
Aechmea novoae (Bromeliaceae, Bromelioideae), a Novelty from the State of Jalisco, Mexico

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ABSTRACT. *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo, an epiphytic species distributed in the municipalities of Cabo Corrientes, La Huerta, and Puerto Vallarta in the state of Jalisco, Mexico, is described and illustrated. Morphologically, the new taxon resembles *A. mexicana* Baker and *A. lueddemanniana* (K. Koch) Brongn. ex Mez. A comparative table, figures, and a distribution map of the three species are included.

RESUMEN. Se describe e ilustra *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo, especie epífita que se distribuye en los municipios de Cabo Corrientes, La Huerta y Puerto Vallarta, en el estado de Jalisco, México. El nuevo taxon se parece morfológicamente a *A. mexicana* Baker y a *A. lueddemanniana* (K. Koch) Brongn. ex Mez. Se incluye una tabla comparativa, figuras y un mapa de distribución de las tres especies.

Key words: *Aechmea*, Bromeliaceae, Cabo Corrientes, epiphytes, La Huerta, Mexico.

As a result of botanical explorations in the vicinity of Las Juntas y Los Veranos in the municipality of Cabo Corrientes, Jalisco, Mexico, in the course of the first author's master's thesis project, material in fruit of a species of *Aechmea* Ruiz & Pav. (Bromeliaceae, Bromelioideae) was collected. It was originally identified as *A. mexicana* Baker. However, a detailed examination of herbarium material, as well as the study of a flowering specimen of a cultivated plant from Jalisco, revealed that it is an undescribed species.

MATERIALS AND METHODS

Material was collected following the guidelines of Aguirre León (1986); the specimens were deposited at Herbario Metropolitano (UAMIZ), Universidad Autónoma Metropolitana. Around 80 herbarium sheets of *Aechmea*

mexicana and ca. 74 herbarium sheets of *A. lueddemanniana* (K. Koch) Brongn. ex Mez (Appendix 1) from the following herbaria were reviewed: CHIP, CIB, CICY, CORU, ENCB, GH, HEM, IBUG, IEB, K, MEXU, MICH, MO, SERO, UAMIZ, UC, US, and XAL (acronyms according to Thiers, 2020+). Specimens and type images from HAL, K, and UC were also studied. Morphological analyses of the leaves and flowers were made with a standard stereoscope. The description of morphological characters follows Brown and Terry (1992) and Scharf and Gouda (2008).

TAXONOMIC TREATMENT

Aechmea novoae Flores-Arg., López-Ferr. & Espejo, sp. nov. TYPE: Mexico. Jalisco: municipio de Cabo Corrientes, ejido Las Juntas y Los Veranos, santuario las Guacamayas, 20°25'58.8"N, 105°18'55.8"W, 600 m.s.l., bosque tropical subcaducifolio, 23 Mar. 2018 (st.), cultivated and pressed 28 Oct. 2019 (fl.), A. Flores-Argüelles, A. Espejo, A. R. López-Ferrari, R. Hernández-Cárdenas & I. N. Gomez-Escamilla 987 (holotype, UAMIZ!; isotype, IBUG!). Figure 1B–G.

Diagnosis. *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo differs from *A. mexicana* Baker by its longer leaf sheaths and blades and cylindrical, sparsely white-lepidote inflorescence (vs. conical, densely white-lepidote), with shorter primary branches and fewer flowers per branch.

Herbs perennial, epiphytic, rarely lithophytic, in flower up to 1.1 m high from the base of the rosette to the apex of the inflorescence. Rosettes solitary, tank-type, forming an inverted straight cone up to 1.7 m diam. Stem rhizomatous, appressed to the phorophyte, 5–6 cm diam. and up to 60 cm long. Roots fibrous, thin. Leaves numerous, 60–160 cm; leaf sheath straw-colored or light brown, elliptic, 21–37 × 13–19.5 cm, entire, densely brownish punctulate lepidote adaxially, sparsely lepidote abaxially; blade green, the lower ones reflexed and

