

DOI: <https://doi.org/10.36602/jsba.2026.21.43>

## A Newly Documented Species for the Libyan Flora: *Boerhavia erecta* L. (Nyctaginaceae).

Sh-Hoob Mohamed El-Ahamir<sup>1</sup>, & Khalefah Salem Imohammed<sup>2</sup> & Ibtisam S Alahmer<sup>3</sup>

<sup>1</sup>Botany Department, Gharyan University, Gharyanstreet, 041, Gharyan, Libya; ORCID:  
<https://orcid.org/0009-0004-6119-4408>

<sup>2</sup>Botany Department, Faculty of Science, Sabha University, Libya; [khal.salem@sebhau.edu.ly](mailto:khal.salem@sebhau.edu.ly), ORCID:  
<https://orcid.org/0009-0005-0181-2056>

<sup>3</sup>College of Engineering Technology-Gherian [ibtisam.alahmer.10@gu.edu.ly](mailto:ibtisam.alahmer.10@gu.edu.ly), ORCID:<https://orcid.org/0009-0009-8491-1357>

\* corresponding author e-mail: [Shhoob.Elhmir@gu.edu.ly](mailto:Shhoob.Elhmir@gu.edu.ly)  
Phone: +218911217578

Submission date:10.10.2025

Acceptance date:23.3.2026

Electronic publishing date: 24.3.2026

**Abstract:** *Boerhavia erecta* has been recorded for the first time in the flora of Libya. This widespread wild weed was collected in 2023 and 2024 from multiple locations, all included in the regions Sabha and Ariggiba, and situated approximately 110 km southwest of Sabha city. This species, known for its adaptability to disturbed habitats and arid conditions, holds ecological significance in its native and introduced ranges. To facilitate its accurate identification and support future research efforts, a comprehensive description of the species is provided, along with data about the habitat and a distribution map. These findings offer valuable insights into the plant's occurrence, ecological preferences, and adaptability within Libya's unique climatic conditions. Additionally, the study discusses the potential threats posed by *Boerhavia erecta* to native plant flora and vegetation. Emphasis is placed on the importance of monitoring the spread of *B. erecta* and conducting further studies to assess its ecological impact in Libya. This record not only highlights the plant's expansion but also underscores the need for continued floristic surveys to document and preserve the country's rich biodiversity.

**Keywords:** Ariggiba Region, Sabha, erect spiderling, new record, Libya.

### Introduction:

The flora of Libya continues to reveal new botanical records as field surveys expand into previously underexplored regions. Continuous updates to the national flora are therefore essential for improving our understanding of plant diversity, ecological relationships, and patterns of species distribution.

The genus *Boerhavia* L.(Nyctaginaceae) comprises herbaceous species widely distributed in tropical and subtropical regions. Members of the genus are generally characterized by slender stems, small clustered flowers, and sticky anthocarps that facilitate dispersal. Several species occur in disturbed habitats such as roadsides and fallow lands and are also known for their medicinal importance. Although several species of *Boerhavia* have been reported from North Africa, the occurrence of *Boerhavia erecta* L. has not previously been confirmed in the Libyan flora. During recent botanical surveys in the Sabha region, individuals of this species were

collected and examined using standard taxonomic keys and morphological comparisons.

This study aims to document the first confirmed record of *B.erecta* in Libya and to provide a morphological description together with notes on its habitat and distribution.

### Materials and Methods

Field surveys were conducted between 2023 and 2024 in the Sabha region and adjacent areas to document plant species occurring in disturbed and semi-natural habitats(Fig.1). During these surveys, several individuals suspected to belong to the genus *Boerhavia* were collected for further examination. Specimens were gathered following standard botanical collection procedures, with notes taken on habitat conditions, associated vegetation, and geographic coordinates. Fresh plant material was transported to the laboratory for detailed morphological assessment. Diagnostic characters including stem structure,

leaf arrangement, floral morphology, and fruit characteristics were examined stereomicroscope. Measurements were recorded for key features such as leaf dimensions, internode length, inflorescence type, and fruit shape. Photographs of both field and laboratory material were taken to support documentation.

