

Solanum diphyllum L. (Solanaceae) – A new record for northern India

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Manuscript received: 07 May 2015

Accepted for publication: 03 August 2015

ABSTRACT

Singh R. K. & Garg A. 2015. *Solanum diphyllum* L. (Solanaceae) – A new record for northern India. Geophytology 45(2): 253-256.

Solanum diphyllum L., a Central American species, is reported here from northern India for the first time from West Champaran district of Bihar, Koriya district of Chhattisgarh, Anuppur district of Madhya Pradesh and Allahabad, Gorakhpur and Varanasi districts of Uttar Pradesh and its introduction in India is discussed. Detailed description and photographs are provided for easy identification of the species.

Key-words: *Solanum diphyllum*, Bihar, Chhattisgarh, Madhya Pradesh, Uttar Pradesh, India.

INTRODUCTION

Solanum diphyllum L., commonly known as two-leaf nightshade, is native of south Mexico to Costa Rica in Central America but widely naturalized in many tropical and subtropical regions of the world having escaped from cultivation. The specific epithet 'diphyllum', meaning two leaves, refers to the arrangement of leaves which grow in pairs from a single bud. The genus *Solanum* (Solanaceae) is represented by 1250 species world-wide (Mabberley 2008) and 45 species and 3 varieties in India (Deb 1980, Reema Kumari 2004), of which *S. vagum* Heyne ex Nees is endemic to Tamil Nadu and *S. purpureilineatum* Sabnis & Bhatt to Gujarat, Uttarakhand and Uttar Pradesh. Of these 48 taxa, 20 species and 3 varieties are native to India and 25 species are exotic. The first occurrence of *S. diphyllum* in India was reported in its adventive stage in 1995 from Howrah district of West

Bengal where it was found in two places comprising few individuals each (Das et al. 1997, Paul & Biswas 2000). Restricted to West-Bengal in 1995, the species went unnoticed for few years till it was recently recorded from Karnataka, Maharashtra and Tamil Nadu (Reema Kumari 2013, Singh et al. 2014).

Solanum diphyllum was collected from 3 districts of Uttar Pradesh – the wastelands of railway colony, Gorakhpur in 2012; wasteland near plant nursery of Manduadih city, Varanasi in 2013; and from wastelands of George Town, Allahabad and Botanical Garden of BSI, CRC, Allahabad in 2012 and 2013. In 2012, the species was also collected from grasslands and outskirts of forest in Koriya district, Chhattisgarh and in Anuppur district, Madhya Pradesh and in 2014, from roadsides of Kotraha, Valmiki Tiger Reserve, West Champaran district of Bihar. According to the information supplied by local inhabitants, the species was prevalent in these

localities about 12-15 years back. Presently, the species has occupied most of the wastelands, grasslands, forest fringes and along roadsides in these districts. Immediate attention and action of concerned agencies is called upon to adopt measures for control of this prolific perennial weed which spreads fast through seeds, else the notorious weed is likely to pose threat to the native flora and in turn become detrimental for native and endemic gene pool.

TAXONOMY

Solanum diphyllum L., Sp. Pl. 184. 1753.

D'Arcy in Ann. Missouri Bot. Gard. 61: 845. 1974.

M. Das et al. in J. Econ. Taxon. Bot. 21: 158. 1997.

T. K. Paul & M. C. Biswas in Bull. Bot. Surv. India 37: 137. 2000.

M. Reema Kumari in Rheedeia 23(1): 50. 2013.

R. K. Singh et al. in Tabrobanica 6(2): 140. 2014.

Plate 1, figures 1-4

Type: Herb. Linn. 248.5 (LINN, MH microfiche!)