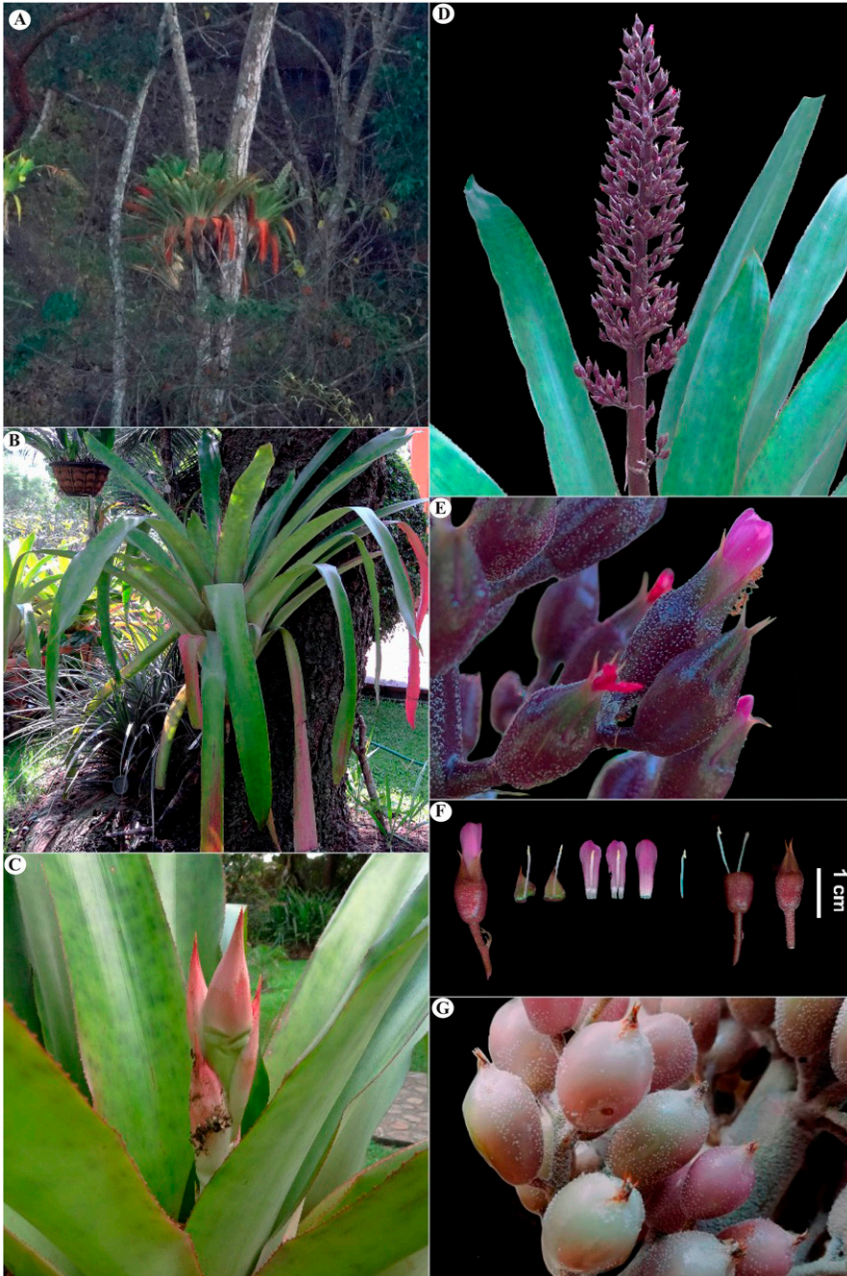


Figure 1. *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo. —A. Habit. —B. Plant. —C. Young inflorescence. —D. Mature inflorescence. —E. Inflorescence detail. —F. Dissected flower. —G. Fruits. A based on a photo by A. Espejo-Serna without specimen; B–G based on *A. Flores-Argüelles et al.* 987 (UAMIZ). Photos: A. Espejo-Serna.

