

Emergence of *Solanum bonariense* L. (Solanaceae) as a new invasive species in Algeria

Original Article

Abstract:

Solanum bonariense L. (Solanaceae), a shrub native to South America, is here recorded for the first time as a naturalized and potentially invasive species in Algeria. Field surveys and herbarium investigations (2022–2025) revealed its occurrence at multiple coastal and peri-urban sites across the eastern, central, and western regions, with the largest stands in the western region. Populations were established in ruderal habitats such as agricultural lands, roadsides, railways, and abandoned lots, as well as in semi-natural scrublands and rocky slopes, illustrating a broad ecological amplitude. The species was frequently observed co-occurring with invasive congeners (*S. elaeagnifolium*, *S. linnaeanum*) and ruderal taxa (*S. nigrum*, *S. villosum*), suggesting similar invasion dynamics. A comparative morphological analysis and an identification key are provided to improve recognition and management of invasive *Solanum* species in Algeria. The documented westward range extension, coupled with evidence of viable, regenerating populations, signals an emerging phytosanitary threat. Early detection, systematic monitoring, and targeted control measures are urgently required to prevent further spread and mitigate ecological, livestock, and economic impacts.

Key words:

Solanum bonariense, invasive plants, Mediterranean flora, weed risk, Solanaceae

Apstrakt:

Pojava vrste *Solanum bonariense* L. (Solanaceae) kao nove invazivne vrste u Alžiru

Solanum bonariense L. (Solanaceae), žbun poreklom iz Južne Amerike, ovde se po prvi put navodi kao naturalizovana i potencijalno invazivna vrsta u Alžiru. Terenska istraživanja i herbarske analize (2022–2025) otkrile su njeno prisustvo na više obalnih i prigradskih lokaliteta širom istočnog, centralnog i zapadnog regiona, sa najvećim populacijama u zapadnom regionu. Populacije su utvrđene u ruderalnim staništima kao što su poljoprivredna zemljišta, putevi, železničke pruge i zapuštene parcele, kao i u poluprirodnim šikarama i stenovitim padinama, što ukazuje na široku ekološku amplitudu. Vrsta je često uočavana u zajednici sa invazivnim srodnicima (*S. elaeagnifolium*, *S. linnaeanum*) i ruderalnim taksonima (*S. nigrum*, *S. villosum*), što sugeriše sličnu dinamiku invazije. Data je uporedna morfološka analiza i identifikacioni ključ radi boljeg prepoznavanja i upravljanja invazivnim vrstama roda *Solanum* u Alžiru. Dokumentovano širenje areala ka zapadu, u kombinaciji sa dokazima o održivim, regenerišućim populacijama, ukazuje na novu fitosanitarnu pretnju. Rano otkrivanje, sistematsko praćenje i ciljane mere kontrole hitno su potrebni kako bi se sprečilo dalje širenje i ublažili ekološki, stočarski i ekonomski uticaji.

Ključne reči:

Solanum bonariense, invazivne biljke, mediteranska flora, rizik od korova, Solanaceae

Introduction

The genus *Solanum* L., one of the largest within the family Solanaceae, comprises over 1200 species globally, with its primary center of diversity in South America (Motti, 2021). These species occupy diverse habitats across temperate to tropical regions,

including Africa, Asia, and Australia (Ramsay & Bryan, 2011; Samuels, 2015). *Solanum* species range morphologically from herbaceous to sub-shrubby and shrubby forms, typically presenting simple leaves that may be entire, sinuate, or lobed (Särkinen & Knapp, 2016). Floral characteristics include a five-lobed calyx, a rotate corolla, and

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a distinctive conical anther formation resulting from five appressed anthers, while fruits are multi-ovulate berries, generally two-locular. The genus includes economically significant taxa such as *S. lycopersicum* L. (tomato), *S. melongena* L. (eggplant), and *S. tuberosum* L. (potato) (Quézel & Santa, 1963; Ganaie et al., 2018).

