Abstract. Jaltomata sagastegui and J. cajamarca, both of Peru, Dept. Cajamarca, Prov. Contumazá, are described and shown in photographs. Jaltomata sagastegui is self-compatible and has a chromosome number of \( n = 12 \); the type was collected at 2500 m elevation. Jaltomata cajamarca grows between 1700 m and 2600 m elevation. Berries of both species are eaten by humans.

Jaltomata Schlechtendal (including Hebecladus Miers) is a diverse genus of about 30 species of herbs and small shrubs that are widely distributed, from Arizona, U.S.A., to southern Bolivia, the Galápagos Islands, and the Greater Antilles. This paper is part of an ongoing series of studies of the systematics of this genus (D'Arcy et al., 1992; Davis, 1986; Davis & Bye, 1982; Knapp et al., 1991; Mione, 1992; Mione & Coe, 1992; Mione et al., 1993; Mione et al., 1994; Mione & Bye, 1996).

After careful study of taxonomic literature, herbarium specimens, and living plants of some 20 Jaltomata species, we recognize J. sagastegui and J. cajamarca as new species. In a study of phylogeny based on chloroplast DNA characters, these two species formed a monophyletic group within an otherwise unresolved lineage of Jaltomata species of South America and the Greater Antilles (Mione et al., 1994).

Methods

Part of our approach has been to grow plants of as many accessions of Jaltomata as possible. For this study seeds were collected in the field when plants were pressed, and were kindly sent to T.M. by A. Sagástegui A. and M. O. Dillon (F). Plants were raised and studied in the greenhouse at the University of Connecticut, Storrs, and herbarium specimens of these plants were deposited at CONN. For each seed accession, we compared the morphology of field-collected herbarium specimens with greenhouse-grown living and herbarium specimens. This provided some understanding of the range of phenotypes possible from one accession, and allowed us to compare the three-dimensional corolla shape of living plants with the corolla as it appears when pressed at various angles. Specimens raised from seed always appeared conspecific with the field-collected specimen from which seeds were collected. Living plants of J. sagastegui were also used to assess stigma compatibility, and to obtain chromosome counts from meiocytes of immature anthers stained with acetic carmine.

Hair morphology was studied, and hairs were measured with wet mounts (including leaf cross sections) and toluidine blue stain. The indicated number of flowers per inflorescence includes open flowers and flower buds. Calyces of Jaltomata are accrescent, and the calyx was therefore measured separately at anthesis and at fruiting. Calyx lobe radius and calyx sinus radius were measured from the point of attachment of the pedicel. Corolla diameter was measured as the distance between the tip of a randomly chosen corolla lobe and another on the opposite side of the corolla, without flattening the corolla of living plants. Stamen length includes the anther. Pollen grain diameter was measured with a compound microscope after staining pollen 30 minutes in "cotton blue" stain. Stigma diameter was measured both on living material, by orienting the style vertically (stigma up) under a dissecting microscope, and on specimens pressed from greenhouse-grown plants. Style length includes the stigma. Calyx lobe radius and calyx sinus radius at fruiting were measured either from the point of attachment of the mature fruit or the center of the pedicel. Fruits, nearly spherical berries, were measured on isotypes for both species, and on living specimens for J. sagastegui. The descriptions are based primarily on greenhouse-grown

Jaltomata sagastegui and Jaltomata cajamarca (Solanaceae), Two New Shrubs from Northern Peru

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plants (from seeds of the type collections), but are also based on the isotypes where noted.

**Jaltomata sagastegui** Mione, sp. nov. TYPE: Peru. Dept. Cajamarca, Prov. Contumazá: “alrededores de Guzmango, 2,500 m, ladera con arbustos, 9 Junio 1990,” A. Sagástegui A. 14389 (holotype, F; isotypes, CONN, Mione herbarium). Figure 1.

Corolla tubulosa-brevis cum limbo rotato, limbus quinquelandus; stamina non exserta a corollae tubo; stylus 3.5—5 mm longus; calyx parvus fructifer, lobi radius ad 4.5 mm, sinus radius ad 3 mm.