red at the distal portion, strap-shaped, 40–122 × 9–13.5 cm, coriaceous, sparsely white-lepidote adaxially, densely white-lepidote abaxially, acuminate, margin spinose-serrate, the spines antrorse, 0.8–2.1 mm. Inflorescence terminal, dark purple, erect, paniculiform, 2 or 3 times branched, cylindrical, 70–80 cm,

ca. 8 cm diam., very sparsely white-lepidote; peduncle erect, cylindrical, 35–40 cm, ca. 2 cm diam.; peduncle bracts red when young, foliaceous, longer than the internodes, the sheaths of the basal ones elliptic, the apical ones narrowly elliptic, 8.1–13 × 1.7–4.4 cm, glabrous, the blades triangular, 1.3–6 × 0.4–2 cm,

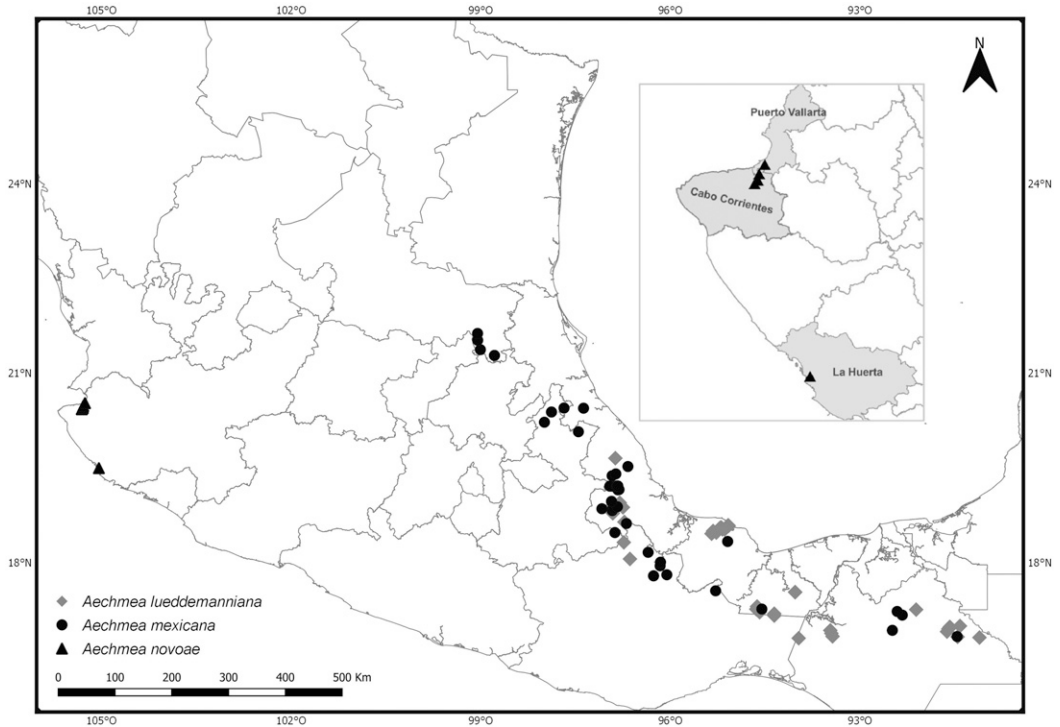


Figure 2. Distribution map of *Aechmea*. —● *Aechmea mexicana* Baker. —▲ *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo. —◆ *Aechmea lueddemanniana* (K. Koch) Brongn. ex Mez.

entire, acuminate and pungent at the apex, lepidote on both sides; branches divaricate to ascending, the basal ones 5–6.5 cm and conspicuously branched, the apical ones 3–4 cm, simple or few-branched; basal primary bracts similar to those of the peduncle, deciduous, the blades ca. 5.8 × ca. 1.6 cm, the apical ones pale brown, filiform, deciduous, 5.5–9 mm; floral bracts similar to equal to the upper primary bracts, 2.2–5 mm; flowers polystichous, ascending to erect, laxly disposed, 2 to 16 per branch, pedicellate; pedicels longer than floral bracts, 2.6–7.7 mm, sparsely white-lepidote. Flowers with sepals connate at the base forming a hypanthium with the ovary, free in the apical portion, asymmetric, with a hyaline wing at the right side, purplish brown, 6.6–10.4 × 3.5–5.5 mm, fleshy, strongly appressed to the corolla, apiculate, the apicule pale brown, 2–4 mm, persistent in fruit; petals free, lilac to magenta, oblong to oblong-spathulate, 13–16 × 3–4.5 mm, rounded at the apex, bearing a pair of saclike basal appendages on the adaxial surface formed by 2 lateral folds and 2 fimbriate ligules, 1.5 mm; stamens equal, shorter than petals, filaments white, 2.3–7.8 mm, 3 adnate basally to the petals, anthers yellow, oblong, 1.2–2 mm; ovary oblong to obconic, 8.7–10 mm, ca. 6.2 mm diam., style filiform, 8–10 mm, stigma simple, erect. Fruit a berry, pale green when young, pale rose to whitish when mature, obovoid,