In Algeria, both native and non-native *Solanum* species are present. Common annuals like *S. nigrum* L. and *S. villosum* Mill. inhabit disturbed and agricultural landscapes (Quézel & Santa, 1963; Idrissi et al., 2024). More concerning are introduced congeners such as *S. elaeagnifolium* Cav. and *S. linnaeanum* Hepper & P.-M.L.Jaeger, which aggressively invade pastures, roadsides, and orchards across northern Algeria (Meddour et al., 2020). These taxa exemplify the ecological plasticity and high colonizing potential of the genus in Mediterranean ecosystems (Karmezi et al., 2023; Khamar et al., 2024).

At the global scale, several *Solanum* species pose serious invasion threats (Fensham et al., 2019). In particular, *S. elaeagnifolium* is reported from every continent except Antarctica and is recognized as an aggressive invader, especially in the Mediterranean region. It thrives in disturbed habitats and environments affected by human activity—roadsides, agricultural lands, and urban environs—fueled by prolific sexual and vegetative reproduction, remarkable drought and salinity tolerance, and broad dispersal pathways including soil, water, animals, and machinery (Roberts & Florentine, 2022). This example underscores recurring traits favoring invasiveness within the genus: high reproductive output (both sexual and vegetative), tolerance to abiotic stresses (drought, salinity, disturbance), phenotypic and genetic plasticity, and effective dispersal mechanisms (Tataridas et al., 2023).

Against this backdrop, *Solanum bonariense* L., a South American perennial shrub, has been the subject of extensive investigation and is now urgently recorded in Algeria. Known from its native range in Argentina, Uruguay, Paraguay, and southern Brazil (Palchetti et al., 2020), *S. bonariense* has established invasive populations in countries such as South Africa, Australia, and New Zealand, where it invades pastures, grasslands, and forest edges (Galasso et al., 2019). According to Verdes et al. (2006), *S. bonariense* poses serious risks to livestock: grazing cattle exposed to this shrub may suffer from cerebellar cortical degeneration, manifesting as ataxia, hypermetria, hyperesthesia, head and limb extension, nystagmus, and falls, with microscopic lesions including Purkinje cell loss and white-matter degeneration in the cerebellum (Verdes et al., 2015). Although mechanisms remain under

investigation, these neurotoxic effects can impair animal health and productivity. Ecologically, *S. bonariense* is classified as an invasive alien plant in some regions, capable of altering habitat structure, reducing native plant recruitment, and thereby undermining biodiversity through competitive displacement (Khamar et al., 2024).

Herbarium and field surveys conducted between 2022 and 2025 confirmed its first Algerian record, with specimens from coastal and peri-urban sites in northern Algeria; no prior records were found in national floristic references or herbarium collections. Given the documented invasiveness of congeners worldwide, the discovery of *S. bonariense* in northern Algeria represents a significant emerging bioinvasion risk. Its ecological adaptability, reproductive strategies, and establishment in anthropogenically disturbed environments portend similar dynamics to those of *S. elaeagnifolium* and other invasive *Solanum* species. Consequently, proactive investigation, ecological impact assessment, and integrated management measures are warranted to mitigate its potential spread and ecological consequences.

Materials and Methods

Study area

Field surveys were carried out between 2022 and 2025 across coastal and peri-urban localities of northern Algeria, spanning the provinces of Jijel, Skikda, Annaba, Bejaia, Algiers, and Oran. The regions are characterized by a Mediterranean climate, with mild, wet winters and hot, dry summers. According to the Algerian National Office of Meteorology, the mean annual temperature is 18.2 °C, ranging from 12.0 °C in January to 26.8 °C in August, while the mean annual precipitation is 345 mm, with most falling between October and April.

Field surveys and specimen collection

Populations of *Solanum bonariense* were located and georeferenced using a Garmin eTrex 10 GPS receiver. For each site, data on habitat type (roadsides, abandoned fields, coastal scrublands, peri-urban margins), disturbance level, associated vegetation, and potential dispersal pathways were recorded. Voucher specimens were collected, pressed, and prepared following standard herbarium techniques. Specimens were subsequently deposited at the Herbarium of the University of Oran (HUO).