Identification of the specimens was carried out using regional floras, taxonomic literature, and comparative descriptions of Nyctaginaceae species from neighboring countries. Reference materials and herbarium specimens from published databases were also consulted to verify the taxonomic placement [10,11,12]. Once confirmed, voucher specimens were prepared, preserved, and deposited in the herbarium of the Department of Botany, University of Gharyan.

Environmental information including soil texture, habitat disturbance level, and elevation was recorded to provide context for the species' ecological preferences. These observations contribute to understanding the adaptability and distribution patterns of *Boerhavia erecta* in the local environment.

## **Results**

Field observations confirmed the occurrence of *Boerhavia erecta* L. at multiple sites within the Sabha and Ariggiba regions, particularly in disturbed locations such as roadsides, agricultural field margins, abandoned lots, and open sandy or gravelly soils [2]. The species appeared well adapted to habitats affected by human activity, where competition with other vegetation was relatively low.

## **Morphological Characteristics**

Specimens displayed the typical growth form associated with *Boerhavia* species, consisting of slender, erect to somewhat spreading herbaceous stems. Plants ranged from 20 to 60 cm in height, with stems exhibiting a smooth surface and branching predominantly from the lower nodes [13]. Leaves were simple, arranged oppositely, and varied from ovate to broadly elliptic, with a noticeable asymmetry at the leaf base. The upper leaf surface appeared green and smooth, while the underside was paler with fine venation [10]. Inflorescences occurred as small clusters of flowers borne on delicate, wiry peduncles. Flowers were minute, pink to pale purple, and displayed the typical funnel-shaped perianth characteristic of Nyctaginaceae (Fig.2). Fruits were small, glandular, and sticky, aiding in their attachment to animals or materials for dispersal [12]. These features were consistent with published taxonomic descriptions of *B. erecta*.

## **Distribution and Habitat**

The species was recorded at elevations ranging from approximately 400 to 650 meters. It predominantly occupied areas with loose, well-drained soils and tolerated both direct sunlight and partial shade. Associated vegetation included a mix of ruderal and cultivated species, indicating the plant's ecological flexibility. No evidence of invasive behavior was observed, although its presence in multiple disturbed sites suggests a capacity for localized spread.

These findings represent the first verified documentation of *Boerhavia erecta* within the Libyan flora.

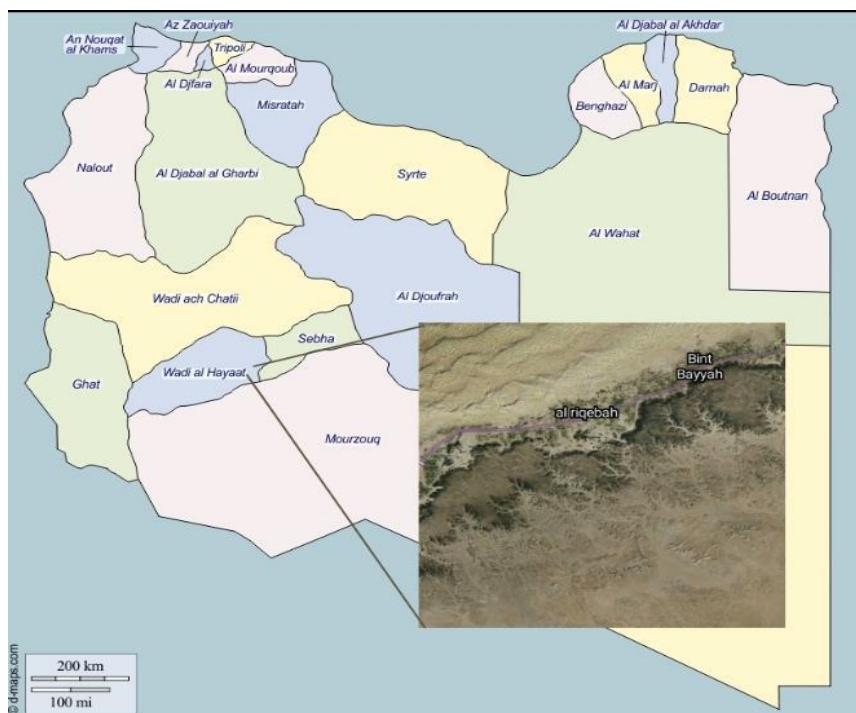


Fig 1. The locality of *Boerhavia erecta* in Libya.