ca. 20 mm, 5.8–8.4 mm diam.; seeds dark brown, fusiform, curved, 2–2.6 mm.

Distribution and habitat. *Aechmea novoae* is known at this time from the municipalities of Cabo Corrientes, La Huerta, and Puerto Vallarta, Jalisco, Mexico (Fig. 2), growing as epiphyte in tropical subdeciduous forests and gallery forests, at 100–600 m elevation.

Phenology. This species flowers from September to January, fruiting from November to March.

Etymology. The specific epithet honors Jorge Heriberto Novoa-Ramos, a dear friend who has made great efforts for the conservation of santuario Las Guacamayas in Cabo Corrientes Municipality. Jorge guided and helped during the fieldwork of the first author's thesis project.

Notes. *Aechmea novoae* was for a long time confused with *A. mexicana* (Magaña R., 1986; McVaugh, 1989; Vázquez-García et al., 2000; Espejo-Serna et al., 2004; Ramírez Delgadillo et al., 2010), a species that it closely resembles morphologically. However, it differs by its longer leaves (sheaths and blades), and by its cylindrical, sparsely white-lepidote inflorescence (Figs. 1, 3; Table 1). Magaña (1986) included *A. novoae* under the name of *A. mexicana* in her thesis about the Bromeliaceae

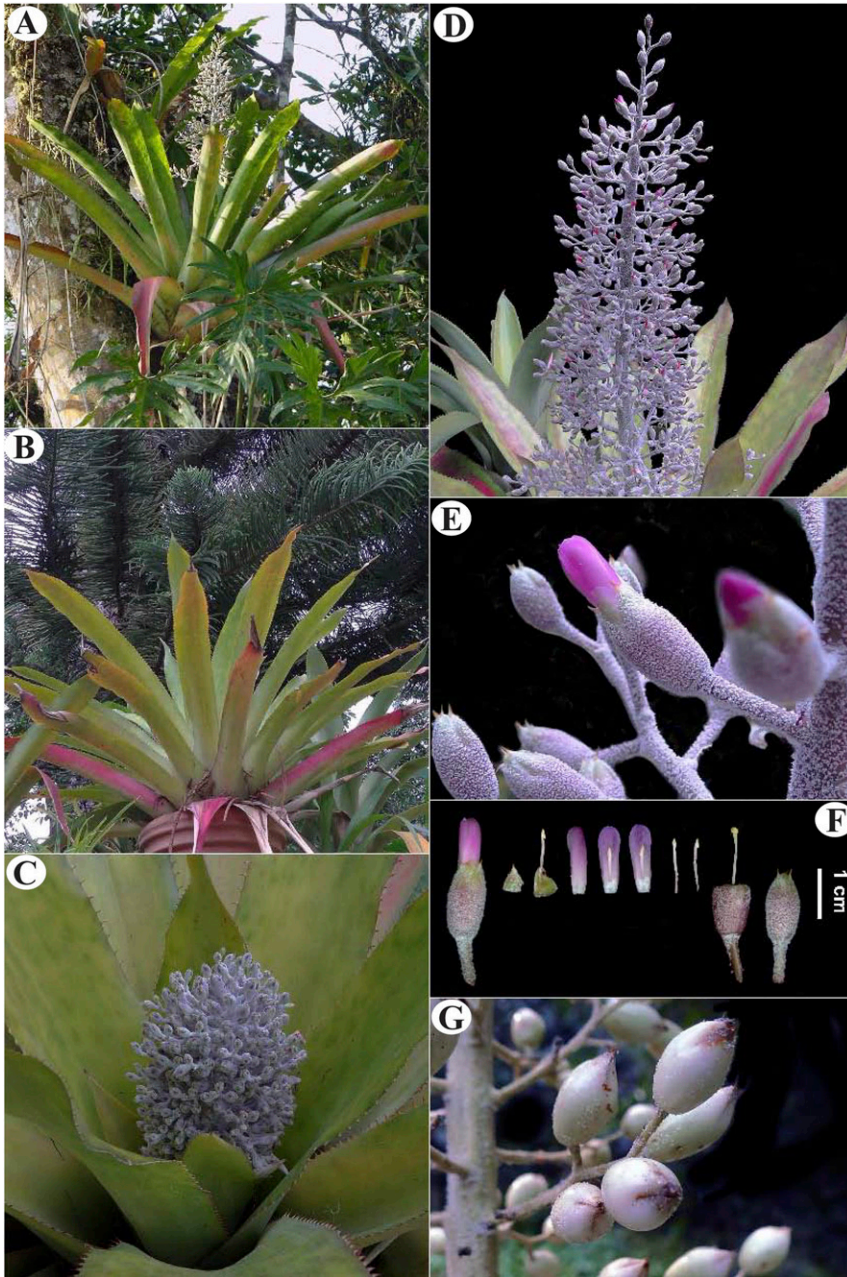


Figure 3. *Aechmea mexicana* Baker. —A. Habit. —B. Plant. —C. Young inflorescence. —D. Mature inflorescence. —E. Inflorescence detail. —F. Flower dissected. —G. Fruits. Based on *M. Miguel-Vázquez et al.* 258 (UAMIZ). Photos: A. Espejo-Serna.

of the Coast of Jalisco, describing it as a plant with narrow inflorescences, 7 cm wide (diameter) with basal branches 4–5 cm long. Later, McVaugh (1989), in *Flora Novo-Galiciana*, refers to Magaña's work, indicating also that plants from Jalisco have inflorescences with basal branches up to 4–5 cm long, a characteristic