Herbarium and literature analysis

Taxonomic verification of *S. bonariense* and comparison with related *Solanum* taxa were performed using morphological descriptions and

diagnostic keys from Dobignard & Chatelain (2013). Additional reference material was examined from collections at the National Museum of Natural History, Paris, and the University of Vienna Herbarium (WU). Historical floristic records (Quézel & Santa, 1963) and regional invasive species databases were consulted to confirm the presence or absence of prior reports of *S. bonariense* in Algeria.

Morphological analyses and identification key

Morphological characterization included stem habit, leaf morphology (shape, size), floral traits, and fruit dimensions. These features were documented for *S. bonariense* and compared with those of four congeners present in Algeria: *S. elaeagnifolium*, *S. linnaeanum*, *S. nigrum*, and *S. villosum* (Tab. 1).

Mapping and data processing

Occurrence data for *S. bonariense* were processed using ArcGIS 10.8 (Esri, Redlands, CA, USA) to produce a georeferenced distribution map (Fig. 2). GPS locality points were integrated with geospatial layers from the Algerian National Geodetic Database. Habitat data were summarized to describe ecological conditions favoring the establishment of the species.

Biosecurity protocols

To prevent inadvertent spread of *S. bonariense* during fieldwork, standard biosecurity measures were implemented. Equipment, including GPS devices, sampling tools, and footwear, was thoroughly cleaned between sites to avoid seed transfer. Plant material collected for herbarium deposition was bagged

Table 1. Morphological differences among *Solanum* species in Algeria

Character	<i>S. bonariense</i>	<i>S. nigrum</i>	<i>S. villosum</i>	<i>S. elaeagnifolium</i>	<i>S. linnaeanum</i>
Habitat	Ruderal, roadsides, disturbed soils, pasture, scrublands, coastal areas	Cultivated fields, gardens, waste places, disturbed areas, agricultural lands	Cultivated fields, gardens, waste places, disturbed areas, agricultural lands, ruderal sites, open ground	Dry sandy soils, roadsides, abandoned fields, disturbed soils, wastelands, pastures, coastal areas	Scrub, field margins, Mediterranean maquis, roadsides, rocky and coastal areas
Height (m)	1–2.5	0.2–0.6	0.3–0.7	0.3–1	0.5–2.5
Leaves shape	Elliptic to lanceolate, entire or slightly wavy, ovate, entire margins	Ovate to lanceolate, heart-shaped, wavy-margined	ovate, thinner, wavy-margined, entire or shallowly lobed	Deeply lobed, gray-green, tomentose, lanceolate, wavy edges	Deeply lobed, prickly, pubescent, lobed margins, persistent, alternate
Leaf length (cm)	5–12	2–7	3–8	5–15	5–12
Leaf petiole	Present, short	Present, 1–3 cm	Present, slender	Present, 2–5 cm	Present, stout, often winged and prickly
Flowering time	Spring to late autumn	Summer to autumn	Summer to early autumn	Spring to autumn	Spring to autumn
Flower color	Purple, with yellow anther	White, greenish to whitish petals, with yellow anthers	White, or purple-tinged	Purple, blue to pale lavender, occasionally white	Purple corolla
Corolla diameter (mm)	15–20	8–12	10–15	20–30	15–25
Corolla shape	Star-shaped, spreading lobes, rotate-pentagonal	Star-shaped	Star-shaped	Star-shaped, deeply divided	Star-shaped
Fruit diameter (cm)	1–1.2	0.6–1.3	0.5–0.9	1–1.5	2–5.5

separately and handled to minimize seed dispersal into surrounding environments. All field personnel were trained in identification and containment protocols, ensuring that survey activities did not contribute to further naturalization of the species.

Results and Discussion

Morphological differentiation

Solanum bonariense can be readily distinguished from other *Solanum* species present in northern Algeria by its perennial, woody habit and extended flowering period, from spring to late autumn. Several additional morphological traits further separate *S. bonariense* from co-occurring congeners (Tab. 1).