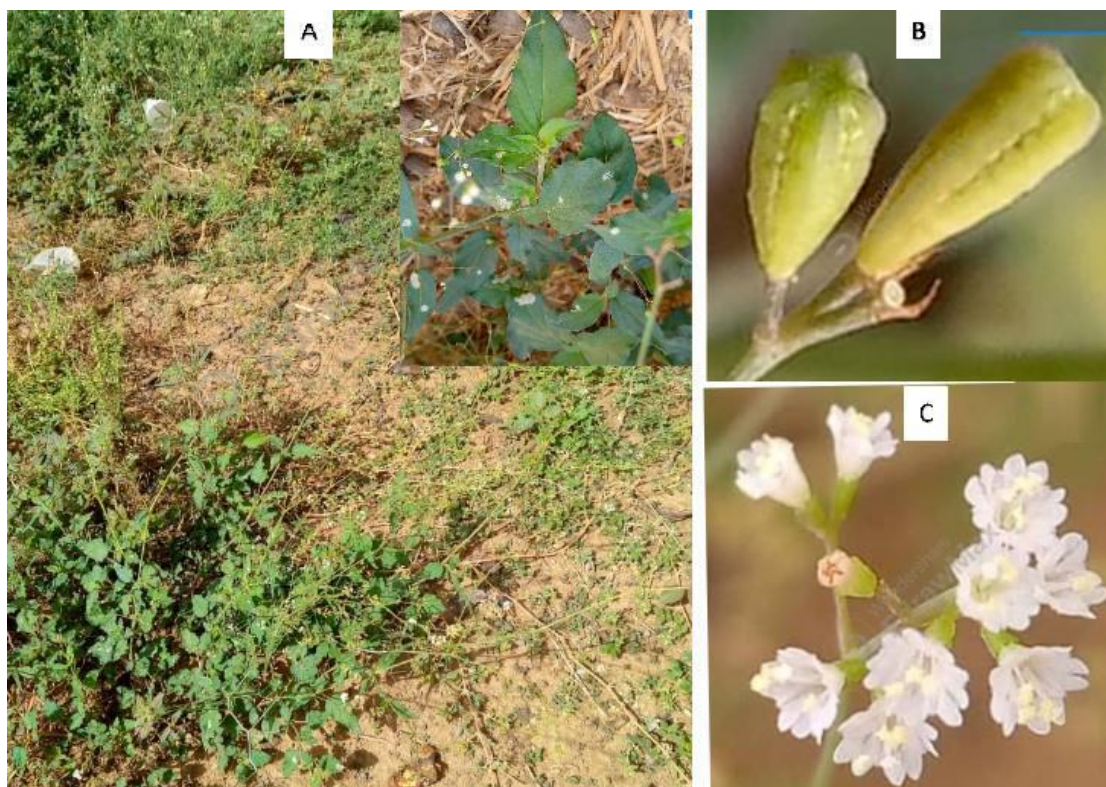


Fig. 2. *Boerhavia erecta*, A: Habit, B: Anthocarps, C: flowers

**Phenology:** Flowers and fruits are produced from spring until late autumn (October to May).  
**Accepted name:** *Boerhavia erecta* L., Sp. Pl. 3.