Branching shrub to 1 m. Younger stems somewhat 4- or 5-sided, woody stems (brown) terete and hollow. Hairs of young stems dendritic, rarely forked or of the finger type, to 0.4 mm long. Leaves often geminate; ovate (Fig. 1a), the apex sometimes acuminate, margin entire or repand; 3.2—14 cm long, 1—6.5 cm wide; adaxially and abaxially tomentulose with interspersed dendritic and finger hairs 0.04—0.22 mm long. Inflorescence to 12-flowered; sometimes branched. Peduncles 9.5—28 mm long, longer than attached pedicels; green; straight (Fig. 1b); ligneous at fruiting; pedicels 4.5—7 mm long. Calyx at anthesis green; 5.1—6.5 mm diam.; lobe radius 2.6 mm; sinus radius 1.2 mm; abaxially tomentose with a dense covering of branched hairs (Fig. 1b); lobes reflexed. Corolla short-tubular with a rotate limb; the limb with 5 lobes alternating with 5 inconspicuous to absent lobules (Fig. 1a); white with two purple ovate maculae straddling the main vein to each corolla lobe; limb 11—14 mm diam.; tube 4—5 mm long and 4.5—5 mm diam. Stamens 3.2—3.4 mm long, not exserted beyond mouth of corolla tube (Fig. 1a). Filaments with finger hairs along basal 40—50%, the hairs to 0.5 mm long. Anthers, undehisced 1.6—2.0 × 1.3—1.5 mm. Pollen grains 75,000—93,000 per flower, 25—30 μm diam. Stigma (arrow, Fig. 1a) diameter 0.33—0.6 mm. Style length 3.5—5.4 mm, exserting 1—3 mm beyond anthers (Fig. 1a). Ovules 56—87 per ovary. Fruits 5—8 mm across (Fig. 1c), yellow-orange (type), orange (greenhouse). Calyx (fruiting) small (Fig. 1c): lobe radius to 4.5 mm, sinus radius to 3 mm. Chromosome number n = 12.

**Jaltomata sagastegui**, now known only from the type, is distributed at least in northern Peru, Dept. Cajamarca, prov. Contumazá. The type, collected in June, bears fruits. The herbarium label indicates that the fruits are eaten, and the local name is “canamuela.” The specific epithet was chosen to honor the eminent Peruvian botanist Abundio Sagástegui Alva.
Table 1. Comparison of some characters of *Jaltomata sagastegui* and *J. cajamarca*.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>J. sagastegui</em></th>
<th><em>J. cajamarca</em></th>
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<tbody>
<tr>
<td>Young stem shape</td>
<td>somewhat 4 or 5-sided</td>
<td>4 or 5 projecting longitudinal ridges</td>
</tr>
<tr>
<td>Maximum hair length on young stems</td>
<td>0.4 mm</td>
<td>2.2 mm</td>
</tr>
<tr>
<td>Leaf margin</td>
<td>never toothed</td>
<td>sometimes toothed</td>
</tr>
<tr>
<td>Corolla lobules (alternate with 5 prominent lobes)</td>
<td>inconspicuous to absent</td>
<td>prominent</td>
</tr>
<tr>
<td>Stamen length</td>
<td>3.2–3.4 mm</td>
<td>3.4–5.9 mm</td>
</tr>
<tr>
<td>Stamens exserted beyond corolla tube</td>
<td>no</td>
<td>1–4 mm</td>
</tr>
<tr>
<td>Hairs borne along length of filament</td>
<td>40–50%</td>
<td>45–90%</td>
</tr>
<tr>
<td>Style length</td>
<td>3.5–5.4 mm</td>
<td>5.5–11 mm</td>
</tr>
<tr>
<td>Stigma diameter</td>
<td>0.33–0.6 mm</td>
<td>0.33–1.06 mm</td>
</tr>
</tbody>
</table>

Although similar, *Jaltomata sagastegui* and *J. cajamarca* are easily distinguished (Table 1). Both are superficially similar to *J. propinqua* (Miers) Mione & M. Nee of Peru, Dept. Lima, with which they share a short tubular corolla with a rotate limb. *Jaltomata propinqua*, however, has gland-tipped hairs and a style approximately twice the length of the stamens, while *J. sagastegui* and *J. cajamarca* essentially lack gland-tipped hairs, and their styles extend at most a few millimeters beyond the stamens. To our knowledge, no other *Jaltomata* species have a short-tubular corolla and a broad limb.

Reproductive biology. *Jaltomata sagastegui* (grown as T.M. accession 536) is self-compatible; fruits were usually set following manual self-pollination and were occasionally set in a pollinator-free greenhouse. When ripe fruits were manually removed articulation was at the base of the pedicel. *Jaltomata cajamarca* (grown as T.M. accession 537) did not set fruit following six manual self-pollinations, nor were fruits set from six interplant pollinations involving three different plants from seeds of the type collection. It is possible that this lack of fruit-set was due to suboptimal growing conditions. Thus, at this time no conclusion can be made about stigma compatibility of *J. cajamarca*. All other *Jaltomata* species (16) assessed to date are self-compatible. Crosses between *J. sagastegui* and *J. cajamarca* were not attempted, nor were other interspecific crosses involving these species.

Most *Jaltomata* species assessed to date are protogynous, with anthesis occurring early in the morning and anthers remaining undehisced during that day (Mione, 1992). *Jaltomata sagastegui* lacks protogyne. Observations made in early April 1992 indicated that all anthers dehisced prior to 8:00 a.m. on the day of anthesis. Although several *Jaltomata* species of Peru and Bolivia produce copious, bright red/orange nectar at the base of translucent corollas, *J. sagastegui* and *J. cajamarca* have neither of these features (Figs. 1, 2). Flowers of all Mesoamerican species of *Jaltomata* close at dusk for the night, while flowers of *J. sagastegui*, *J. cajamarca*, and many, but not all, of the other South American species remain open at night (Mione, 1992).

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Literature Cited


