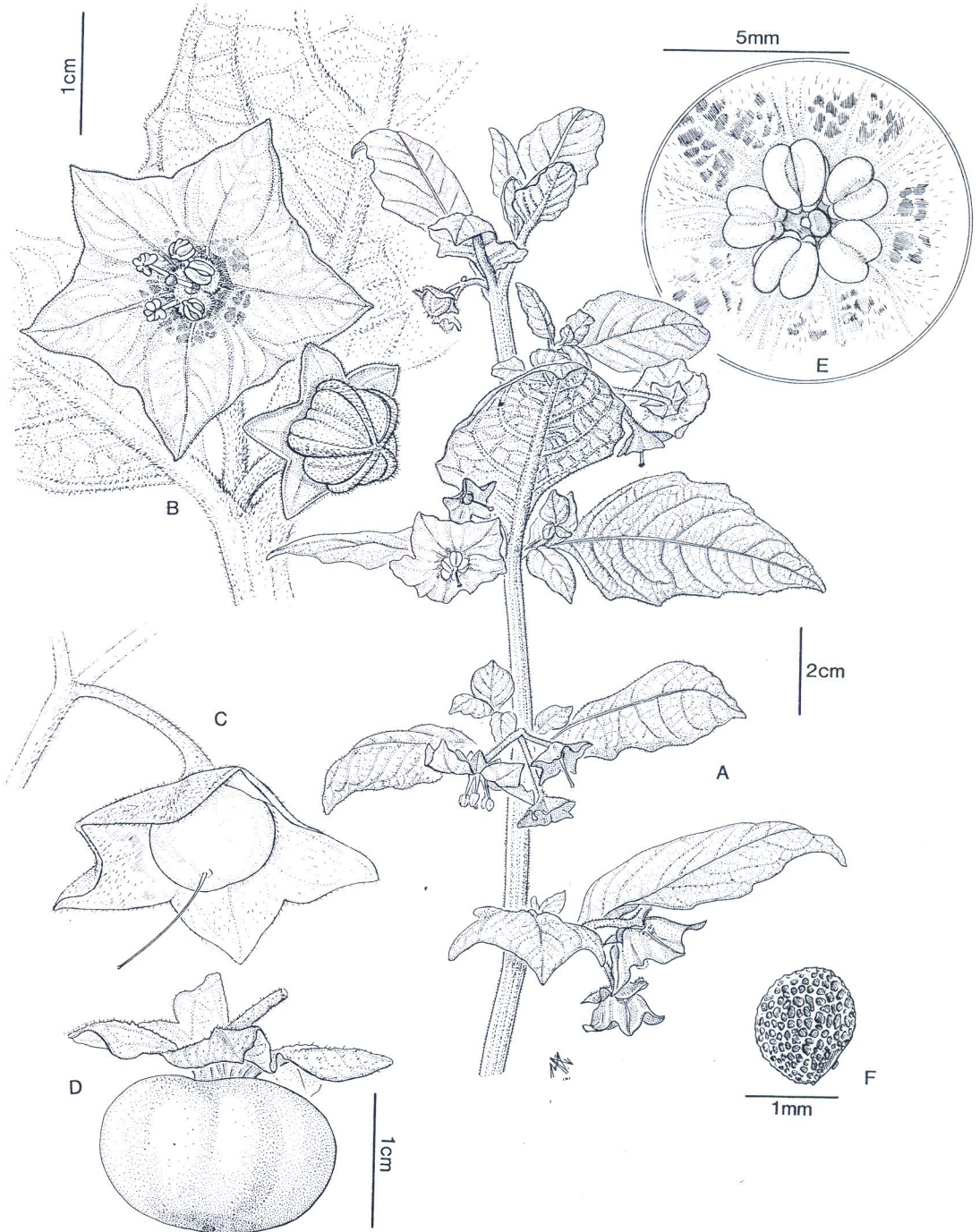


Figure 1. *Jaltomata grandiflora* (Robinson & Greenmann) D'Arcy, Mione & Davis. —A. Habit. —B. Flower and flower bud. —C. Young fruit. —D. Mature fruit. —E. Androecium and corolla pattern. —F. Seed. (All after D'Arcy 17749, MO.)