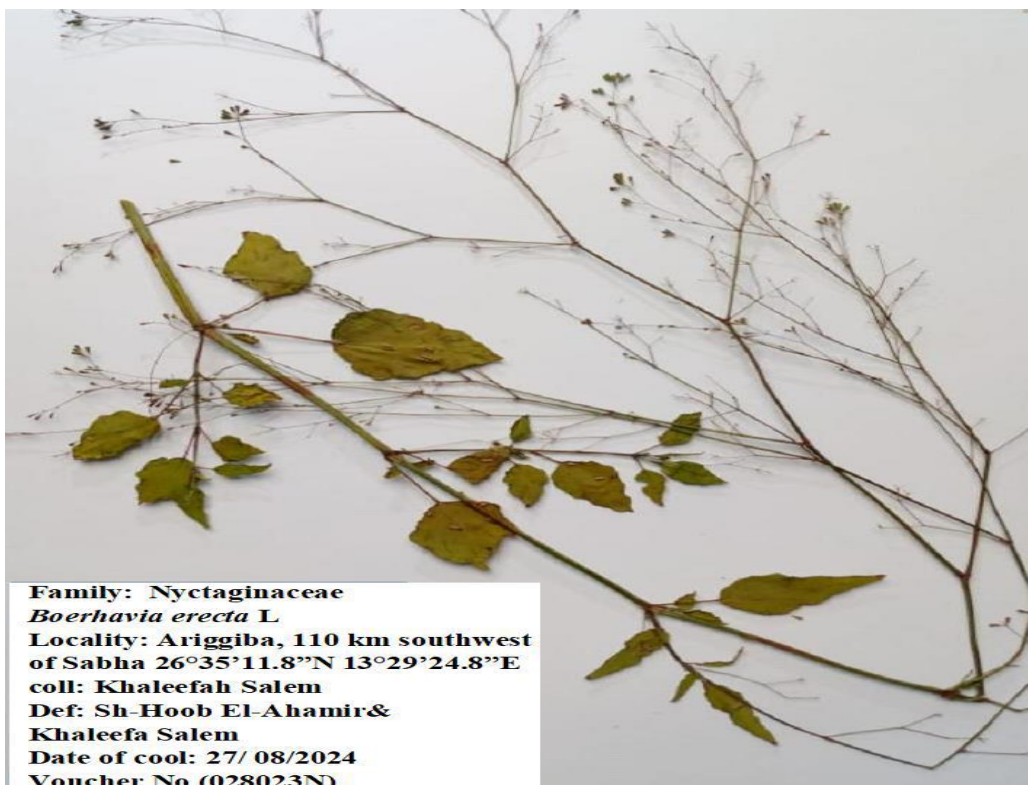
1753 English common name: erect spiderling or the erect boerhavia [11].

**Synonyms:** *Boerhavia atomaria* Raf., *Boerhavia discolor* Kunth., *Boerhavia elongata* Salisb, *Boerhavia erecta* f., *Boerhavia paniculata* var. *subacuta* Choisy., *Boerhavia scabrida* Steud. & Hochst., *Boerhavia thornberi* M.E.Jones., *Boerhavia virgata* Kunth [11].

**Chromosome number:** *Boerhavia erecta* has a chromosome number  $2n=52$  [14,15].

**Voucher specimen:** Specimens examined-colonies of this plant near roadsides, alluvial

plains and borders of fields, dried water bodies and wastelands of (Ariggiba region, located approximately 110 km southwest of Sabha region of Libya, about 771 km south of Tripoli, the plant has been detected in 12 locations on (coordinates  $26^{\circ}35'11.8''N$ ,  $13^{\circ}29'24.8''E$  (Fig.3).



**Fig 3.** Herbarium specimen of *Boerhavia erecta*. collected from Sabha & Ariggiba regions.

The current study reports the first record of *B. erecta* in the flora of Libya. The species has been observed to be widespread the Ariggiba Region, located approximately 110 km southwest of Sabha city (Fig.1). This discovery is particularly

noteworthy, as *Boerhavia erecta* was not included in the flora of Libya documented by Jafri and El-Gadi [16]. Its presence marks a new addition to the country's plant species diversity, highlighting the dynamic and evolving nature of Libya's flora.