To facilitate field identification, we provide a dichotomous key for the *Solanum* species recorded in northern Algeria:

1. Plants woody, perennial; leaves entire, glabrous or sparsely pubescent; purple flowers with yellow anther cone; fruits yellow to orange at maturity – *S. bonariense* L. (Fig. 1).
2. Plants spiny or unarmed, perennial or annual; leaves often lobed, grey-green to pubescent; fruits variously colored at maturity
3. Fruits black at maturity; annual herbs – *S. nigrum* L.
4. Fruits red or orange at maturity; annual herbs – *S. villosum* Mill.
5. Fruits yellow, berries persistent; stems and leaves often covered with stellate hairs – *S.*

elaeagnifolium Cav.

6. Fruits green-striped turning yellow at maturity; plants armed with prickles on stems and leaves – *S. linnaeanum* Hepper & P.-M.L. Jaeger

The morphological analysis highlights that *S. bonariense* differs markedly from both annual and perennial congeners in growth form, leaf architecture, flowering phenology, and reproductive traits. These features, combined with its broad habitat tolerance and extended flowering period, underscore its potential for rapid colonization of disturbed and semi-natural habitats in northern Algeria.

Distribution of Solanum bonariense in Algeria

Solanum bonariense was recorded at several localities along the northern Mediterranean coastal region of Algeria, spanning from the east (Annaba, Skikda, Jijel, Béjaïa) to the central (Algiers) and to the western (Oran) parts of the country (Fig. 2). These occurrences are confined to the temperate coastal belt (20–25 °C average annual temperatures), where both anthropogenic disturbance and semi-natural habitats provide suitable conditions for establishment. Across sites, populations were observed in ruderal habitats such as transport corridors and abandoned lots, as well as in semi-natural scrublands, underscoring the species' ecological plasticity.

Northeastern Algeria:

Jijel (36°49'22" N, 5°45'41" E). A roadside



Fig. 1. *Solanum bonariense* L., Oran (NW-Ageria), July 2025 (photo by LM Mansouri)

embankment with ~20 mature shrubs across ~30 m². The soil was sandy-loam and moderately disturbed, with co-occurring species including *Atriplex halimus* L., *Dittrichia viscosa* (L.) Greuter, and *Sonchus oleraceus* (L.).

Skikda (36°52'48" N, 6°55'04" E). The largest eastern population (~40 shrubs across ~200 m²) occurred along abandoned lots. Associated taxa included *Erigeron bonariensis* L., *Chenopodium murale* (L.) Fuentes, Uotila & Borsch, and *Anethum foeniculum* (L.). Numerous seedlings indicated active recruitment and potential spread along linear transport networks.

Annaba (36°53'07" N, 7°45'01" E). Approximately 25 shrubs were recorded in degraded scrubland on clay-sandy soils, accompanied by *Olea europaea* L., *Asphodelus tenuifolius* Cav., and *Cynodon dactylon* (L.) Pers. Proximity to a watercourse suggests hydrochorous dispersal pathways.

Béjaïa (36°46'44", 5°00'49" E). A small population (<10 shrubs) was observed on a rocky slope bordering cultivated terraces, within semi-natural vegetation dominated by *Pistacia lentiscus* L. and *Pinus halepensis* (Mill.).

North-Central Algeria:

Algiers (36°45'58" N, 3°20'30" E). A newly recorded central population of 20 mature shrubs was found within ruderal habitats adjacent to peri-urban scrublands. The site lies close to Reghaïa Lake, favoring dispersal and persistence.

Northwestern Algeria:

Oran, Cap Falcon (35°46'05" N, 0°47'50" W). The largest western coastal population (~100 shrubs on an area of 300 m²) was established on clay sandy loam soil within coastal scrub, accompanied by *Atriplex halimus* L., *Hyoscyamus albus* L., and *Ficus carica* (L.). The extent and density suggest a well-established stand with significant reproductive capacity.

Oran, Ain Turk (35°45'16" N, 0°47'34" W).

