PLANT TAXONOMY, GEOGRAPHY AND FLORISTICS
СИСТЕМАТИКА, ФЛОРИСТИКА, ГЕОГРАФІЯ РОСЛИН

https://doi.org/10.15407/ukrbotj82.05.407
RESEARCH ARTICLE

A new species of *Dysphania* (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.) from north-central Mexico

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Abstract. *Dysphania siqueirosae* Sandoval-Ortega & Rodríguez-Pérez (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.) is described as a new species from the states of Aguascalientes and Zacatecas (north-central Mexico). The new species is morphologically similar to *D. dissecta* but it can be distinguished from the latter by the perianth being subglobose to broadly ovate in fruit, utricle not visible between basal parts of the perianth segments, the perianth segments linear-lanceolate, keeled, joined by the scarious, accrescent, and wing-like margins.

Keywords: Aguascalientes, *Dysphanieae*, flora of Mexico

Introduction

With ca. 50 species, *Dysphania* R. Br. is the largest and most widespread genus in the tribe *Dysphanieae* Pax (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.), with the greatest species diversity currently recorded in Australia and South America (see an overview in Uotila et al., 2021, and references therein).

A total of eight *Dysphania* species were earlier reported for Mexico (Sandoval-Ortega, Zumaya-Mendoza, 2025), of which six are considered native [*Dysphania ambrosioides* (L.) Mosyakin & Clemants, *D. anthelmintica* (L.) Mosyakin & Clemants, *D. atriplicifolia* (Spreng.) G. Kadereit, Sukhor. & Uotila (≡ *Cycloloma atriplicifolium* (Spreng.) Coult.), *D. dissecta* (Moq.) Mosyakin & Clemants, *D. stellata* (S. Watson) Mosyakin & Clemants, and *D. incisa* (Poir.) Sand.-Ort. & Zumaya (see, e.g., Clemants, Mosyakin, 2003; Villaseñor, 2016; Sandoval-Ortega et al., 2017; Mosyakin, 2021; POWO, 2025–onward; Sandoval-Ortega, Zumaya-Mendoza, 2025)] and two alien [*D. carinata* (R. Br.) Mosyakin & Clemants, native to Australia (Sandoval-Ortega et al., 2017) and *D. botrys* (L.) Mosyakin & Clemants, native to Europe and Asia (POWO, 2025–onward)].

In general, the infrageneric taxonomy of *Dysphania* is now rather well understood (see Uotila et al., 2021; Mosyakin, 2021), but several morphologically deviant

ARTICLE HISTORY. Submitted 05 August 2025. Revised 10 October 2025. Published 30 October 2025
CITATION. Sandoval-Ortega M.H., Rodríguez-Pérez E.J. 2025. A new species of *Dysphania* (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.) from north-central Mexico. *Ukrainian Botanical Journal*, 82(5): 407–415. https://doi.org/10.15407/ukrbotj82.05.407

Fig 1. Holotype of *Dysphania siqueirosae* (USON33715)

and geographically restricted taxa, in particular, *D. stellata* (S. Watson) Mosyakin & Clemants and *D. dissecta* (Moq.) Mosyakin & Clemants, and the South American *D. minuata* (Aellen) Mosyakin & Clemants, currently remain unplaced to sections or clades (see Mosyakin, Clemants, 2008; Uotila et al., 2021).

Fig. 2. *Dysphania siqueirosae*. A: general habit; B: close-up of the inflorescence

As part of the study of the flora of the states of Aguascalientes and Zacatecas (Mexico) (see, e.g., Sandoval-Ortega et al., 2019, 2020) and the taxonomic revision of the family *Amaranthaceae* s. l. of Mexico (Sandoval-Ortega, Zumaya-Mendoza, 2023a, 2023b; Zumaya-Mendoza, Sandoval-Ortega, 2025), we consulted herbarium specimens of *Dysphania* deposited in the main Mexican herbaria and noticed that some specimens collected in Aguascalientes did not match any of the species previously described from or reported for the country. Here we describe a new species of *Dysphania* and compare it with its morphologically closest relative.

Materials and Methods

From February 2022 to July 2025, the specimens of the genus *Dysphania* deposited in the herbaria ENCB, HUAA, HZAC, MEXU, UAZ (acronyms follow Thiers, 2025–onward) were examined.