**Key to the genus *Boerhavia* in Libya**

The Flora of Libya previously documented two species of the genus *Boerhavia* [1]. However, this research has identified a third species, necessitating a revision of the taxonomic key to accurately distinguish between them.

- 1a. Plant erect, flowers white, anthocarps obconical, glabrous and eglandular ..... *B. erecta*

1b. Plant decumbent or prostrate, flowers pinkish to mauve, anthocarps clavate (club-shaped), obovoid or ellipsoid, with stalked, sessile glands or straight unstalked hairs ..... 2a

2a. Leaf margins entire and pubescent; inflorescences mainly terminal panicles; upper part of perianth crimson to magenta; anthers and stigma crimson to magenta; anthocarps with glands mostly on the ridges ..... *B. diffusa*

2b. Leaf margins finely serrulate; inflorescences generally axillary but also terminal; upper part of perianth pink to pale purple; anthers yellow, stigma pale purple; anthocarps with glands on both ridges and furrows ..... *B. repens*

## Discussion

The specimens collected from the Sabha region were identified as *Boerhavia erecta* L. based on several diagnostic morphological characters. This species may easily be confused with *B. diffusa*, which often complicates accurate identification. However, *B. erecta* can be distinguished by its erect growth habit, relatively taller stature, an elongated primary floral axis, and a glabrous anthocarp with a truncate apex. [12, 17]. The distribution of the genus *Boerhavia* in Libya varies across different regions. *B. diffusa* is primarily found in Wadi Karkour and Gabal Arkenu, approximately 40 km northwest of Jabal al Uwaynat [18]. In contrast, *B. repens* has a more restricted range, being limited to the Fezzan region [1]. Similarly, *B. erecta* has been recorded in the Arigriba region, which is also part of Fezzan. This indicates that while *B. diffusa* extends into the northeastern desert areas, *B. repens* and *B. erecta* are confined to the southwestern Fezzan region, suggesting possible ecological or climatic preferences among these species.

The genus *Boerhavia* within the Nyctaginaceae family consists of around 40 species that are widely distributed across tropical and subtropical regions [1]. *B. erecta* is native to both northern and southern parts of the Americas but has been introduced to various other regions, including temperate and tropical Asia, Africa, and South America. The distribution of *B. erecta* can be attributed to multiple factors. Its introduction to new areas, such as Libya, likely occurred due to human activities, including agriculture, trade, and horticulture. Furthermore, its use for medicinal purposes may have facilitated its spread or introduction. Nevertheless, at the current stage, *Boerhavia erecta* cannot be regarded as an invasive species in Libya, as long-term data on its population dynamics and its potential impacts on native plant communities are still lacking.

## Conclusions

This study documents the expanding global distribution of *Boerhavia erecta*, highlighting its introduction into Africa and marking the first record of its presence in Libya. The findings illustrate the species' ability to naturalize and establish populations beyond its native range. While *B. erecta* is known for several medicinal uses, its introduction in non-native regions poses potential threats to local ecosystems and biodiversity. The establishment of *B. erecta* in Libya exemplifies the plant's adaptability and reflects the ecological conditions of the region.

To mitigate the potential negative impacts associated with the further expansion of this species, proactive management strategies, such as monitoring, control measures, and sustainable harvesting practices, may be necessary. Continued research and vigilance will be critical for understanding and managing the widespread distribution of *B. erecta* globally.

## References

- [1] El-Ahamir, S. H., & Imohammed, K. S The first record of a medicinal plant species *Boerhavia repens* L. (Nyctaginaceae) from Libya. Scientific Reports in Life Sciences 2024; 5(4), 59-66.
- [2] Khan, M. A., Al-Dosari, M. S., & Al-Masri, M. R "Distribution and Ecological Characteristics of *Boerhavia erecta* L. in Saudi Arabia." Saudi Journal of Biological Sciences 2012;19(1), 35-40.
- [3] Thulin, M.. Nyctaginaceae. Flora of Somalia. Vol. 1, Royal Botanic Gardens, Kew, 1993; 169-171.
- [4] Miller, A.G. and Cope, T.A Flora of the Arabian Peninsula and Socotra. Vol. 1, Edinburgh Univ. Press in Association with