that clearly distinguishes these plants from *A. mexicana* whose basal branches reach 18.5 cm long. It is important to note that Magaña's description was based only on two fruiting specimens (*Magaña & Lott 45* and *Beutelspacher 38662*, see paratypes below).

Table 1. Comparative characteristics of *Aechmea novoae* Flores-Arg., López-Ferr. & Espejo, *A. mexicana* Baker, and *A. lueddemanniana* (K. Koch) Brongn. ex Mez.

	<i>A. novoae</i>	<i>A. mexicana</i>	<i>A. lueddemanniana</i>
Distribution (States of Mexico)	Jalisco	Chiapas, Oaxaca, Puebla, San Luis Potosí, and Veracruz	Chiapas, Oaxaca, and Veracruz
Foliar sheath size	21–37 × 13–19.5 cm	14–20 × 8–16 cm	6–10 × 5–6 cm
Foliar blade size	40–122 × 9–13.5 cm	54–100 × 5–16 cm	25–55 × 3.5–6.5 cm
Inflorescence form and length	cylindrical, 70–80 cm	conical, 80–90 cm	conical to cylindrical, 40–50 cm
Inflorescence color and indument	dark purple, very sparsely white-lepidote	green, densely white-lepidote	dark purple, sparsely white-lepidote
Peduncle bract color	reddish when young, brownish when mature	whitish when young, pale brown when mature	whitish when young, pale brown when mature
Length of basal branches of inflorescence	5–6.5 cm	15–18.5 cm	4–5 cm
Flowers per branch	2 to 16	5 to 56	3 to 6
Sepal color and size	purplish brown, 6.6–10.4 × 3.5–5.5 mm	green, 5.3–7.3 × 3.7–5.2 mm	purplish brown, 3–5 × 2–4 mm
Petal size	13–16 × 3–4.5 mm	13–14 × 5–5.5 mm	8–10 × 3–4 mm
Fruit color	pale green when young, pale rose to whitish when mature	green when young, whitish purple when mature	white when young, purple to black when mature
Fruit shape, size at maturity	obovoid, ca. 20 × 5.8–8.4 mm	ellipsoid, 15–17 × 7–8 mm	oblong, 11–15 × 3–7 mm