Based on information from the specimens consulted, field surveys were carried out in the states of Aguascalientes and Zacatecas in search of the undescribed *Dysphania*. The material was collected and placed in the herbarium of the University of Sonora, Mexico (USON). Measurements were taken with a stereoscope, and a morphological description of a new taxon of the genus *Dysphania* was drafted.

A distribution map for the new species was prepared using QGIS program (QGIS.org, 2024), and the coordinates, if missing from a specimen, were assigned based on the collection location using Google Earth.

Description of the new species

***Dysphania siqueirosae* Sandoval-Ortega & Rodríguez-Pérez, sp. nov.**

Type: México, Zacatecas, municipio Pánuco, 2 km al NE de Pozo de Gamboa, márgenes del poblado Martín Díaz, 22°57'57"N, 102°32'51.1"W, 2105 m, 26 Jul. 2025, *Sandoval-Ortega 1308* (holotype USON 33715; isotypes HZAC, HUAA, MEXU). — Fig. 1.

Diagnosis:—*Dysphania siqueirosae* is similar to *D. dissecta* but it can be distinguished by the floral morphology: perianth subglobose to broadly ovate in fruit, utricle not visible between basal parts of the perianth segments (*versus* broadly turbinate in fruit, utricle visible between basal parts of the perianth segments), perianth segments linear-lanceolate, keeled, joined by the scarious, accrescent and wing-like margins (*versus* perianth segments spatulate, not contiguous, incurved, margins thin and inconspicuous).

Description:—Herbs, annual, aromatic, 5–20 cm tall, stems erect, pubescent with glandular and multicellular trichomes (Fig. 2). Leaves 20–35(50) × 10–15(25) mm, sparsely pinnatisect, lobes linear, as