- Royal Botanic Garden Edinburgh, Royal Botanic Gardens, Kew, UK. . 1996; 586
- [5] Wood, J.R.I.. A handbook of the Yemen flora. Royal Botanic Gardens, Kew, UK 1997; 75-78.
- [6] Chaudhary, S.A.. Nyctaginaceae. In: Chaudhary, S.A. (ed.) Flora of the Kingdom of Saudi Arabia illustrated. Vol. 1, National Herbarium, National Agriculture and Water Research Center, Ministry of Agriculture and Water, Riyadh, Kingdom of Saudi Arabia, 1999; 131 - 132.
- [7] Ghazanfar, S.A. 2003. Flora of Oman. Vol. National Botanic Garden (Belgium) 2006; 1, 29 & 30.
- [8] Karim, F.M. and Fawzi N.M.. Flora of the United Arab Emirates. Vol. 1, Publications Department, United Arab Emirates University, Abu Dhabi, UAE 2007; 1, 42-45. <https://www./publication/215527074>
- [9] Norton, J., Majid, S.A., Allan, D., Al Safran, M., Böer, B. and Richer, R An Illustrated Checklist of the Flora of Qatar. Brown Down Publications, Gosport, UK 2009; 96. <https://www./publication/57f07c7e08ae886b8975469a>
- [10] Chen, S. H., & Wu, M. J.. A taxonomical study of the genus *Boerhavia* (Nyctaginaceae) in Taiwan. Taiwan, 2007; 52(4), 332-342. DOI: 10.6165/tai.2007.52(4).332
- [11] Struwig, M., Siebert, S. J. A taxonomic revision of *Boerhavia* (Nyctaginaceae) in southern Africa. South African Journal of Botany 2013; 86, 116-134. <https://doi.org/10.1016/j.sajb.2013.02.172>
- [12] Choo, L. M., Chen, L. M. J., Turner, I. M Flora of Singapore precursors, 31: The genus *Boerhavia* (Nyctaginaceae) in Singapore and clarification of *Boerhavia diffusa* in Singapore and Peninsular Malaysia. [" Gardens' Bulletin Singapore"], 2022; doi: 10.26492/gbs74(1).
- [13] Ulus, A., & Bolat, F.. *Boerhavia erecta* L. (Nyctaginaceae): A new record to the flora of Türkiye. Eurasian Journal of Forest Science 2024; 12(2), 84-95. <https://doi.org/10.31195/eje-jfs.1494194>
- [14] Melgarejo, T. A., Rojas, M. R., & Gilbertson, R. L. A bipartite begomovirus infecting *Boerhavia erecta* (family Nyctaginaceae) in the Dominican Republic represents a distinct phylogenetic lineage and has a high degree of host specificity. Phytopathology, 2019; 109(8), 1464-1474. doi/full/10.1094/PHTO-02-19-0061-R.
- [15] Azeez, S. O., Matthew, J. O., Olaoluwa, E. A., Adegboyega, G. B., & Akinyoola, I. O Morphological and molecular studies of three species of *Boerhavia* L. from Ile-Ife, Nigeria. Ife Journal of Science 2020; 22(2), 225-236. <https://dx.doi.org/10.4314/ij.s.v22i2.20>.
- [16] Jafri S. M., El - Gadi A. A. (1989). Flora of Libya, AlFaateh University. Faculty of Sciences. Tripoli, Libya: Department of Botany.
- [17] Mochanla, D. S., & Aluri, J. S. R. The Reproductive Ecology of *Boerhavia diffusa* L. and *Boerhavia erecta* L. (Nyctaginaceae). Chief Editor Professor Khaled H. Abu-Elteen 2021; 8(2), 93-109. publication/356818621
- [18] Siddiqi, M. A., & El-Gadi, A.. family Nyctaginaceae. In: Flora of Libya. Department of Botany, Al-Fateh University, Tripoli, Libya. 1980; ( 80), 1-8