Aechmea novoae and *A. mexicana* belong to the subgenus *Podaechmea* Mez (1896), which was treated as a genus by Smith and Kress (1989, 1990). The third Mexican member of *Aechmea* subg. *Podaechmea* is *A. lueddemanniana* (Espejo-Serna & López-Ferrari, 1994), a taxon that shares with the other two species compound inflorescences, lepidote-pedicellate flowers, and basal petal appendages (Smith & Downs, 1979), but differs from both by its much smaller habit (Fig. 4, Table 1). *Aechmea novoae* also differs from both *A. lueddemanniana* and *A. mexicana* by its geographic distribution, Jalisco State in western Mexico, whereas the other two species are reported from Chiapas, Oaxaca, Puebla, San Luis Potosí, and Veracruz in the eastern slope of the country (Fig. 2).

Recently, based on molecular data, the *Androlepis* Alliance was proposed including *Aechmea* subg. *Podaechmea* among other taxa with different morphological characters (Sass & Specht, 2010; Ramírez-Díaz et al., 2019). As a member of *Aechmea* subg. *Podaechmea*, the new species here proposed obviously also belongs to the *Androlepis* Alliance.

With this finding, the number of Mexican *Aechmea* species increases to 10, three of them endemic to the country (Espejo-Serna et al., 2004; López-Ferrari et al., 2011; Espejo Serna, 2012).

Paratypes. MEXICO. **Jalisco:** municipio de Cabo Corrientes, ejido Las Juntas y Los Veranos, santuario las Guacamayas, 20°25'49.3"N, 105°18'59.54"W, 586 m.s.l., vegetación riparia, 24 Mar. 2019 (fr.), *J. Novoa-Ramos s.n.* (UAMIZ); 24 km al S de Puerto Vallarta, sobre la carretera a Barra de Navidad, cañada con selva mediana subcaducifolia, 18 Jan. 1985 (fr.), *P. Magaña & E. Lott 45* (MEXU 414700, 414701);

municipio de La Huerta, cerca de estación Chamela, 100 m.s.l., 5 Feb. 1975 (fr.), *C. Beutelspacher 38662* (MEXU 182308).

Photographic records. MEXICO. **Jalisco:** municipio de Cabo Corrientes, Las Juntas y Los Veranos, 20°28'53.61"N, 105°17'37.06"W, ca. 290 m.s.l., 22 Mar. 2018 (fr.), photo by *A. Espejo* (UAMIZ) (Fig. 1A); municipio de Puerto Vallarta, camino al Edén, 20°31'37.56"N, 105°15'59.76"W, 130 m.s.l., Jan. 2019 (fr.), photo by *Dante S. Figueroa* (UAMIZ).