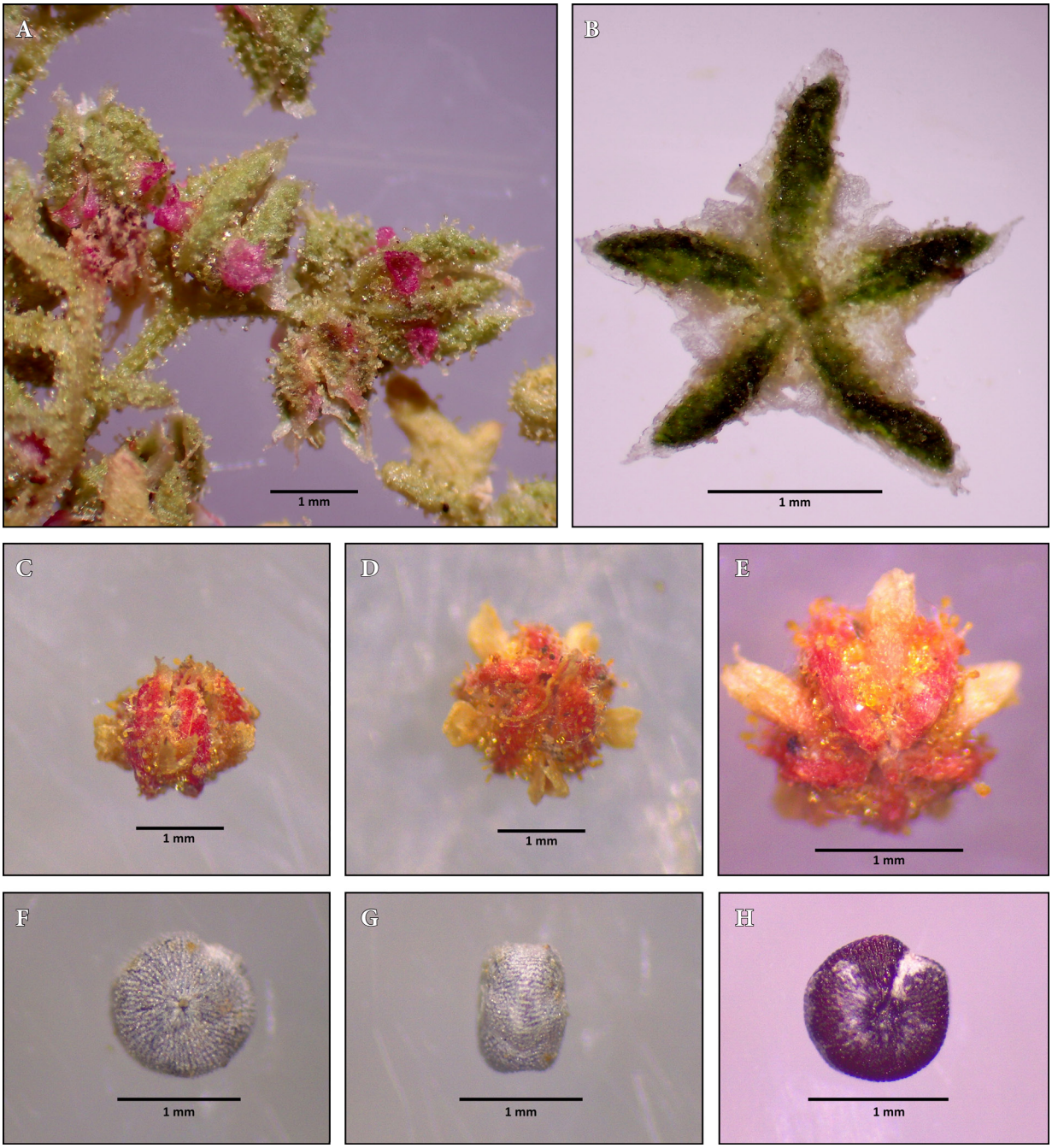

Fig. 3. *Dysphania siqueirosae*. A: inflorescence detail; B: opened perianth seen from below; C: lateral view of a fruiting perianth; D: upper view of a fruiting perianth; E: bottom view of a fruiting perianth; F: upper view of an utricle, with the pericarp attached to the seed; G: lateral view of an utricle, with the pericarp attached to the seed; H: partially naked seed

wide as the rachis or nearly so, with few very short secondary lobes, apex and lobes obtuse, adaxial surface with pubescence similar to the stems, abaxial surface with glandular and multicellular trichomes and sessile yellow glands. Inflorescences axillar and terminal, short paniculate, the branches with pubescence similar to the stems, flowers sessile to subsessile (Fig. 3A). Perianth subglobose to ovate,