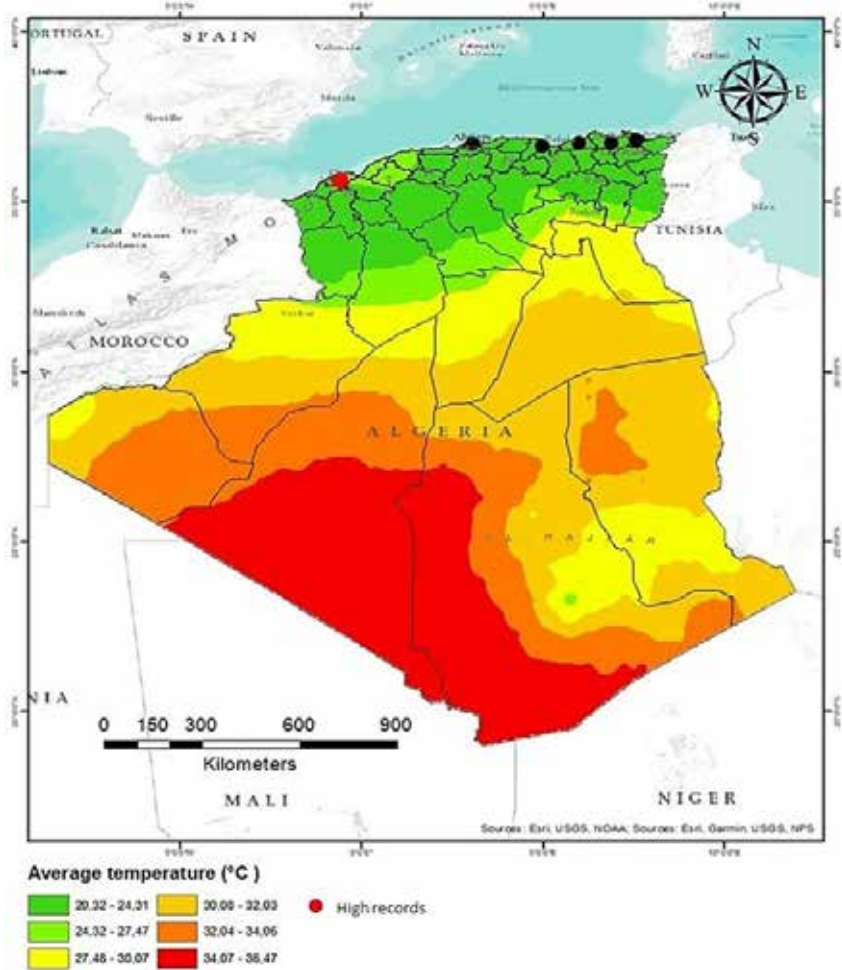


Fig. 2. Distribution map of *Solanum bonariense* L. in Algeria, with the highest records in northwestern region (Oran)

Another dense population (~100 shrubs) was recorded in degraded scrubland near a cultivated area. Co-occurring species included *Tamarix africana* Poir., *Retama monosperma* (L.) Boiss., and *Hordeum murinum* (L.). Both coastal sites (Cap Falcon and Ain Turk) represent major invasion fronts.

Oran, Misserghin (35°37'24" N, 0°43'58" W). Approximately 50 shrubs were recorded in abandoned agricultural fields with sandy-clay soils, surrounded by *Scolymus hispanicus* L., *Hordeum murinum* L., and *Malva sylvestris* (L.).

Oran, Bir El Djir (35°43'56" N, 0°32'57" W). A moderate population (~30 shrubs) was observed near cultivated areas along transport corridors and urban wastelands, indicating tolerance to disturbed urban environments.

These records demonstrate that *S. bonariense* has successfully established across both ruderal and semi-natural habitats in Algeria, forming viable populations with evidence of persistence and regeneration. Its occurrence along roadsides, railways, riparian corridors, and coastal areas suggests

multiple dispersal vectors, including anthropogenic, hydrochorous, and possibly zoochorous mechanisms.

Compared with other naturalized *Solanum* species in the Mediterranean Basin, *S. bonariense* exhibits ecological strategies consistent with those of successful invaders. For instance, *S. elaeagnifolium* is widespread in North Africa, dominating agricultural fields and disturbed soils, while *S. nigrum* and *S. villosum* are ubiquitous in ruderal habitats with nitrophilous flora. The establishment of *S. bonariense* in similar environments, combined with dense coastal populations in Oran, indicates a strong potential to follow a comparable invasion trajectory if left unmanaged.

The updated distribution map (Fig. 2) confirms that *S. bonariense* extends across northern Algeria, representing a significant range expansion, with high records in Oran (NW Algeria).