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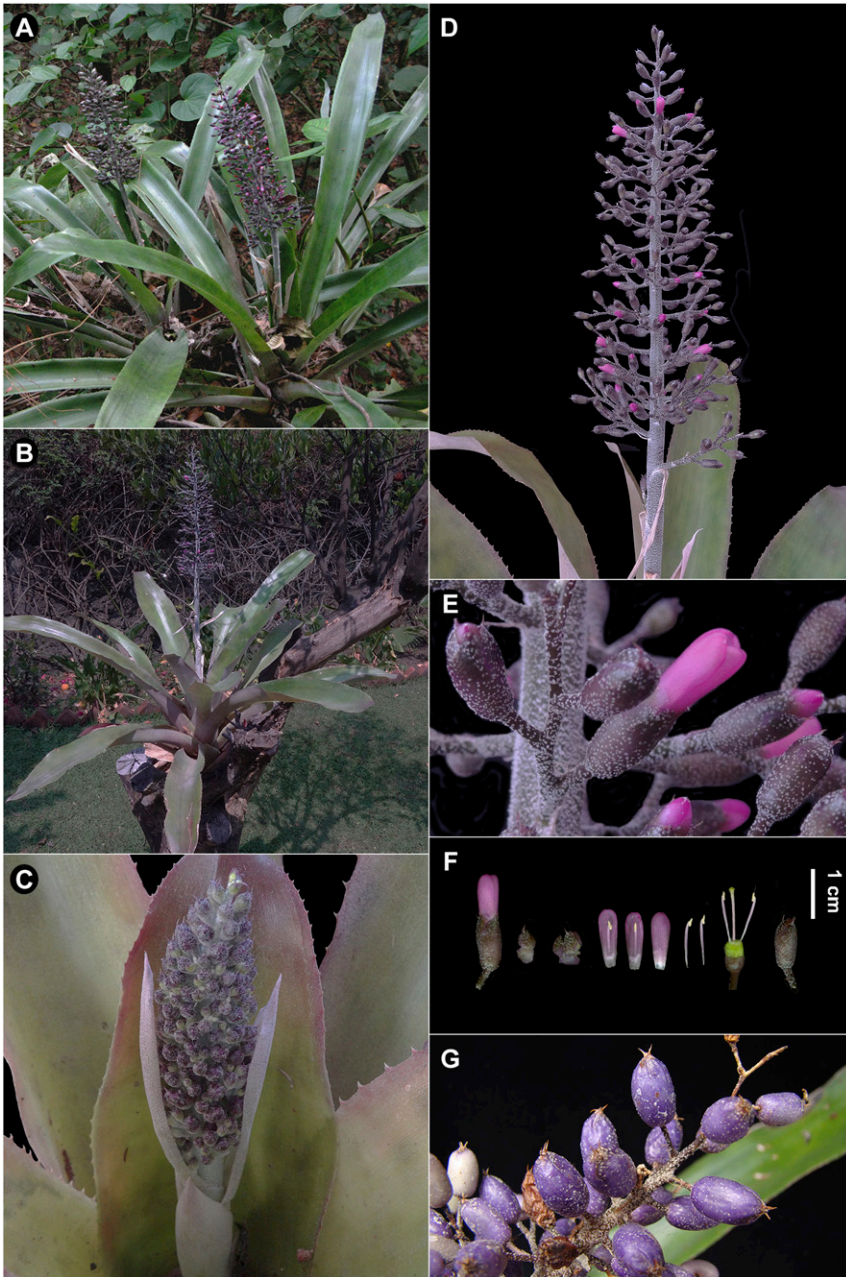


Figure 4. *Aechmea lueddemanniana* (K. Koch) Brongn. ex Mez. —A. Habit. —B. Plant. —C. Young inflorescence. —D. Mature inflorescence. —E. Inflorescence detail. —F. Flower dissected. —G. Fruits. Based on B. Pérez-García 1225 (UAMIZ). Photos: A, Aniceto Mendoza-Ruiz; B–G, A. Espejo-Serna.