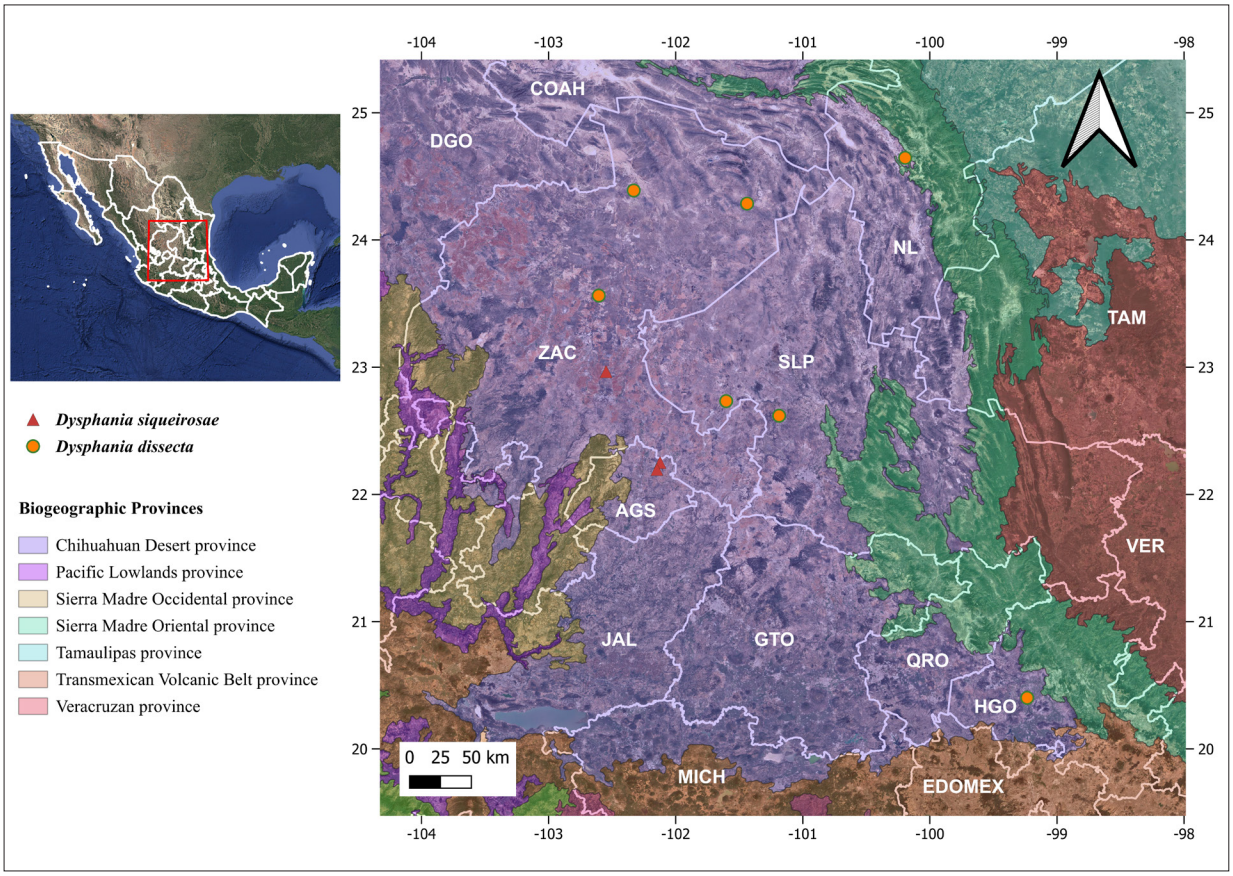

Fig. 4. Distribution of *Dysphania dissecta* and *D. siqueirosae* sp. nov. AGS — Aguascalientes; COAH — Coahuila; DGO — Durango; EDOMEX — Estado de México; GTO — Guanajuato; HGO — Hidalgo; JAL — Jalisco; MICH — Michoacán; NL — Nuevo León; QRO — Querétaro; SLP — San Luis Potosí; TAM — Tamaulipas; VER — Veracruz; ZAC — Zacatecas

segments 5, linear-lanceolate (Fig. 3B), 1.2–1.5 × ca. 0.5 mm, keeled on the midvein, basally joined by the scarious, white to purple, accrescent and wing-like margins that may extend up to 0.5 mm in fruit (Fig. 3C–E), apex acute, pubescent with glandular and multicellular trichomes and sessile yellow glands on the margins. Stamen 1, slightly exserted, ovary subglobose ca. 0.5 mm, stigmas 2, filiform, 1.5–2 mm long. Utricle attached to the seed, white (Fig. 3F, G), not visible between basal parts of the perianth segments. Seed ca. 1 mm in diameter, circular in outline, fairly thick, margins truncate, surface reticulate, black to dark brown (Fig. 3H).

Additional examined material of *Dysphania siqueirosae* (paratypes):—México, Aguascalientes, municipio Asientos, Caliza al S del cerro Palmira, 4 km al W de Asientos, 1 Sep. 1967, *Rzedowski 25089* (ENCB, without catalogue number but labeled as paratype); municipio Tepezalá, cañada arroyo Hondo ± 2 km al W de Puerto La Concepción, 10 Sep. 2000, *Rosales C. 1460* (HUAA 19463), 1 km al W de Puerto La Concepción, 11 Sep. 2000, *De la Cerda 6465* (HUAA 19466). Zacatecas, municipio Pánuco, km 14, carretera Zacatecas-Concepción del Oro, 23 Aug. 2002, *Balleza 13083* (UAZ 6657).

Phenology:—Flowering and fruiting from July to September.

Conservation status:—*Dysphania siqueirosae* is known so far only from three localities from the states of Aguascalientes and Zacatecas in Mexico. However, it is possible that this species has a wider distribution, since it occurs in secondary vegetation, roadsides and margins of crop fields but it is a small plant not so easy to detect, without showy flowers or striking color, which makes it go unnoticed among the neighboring vegetation. More extensive studies on the species are required to determine its conservation status. Therefore, following the guidelines of

Fig. 5. Habitat of *Dysphania siqueirosae*, in the municipality of Pánuco, Zacatecas, Mexico

the IUCN criteria (IUCN, 2025), *D. siqueirosae* is here assessed as Data Deficient (DD).