mens subequal, anthers yellow, ovoid, 3–3.5 mm long before dehiscence (2 mm after) and lobed ca. 1 mm below the connective, ventrifixed near the base of the connective, deeply creased on the dorsal side and along the stoma, not apiculate, filaments white, erect, subulate, apically glabrous, basally tufted, ca. 7 mm long; pollen yellow; disk pale yellow or orange, surrounding the basal half of the ovary and immersed beneath the corolla tube and filament bases; ovary green, hemispherical, style ca. 7 mm long, glabrous, stigma dark green, hemispherical, 1 mm across, situated among the anthers; ovules ca. 200. Berry black, juicy, depressed globose, 9.2–12 × 14–18 mm across; fruiting calyx persect, becoming brownish; seeds ca. 90. Chromosomes (mitotic) $2n = 24$.

Additional material examined. MEXICO. MICHOACAN: near Km 35 on route 120 to Santa Clara from Patzcuaro in old pine-oak forest, 2,004 m, 24–25 July 1977 (in bud), *Davis 776* (MO); Patzcuaro area ca. 1 mi. past microwave tower, 1.8 mi. past Los Tanques pueblo, 3 July 1982 (st), *Davis 1114* (MO); progeny of seed from *Davis 1114* grown at Missouri Botanical Garden, *D'Arcy 17749* (MO); grown at University of Connecticut, *Mione 454* (COLO, CONN, MEXU).

Jaltomata grandiflora is known only from three collections made in the Patzcuaro region of central Michoacán, which is about halfway between Morelia and Uruapan, 19°30'N, 101°35'W. The region is of Quaternary and Tertiary extrusive exposures (Atlas Nacional del Medio Físico, 1981: 145).

As more material is grown, duplicates will be distributed to other institutions.

In cultivation, the species appears to tolerate a limited temperature range, 18°–23°C. At lower and higher temperatures, growth declines and plants decrease in size, flower buds fail to appear, and buds already present fail to develop into flowers. This narrow temperature tolerance may partly account for the limited distribution of the species in nature, although many other species have similar temperature requirements. For plants in our North American greenhouses, this means blooming is restricted to a few weeks in spring and autumn. Flowering plants were found in nature in July and August.

Jaltomata grandiflora is easily distinguished from other members of the genus by its velutinous, soft

leaves and stems, and by its large, pentagonal, spotted flowers. Although minute droplets can be seen at the tips of many of the hairs of the indumentum, the plants are not viscid. The markings on the corolla, green against a yellowish white background, are a series of spots arranged in a star, resembling the markings in *Leucophysalis grandiflora* (Hook.) Rydberg, *L. viscosa* (Schrader) Hunz, *Physalis franchetii* Masters, *P. greenmannii* Waterfall, and *P. stapelioides* (Regel) Bitter. These species are all members of the physaloid group (subtribe Physalidinae Miers) of Solanaceae, which includes about a dozen genera centered in northern Mexico (*Chamaesaracha*, *Jaltomata*, *Margaranthus*, *Physalis*, *Quincula*) but is also represented in temperate Asia (*Physaliastrum*, *Physalis*) and in tropical America (*Deprea*). Corollas of most other members of the group are either unmarked or the maculae are in solid blotches. The spotted corolla of *Jaltomata grandiflora* is shown in Figure 1E, and that of *Leucophysalis grandiflora* is illustrated by D'Arcy et al. (1990). Another unusual feature is the rootstock, which one collector (Davis) recorded as "Wow! what a large rootstock!" Such enlarged roots may be otherwise unknown in the physaloid group of genera.

Jaltomata grandiflora, based on our analysis of morphological similarity (including fruit color) and chloroplast DNA characters, is clearly a member of the herbaceous, black/purple fruited clade (one of two major clades of *Jaltomata*). This species, based on cpDNA characters, is basal; it is the sister taxon to all other species of the black/purple fruited clade.

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Literature Cited

- Atlas Nacional del Medio Físico. 1981. Secretaría de programación y presupuesto. Mexico, D.F.
- D'Arcy, W. G., K. Pickett & R. C. Keating. 1990. Investigation into *Leucophysalis grandiflora*. Wildflower, Fall/Winter 1990: 21–26.
- Davis, T., IV. 1980. The generic relationship of *Saracha* and *Jaltomata* (Solanaceae: Solaneae). *Rhodora* 82: 345–352.
- Gentry, J. L. 1973. Restoration of *Jaltomata* (Solanaceae). *Phytologia* 27: 286–288.