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- Appendix 1. Specimens examined.
- Aechmea mexicana* Baker. MEXICO. **Chiapas:** D. E. Breedlove 29306 (ENCBx2, MO); D. E. Breedlove 33088 (MEXUx2); D. E. Breedlove 49919 (ENCB); D. E. Breedlove & A. R. Smith 22234 (ENCBx2). **Oaxaca:** A. García-Mendoza et al. 2917 (MEXU); G. Juárez G. & A. Martínez F. 840 (MEXU); G. Martínez Calderón 563 (GH); R. E. Schultes & B. P. Reko 550B (GHx2); R. Torres C. 12160 (MEXU); R. Torres C. & L. Cortés A. 11457 (MEXU); R. Torres C. & E. Martínez S. 10985 (IEB, MEXU). **Puebla:** F. Basurto & R. Patrón 406 (MEXUx2); H. Bravo H. 552 (MEXU); A. Campos V. et al. 36 (MEXU); M. Miguel-Vázquez et al. 258 (UAMIZx4); F. Miranda 3044 (MEXUx2); P. Tenorio L. et al. 12615 (MEXU). **San Luis Potosí:** J. B. Alcorn 2572 (MEXU); C. R. Beutelspacher B. 33 (MEXU); C. R. Beutelspacher B. s.n. (MEXUx4); R. Merrill King 4287 (MICH, US); J. Rzedowski 10154 (ENCB, MICHx2, USx2). **Veracruz:** E. Bourgeau 3106 (Kx2); H. Bravo H. 224 (MEXU); H. Bravo H. 225 (MEXU); G. Castillo C. 1281 (IEB, MEXU, XAL); C. Durán E. & S. Avendaño R. 1116 (XAL); A. Espejo et al. 7029 (UAMIZx2); I. Gómez Ponce de León & A. Velázquez M. 20 (CORUx2, XAL); I. Gómez Ponce de León & A. Velázquez M. 22 (CORU, XAL); I. Gómez Ponce de León & A. Velázquez M. 25 (CORU, XAL); L. Gutiérrez C. s.n. (CORU) [photo by M. Cházaro B., IBUG]; I. Kelly 224-A (US); J. K. Langman 3620 (USx2); A. Lot H. 1054 (GH, MO); V. E. Luna M. et al. 763 (MEXU, XAL); F. Miranda 4889 (MEXUx2); H. Oliva R. & S. Ramírez C. HOR-735 (CORU); C. A. Purpus 15371 (GH); C. A. Purpus 15379 (MICH, UC); F. Ramón F. et al. FRHF 221 (CORU, XAL); R. Robles G. 451 (XAL); P. E. Valdivia Q. 1568 (CICY); F. Ventura A. 3127 (ENCB). *Aechmea lueddemanniana* (K. Koch) Brongn. ex Mez. MEXICO. **Chiapas:** D. Álvarez & A. Chambor 4742 (MEXU); D. E. Breedlove 15682 (MICH); J. I. Calzada et al. 9688 (MEXU, XAL); G. Carnevali et al. 4401 (CICY); G. Davide et al. 20443 (MEXU, MO); A. Durán F. 1126 (HEM); A. Durán F. & S. Levy T. 141 (MEXUx2); O. Farrera S. 1815 (CHIP); N. Martínez-Meléndez 1294 (HEM); E. Martínez S. 17165 (MEXU); E. Martínez S. 17612 (MEXU); E. Martínez S. 17975 (MEXUx2); E. Martínez S. M-21255 (MEXU); E. Martínez S. M-21283 (MEXU); E. Martínez S. & M. A. Soto A. 18663 (MEXU, MO); E. Martínez S. & M. A. Soto A. 18738 (MEXU); H. E. Moore Jr. 2575 (GH, US); B. Pérez G. et al. 1225 (UAMIZ); F. Vázquez B. 927 (XAL). **Oaxaca:** E. Bravo & J. Gutiérrez 207 (UAMIZ); J. Rivera H. et al. 689 (SERO); J. Rivera H. et al. 1232 (MEXU, SEROx2); R. Torres C. et al. 853 (MEXU). **Veracruz:** R. Acevedo R. 122 (IEB, MEXU, XAL); R. Acevedo R. 892 (XAL); R. Acosta P. et al. 3049 (CIB); S. Avendaño R. & R. Sánchez 1237 (XAL); H. Bravo H. s.n. (US); C. R. Beutelspacher B. 2 (MEXU); R. Cedillo T. 3134 (MEXU, MO); Brigada Dorantes 2812 (CICY, MEXUx2, XAL); J. Dorantes S. 3230 (XALx2); A. Franco M. et al. 55 (XAL); A. Franco M. et al. 92 (XAL); G. Ibarra M. et al. 2506 (MEXU, XAL); T. Kroemer et al. 1900 (CORU); T. Kroemer et al. 1955 (MEXU, XAL); E. López P. 17 (XAL); E. López P. 126 (XAL); E. López P. 217 (XAL); E. Matuda 38669 (MEXU); P. Maury 5597 (GH); L. I. Neuling & A. Gómez-Pompa 2535 (MEXU); F. Ponce C. 280 (IEB, MEXUx2, MO, US); A. Rincón G. & C. Durán E. 1485 (MEXU, XAL); A. Rincón G. et al. 2304 (XAL); J. Rivera H. et al. 1232 (MEXU, SEROx2); A. Torres S. & A. Campos V. 244 (MEXU); P. E. Valdivia Q. 285 (XALx2); Brigada Vázquez 803 (XAL); M. Vázquez T. 803 (XAL).