Etymology:—The new species is named after María Elena Siqueiros Delgado, Mexican botanist who has made great contributions to the study of the flora of Aguascalientes (see, e.g., Siqueiros-Delgado, 1996; Siqueiros-Delgado, González-Adame, 2006; Siqueiros-Delgado et al., 2011, 2016, 2017).

Distribution and habitat:—*Dysphania siqueirosae* grows on plains with gently sloping terrain and calcareous soil in the municipalities of Asientos and Tepezalá, in the NE of the state of Aguascalientes, and in the municipality of Pánuco, in the central part of the state of Zacatecas (Fig. 4). From 1800 to 2200 m a.s.l.

Dysphania siqueirosae is a locally common element of the open or dense xerophilous scrublands (Fig. 5) of the crassicaule, spiny, and microphyllous type in the region. It is also abundant in secondary vegetation derived from these scrublands, in areas near crop fields, roads, and urban zones. The tree layer may be represented by *Neltuma laevigata* (Humb. & Bonpl. ex Willd.) Britton & Rose, *Vachellia schaffneri* (S. Watson) Seigler & Ebinger, and *Yucca* spp. The shrub layer includes *Larrea tridentata* (DC.) Coville, *Vachellia constricta* (Benth.) Seigler & Ebinger, *Aloysia gratissima* (Gillies & Hook.) Tronc., *Brickellia veronicifolia* (Kunth) A. Gray, *Baccharis pteronioides* DC., *Mimosa zygophylla* Benth., *Calliandra eriophylla* Benth., *Dalea bicolor* Humb. & Bonpl. ex Willd., *Buddleja scordioides* Kunth, and *Condalia ericoides* (A. Gray) M.C. Johnst. Succulent species present include *Opuntia leucotricha* DC., *Opuntia robusta* H.L. Wendl. ex Pfeiff., *Cylindropuntia imbricata* (Haw.) F.M. Knuth, *Mammillaria uncinata* Zucc. ex Pfeiff., and *Jatropha dioica* Sessé ex Cerv. The herbaceous layer is composed of *Allionia incarnata* L., *Bouteloua curtipendula* (Michx.) Torr., *Muhlenbergia phleoides* (Kunth) Columbus, *Muhlenbergia rigida* (Kunth)

Table 1. **Morphological comparison between *Dysphania dissecta* and *D. siqueirosae***

Morphological characters	*D. dissecta*	*D. siqueirosae*
Flowers	Subsessile	Sessile to subsessile
Perianth shape	Broadly turbinate	Subglobose to broadly ovate
Shape of perianth segments	Oblanceolate to spatulate, incurved and gibbose near the apex	Linear-lanceolate, keeled, not incurved
Margins of perianth segments	Scarious, thin, inconspicuous	Scarious, prominent and wing-like at base

Fig. 6. Detail of inflorescence of an isolectotype of *Ambrina dissecta* (≡ *Dysphania dissecta*) deposited in Muséum National d'Histoire Naturelle (P00606420)

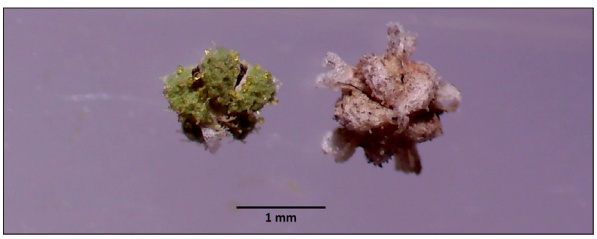

Fig. 7. Comparison of fruiting flowers from above between *Dysphania dissecta* (left) and *D. siqueirosae* (right)

Kunth, *Castilleja mexicana* (Hemsl.) A. Gray, *Oenothera hartwegii* Benth., *Dichondra argentea* Humb. & Bonpl. ex Willd., *Gaillardia comosa* A. Gray, *Zinnia acerosa* (DC.) A. Gray, *Mirabilis glabrifolia* (Ortega) I.M. Johnst., and *Thymophylla setifolia* Lag. In areas affected by disturbance, *Cenchrus ciliaris* L., *Tagetes lunulata* Ortega, *Zinnia peruviana* (L.) L., *Amaranthus palmeri* S. Watson, *Dysphania incisa* (Poir.) Sand.-Ort. & Zumaya, *Heterosperma pinnatum* Cav., *Malva parviflora* L., *Eruca vesicaria* (L.) Cav., and *Dalea foliolosa* (Aiton) Barneby are found.