Description: Undershrub or shrub, 1–2 m high, erect, glabrous, unarmed, surface glandular. Leaves 2 at each node, unequal; major leaves 3–14 × 1.5–4.5 cm, obovate-elliptic, acute or obtuse at apex, cuneate or decurrent at base, entire at margins; lateral nerves 4–8; petioles to 4–10 mm long; minor leaves 0.5–4 × 0.5–3 cm, obovate-rounded, rounded or obtuse at apex, cuneate at base, entire at margins; lateral nerves 2–4; petioles to 1–4 mm long. Inflorescence in leaf opposed, racemose fascicle, 3–11-flowered; peduncles to 3–7 mm long; flowers 7–11 mm across; pedicels 5–10 mm long. Calyx 2–3 × 2–2.5 mm, cupular, 5-lobed, green; lobes 0.5–1.2 × 0.7–1 mm, ovate, acute. Corolla 5–9 mm across, stellate, white, usually 5-lobed; lobes equal, ovate, acute, 4–7 × 2.5–3.5 mm; tube 1–2 mm long. Stamens usually 5, 2–3 mm long, epipetalous, equal, introrse; filaments 0.7–1 mm long; anthers 1.3–2 mm long, oblong, basifixed, yellow, initially dehiscent poricidally, later longitudinally. Ovary globose, 1–2 mm long; style 4–5 mm long, cylindrical, whitish; stigma dot like, yellowish green. Berries 6–14 mm across, globose, slightly constricted in middle, glabrous, green, yellow

or yellowish orange when ripe; seeds reniform or discoid, c. 3 × 2 mm, yellow.

Flowering and fruiting: April–December.

Distribution: Native of south Mexico to Costa Rica in Central America. Cultivated as an ornamental plant for its beautiful bright yellow globose berries. Cultivated, escaped and naturalized in India (Bihar, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal).

Specimens examined: India. Bihar, West-Champaran district, Kotraha, Valmiki Tiger Reserve, along roadside, 25.11.2014, R. K. Singh 72998. Chhattisgarh, Koriya district, Phulpur forest area, in grassland, 08.10.2012, R. K. Singh 69447. Madhya Pradesh, Anuppur district, outskirts of forest, 13.10.2012, R. K. Singh 69499. Uttar Pradesh, Gorakhpur district, wasteland of railway colony, 28.04.2012, R. K. Singh 71871; Allahabad district, wasteland of George Town 03.05.2012, R. K. Singh 71900; Allahabad district, Botanical Garden of BSI, CRC, Allahabad, 23.08.2013, R. K. Singh 72166; Varanasi district, Manduadih city, wasteland near plant nursery, 16.9.2013, R. K. Singh 72198; all deposited in BSA.

Remarks: Earlier literature record, present field observation and information from locals revealed that this ornamental species was brought to India by nurseries for its ornamental significance. From these nurseries, the species escaped and started spreading but went unnoticed until it was reported recently from South India. Our field observation confirmed this, as this species was found in a plant nursery of Manduadih city, Varanasi, Uttar Pradesh and had also spread in wastelands adjacent to this nursery. During our field observations it was found that birds fed upon the small berries and aid in seed dispersal through faeces resulting in distant seed dissemination, the most potential cause of species escape and spread from nurseries. The fact that *Solanum diphyllum* is reported from four states of northern India and three states of South India suggests possibility of its occurrence in other states of India as well. The above localities of northern India



Plate 1

1-4. *Solanum diphyllum* L. 1. Habit. 2. Flowering twig. 3. Flower close-up. 4. Fruiting twig.

comprise of a population of 60-80 individuals each, growing in grasslands, forests edges, under tree shades along roadsides and wastelands. In Indian herbaria, *S. diphyllum* is represented meagrely by few specimens and the present collections deposited in BSA, augment the species representation.

ACKNOWLEDGEMENTS

The authors are thankful to Dr. P. Singh, Director, Botanical Survey of India (BSI), Kolkata and to the Head of Office, BSI, Central Regional Centre, Allahabad for facilities and to the forest officials of Valmiki Tiger Reserve for their generous support during field surveys.

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