Invasive potential and ecological implications

The successful establishment of *Solanum bonariense* in Algerian coastal habitats highlights a suite of functional traits that underpin its invasive potential. These include dual reproductive strategies (sexual reproduction via seeds and vegetative propagation), physiological tolerance to drought and moderate salinity, and morphological resistance to grazing (Zhang et al., 2024). Such characteristics are well recognized as invasion-promoting syndromes in Mediterranean-type ecosystems, where species must tolerate seasonal water deficits, nutrient-poor soils, and recurrent disturbance regimes (Jan et al., 2024). In agricultural contexts, its spread can lead to diminished rangeland quality and potential grazing losses, as cattle avoid or are harmed by the plant, reducing grazing efficiency and increasing management challenges (Barry & Huntsinger, 2021).

The invasion trajectory of *S. bonariense* is consistent with patterns already observed in other alien *Solanum* species in the Mediterranean Basin. *Solanum elaeagnifolium* is now among the most problematic weeds in North Africa and southern Europe, where it invades cereal fields, vineyards, and pastures, forming persistent seed banks and reducing crop yields (Roberts & Florentine, 2022; Mou et al., 2025). In Algeria and Morocco, dense infestations of *S. elaeagnifolium* have been linked to reduced forage quality and increased management costs (Meniou, 2021). Similarly, *S. linnaeanum* (apple of Sodom) has naturalized widely in Tunisia and coastal Morocco, particularly in scrublands and along roadsides, where its spiny morphology and high tolerance to aridity favor its spread (Idrissi et al., 2024). Together with *S. bonariense*, these taxa exemplify a broader trend of multiple *Solanum* invasions facilitated by ecological versatility, endozoochorous dispersal,

and human-mediated disturbance.

The climatic context of northern Algeria—mild, wet winters and long, dry summers (mean annual temperature ~18 °C; annual rainfall ~350 mm)—provides a niche particularly favorable to the establishment of invasive Solanaceae. Comparable climates across the western Mediterranean (e.g., southern Spain, Sicily, coastal Greece) have facilitated the naturalization and expansion of *S. elaeagnifolium* and *S. linnaeanum* (Krigas et al., 2023). Their co-occurrence with *S. bonariense* raises concerns about cumulative ecological impacts, including the displacement of native shrubs (*Pistacia lentiscus*, *Olea europaea*), disruption of successional dynamics in scrublands, and reductions in agricultural productivity due to direct competition and increased management burdens. Similar ecological impacts have been reported in Greece and Portugal, where *S. elaeagnifolium* has significantly altered farmland ecology (Tataridas et al., 2022).

Given the early stage of *S. bonariense* invasion in Algeria, proactive management remains feasible. Early detection and rapid eradication of nascent populations are essential to prevent the formation of persistent seed banks. Mechanical removal can be effective for small, isolated stands, provided it is followed by repeated monitoring. High-risk habitats such as ports, road verges, and abandoned farmland should be prioritized for surveillance due to their role as invasion gateways. Integrated approaches combining soil seed bank management, reduction of livestock-mediated dispersal, and rotation of less susceptible crops are required. Public awareness campaigns may further reduce inadvertent spread through contaminated machinery, fodder, or soil transport.

The emergence of *S. bonariense* alongside *S. elaeagnifolium* signals an accelerating trend of *Solanum*-driven biotic homogenization in Mediterranean North Africa. Without coordinated and regionally integrated interventions, these species are likely to intensify ecological and economic pressures on both natural ecosystems and agroecosystems.

This study provides the first record of *Solanum bonariense* naturalized in coastal northern Algeria. Its drought and salinity tolerance, extended flowering, and efficient dispersal allow it to establish across diverse habitats, from transport corridors to semi-natural ecosystems. In Algeria, *Solanum bonariense* shows a notable ability to colonize a broad spectrum of habitats, ranging from highly disturbed to semi-natural environments. Beyond its frequent occurrence in ruderal sites such as road verges, abandoned urban lots, and agricultural margins, the species is increasingly penetrating semi-natural Mediterranean scrublands (maquis

and garrigue formations), phrygana-like xeric shrublands, and rocky calcareous slopes. These habitats correspond broadly to the alliances *Oleo–Ceratonion siliquae* and *Rosmarinus officinalis* L. (Quézel & Santa, 1963), which characterize large portions of the meso- and thermo-Mediterranean bioclimatic zones. The presence of established and regenerating populations within these semi-natural vegetation units indicates an ongoing transition from ruderal naturalization to incipient invasion of native plant communities. This ecological expansion raises concerns regarding potential competition with native shrubs and herbs that dominate these syntaxa.