Notes:—Herbarium specimens of *Dysphania siqueirosae* had been identified as *D. graveolens* (now recognized as *D. incisa*) or *D. dissecta*. However, after consulting the protologue of its basionym *Ambrina dissecta* (Moquin-Tandon, 1840: 38) and detailed images of the perianth of its lectotype and isolectotypes designated by Sandoval-Ortega & Zumaya-Mendoza (2025; Fig. 6), we confirm that the material here referred does not correspond to any previously described species.

Comparison to *Dysphania dissecta.* *Dysphania dissecta* seems to be the closest relative of *D. siqueirosae.* They can be differentiated from the floral morphology (see the diagnosis above, Table 1, and Figs. 3, 6, 7). The seeds of *D. siqueirosae* are also reticulated, a character previously reported only for *D. dissecta* within the genus *Dysphania* (Uotila et al., 2021); the pubescence is also similar, but in the perianth of *D. siqueirosae* is denser and the sessile glands are distributed on the margins of the segments, especially towards the base. They do not differ in habit, size or leaf shape. The habitat and altitudinal range in which they are distributed is also similar, both species are found in xerophilous scrublands and are restricted to the Chihuahuan Desert biogeographic province (*sensu* Morrone et al., 2017). Therefore, they could coexist at least in some places in the states of Aguascalientes, Zacatecas, and probably San Luis Potosí.

Examined material of *Dysphania dissecta* (for comparison):—México, Hidalgo, municipio Ixmiquilpan, Dadhó, 12 km al S de Ixmiquilpan, 10 Sep. 1981, *Hernández Magaña 6432* (MEXU363139). Nuevo León, municipio Galeana, 118 km al Norte de Matehual. S.L.P. sobre la carretera que va hacia Saltillo, Coah., 25 Sep. 1978, *García P. 688* (MEXU766727). San Luis Potosí, municipio Santo Domingo, Salineras de Santa María Salinas, aprox. 25 km al NE de Villa de Cos, Zacatecas, 29 Aug. 1983, *Villaseñor 540a* (MEXU488961); municipio Moctezuma, 35 km al SO de Venado, 10 Sep. 1973, *Banda, García, Rivera S.N.* (MEXU218312). Zacatecas, municipio Concepción del Oro, Campo experimental Noria de Guadalupe, CNIZA, 35 km al S de Concepción de Oro, 12 Jul. 1975, *González Medrano 8021* (MEXU275456); municipio Cañitas de Felipe Pescador, km 45 de

carretera Villa de Cos-Cañitas de Felipe Pescador, 19 Sep. 2002, *Balleza 13490* (UAZ6648); municipio Mazapil, 4 km al sur de Camacho, por la terracería a Opal, 4 Sep. 2003, *Balleza 16530* (UAZ6645).

Acknowledgements

We are grateful to Daniel Sandoval Ortega, Christian Elizabeth Pérez Valadez, and Oscar Anubis Quetzalcóatl Méndez Gorra for their company and support during the fieldwork, to Vanessa Invernon from P Herbarium (Muséum National d'Histoire Naturelle, Paris, France) for the images of the inflorescences of the specimen P00606421. We express our thanks to Julio Martínez Ramírez and Raúl López García for allowing us to consult the herbaria HUAA and UAZ, Mexico. The useful comments and advice of Pertti Uotila (Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland) and an anonymous reviewer are greatly appreciated.

ETHICS DECLARATION

The authors declare no conflict of interest.

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Новий вид роду *Dysphania* (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.) з північно-центральної Мексики

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Реферат. Описано новий вид *Dysphania siqueirosae* Sandoval-Ortega & Rodríguez-Pérez (*Chenopodiaceae* s. str. / *Amaranthaceae* s. l.) зі штатів Агуаскальєнтес і Сакатекас (північно-центральна Мексика). Новий вид є морфологічно подібним до *D. dissecta*, але відрізняється тим, оцвітина при плодах майже куляста до широкояйцеподібної, плід непомітний між базальними частинами листочків оцвітини, листочки оцвітини килюваті, при основі з'єднанні розрослими плівчастими крилоподібними краями.

Ключові слова: *Dysphanieae*, Агуаскальєнтес, флора Мексики