Together with *S. elaeagnifolium*, a major agricultural pest, and *S. linnaeanum*, *S. nigrum*, and *S. villosum*, which invade pastures and shrublands, *S. bonariense* illustrates a growing trend of *Solanum* invasions in Algeria with profound ecological and socio-economic implications.

Lessons from other Mediterranean countries show that once *Solanum* species become widespread, eradication is extremely difficult and costly. Prevention and rapid eradication of small populations are therefore critical, particularly in high-risk sites such as ports, roadsides, abandoned fields, and riverbanks. For well-established species, integrated management combining mechanical, cultural, and awareness measures is required. The establishment of *S. bonariense* adds urgency to coordinated monitoring and management efforts, as unchecked expansion of invasive *Solanum* species will further threaten biodiversity, land use, herbivorous and rural economies in Mediterranean Algeria.

Medicinal and agrochemical prospects

The bioprospecting of endophytes associated with the *Solanum* genus represents a promising frontier for discovering novel bioactive agents with dual applications in medicine and agriculture. A recent review by Mili (2023) highlights that endophytes function as significant repositories of chemically diverse secondary metabolites. Although only 13 *Solanum* species have been extensively surveyed to date, 98 bioactive compounds (comprising 64 from fungi and 34 from bacteria) have been identified. These metabolites, including sterols, flavonoids, and volatile organic compounds, exhibit a broad spectrum of biological activities, ranging from anticancer and antiparasitic effects to potent antioxidant properties.

Of particular significance is the capability of these endophytes to synthesize antimicrobial compounds that mitigate phytopathogenic threats. Within this context, *Solanum bonariense* emerges as a species of distinct interest. The bioactive profile of its associated endophytes suggests significant potential to develop biofungicides and bactericides

capable of naturally controlling plant diseases. Consequently, the study of *S. bonariense* not only contributes to the search for new pharmaceutical leads but also offers sustainable strategies for crop protection against phytopathogens, leveraging the host-endophyte symbiotic machinery.

In addition to its antimicrobial potential, *S. bonariense* has been recognized for possessing significant insecticidal properties, attributed to its rich secondary metabolite profile. In a screening of wild flora from southeastern Spain, Pascual-Villalobos and Robledo (1999) identified *S. bonariense* as one of the most active species against the stored grain pest *Tribolium castaneum* (Herbst) (Coleoptera). The study demonstrated that acetone extracts from the aerial parts induced a high larval mortality rate of 78.7%. Furthermore, methanolic extracts exhibited significant growth-regulating activity in pupae, resulting in 51.4% mortality and distinct hormonal disruptions.

Conclusion

This study provides the first detailed assessment of *Solanum bonariense* in Algeria, revealing its clear morphological distinctiveness and its successful naturalization across the northern coastal region. Its presence in both ruderal and semi-natural Mediterranean habitats, combined with traits such as perennial growth, extended flowering, and tolerance to drought and disturbance, indicates a strong potential for further spread. Dense, regenerating populations (particularly in Oran, NW Algeria) indicate that the species is already transitioning toward invasive behavior. The ecological trajectory of *S. bonariense* parallels that of other invasive *Solanum* species in the Mediterranean Basin and highlights the need for early detection, rapid removal of small populations, and targeted monitoring of high-risk corridors. Without timely management, the species is likely to contribute to habitat homogenization, competition with native shrublands, and increased impacts on agriculture and rangelands.

At the same time, *S. bonariense* holds notable biotechnological value. This dual ecological and bioprospecting significance underscores the importance of integrating invasion management with continued investigation of the species' medicinal and agrochemical potential.

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