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RESEARCH ARTICLE

Crotalaria shuklae Arjun Prasad Tiwari & Anis Ahmad Ansari (Fabaceae) - a New Species from India

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ABSTRACT: A new species *Crotalaria shuklae* Arjun Prasad Tiwari & Anis Ahmad Ansari is described from Etawah district of Uttar Pradesh, India with detailed description, illustration, photographs, etc., for easy identification in field.

KEY WORDS: *Crotalaria shuklae,* Etawah, Fabaceae, India, new species, Uttar Pradesh.

INTRODUCTION

Crotalaria L. (Fabaceae) is represented by *c.* 700 species (Polhill, 1982; Lewis *et al*., 2005; Adema, 2006; Mabberley, 2008), distributed throughout the tropical and subtropical regions of the world with highest concentration in Africa and Madagascar. *Crotalaria* is the largest legume genus in India, having 93 species, 1 subspecies, 17 varieties and 2 formae of which 38 species, 1 subspecies, 9 varieties and 2 formae are endemic to India (Ansari, 2008). In Uttar Pradesh the genus is represented by 28 species, 5 varieties and 2 formae (Khanna *et al*., 1999). The genus can easily be recognized by its dimorphic anthers and inflated or turgid pods. Several species of this genus are known as "rattlebox" as ripe seeds move freely inside the dry pods and rattle.

During the floristic survey of Etawah district, Uttar Pradesh, the first author collected interesting specimens belonging to the genus *Crotalaria*, growing in ravine area in damp grassland along the edges of Chambal river. On critical examination, checking available literature, up to date internet scrutiny and thorough study of protologue along with type specimens of allied species *Crotalaria lanceolata* E. Meyer, it has been confirmed to be a new species of *Crotalaria* and is herewith described and illustrated.

Crotalaria shuklae Arjun Prasad Tiwari & Anis Ahmad Ansari is closely allied to *C. lanceolata* E. Meyer, but differs in having stems not ribbed, punctate leaves; absence of bracteoles; calyx lobes divided to more than half of its length; vexillum orbicular, 5–6 × 6–7 mm, keel petals not shallowly rounded at the middle, beak not incurved; pods ellipsoid or oblong-ellipsoid, yellowish-brown, apically not curved, less number of seeds and various other characters as given in Table 1.

TAXONOMIC TREATMENT

Crotalaria shuklae Arjun Prasad Tiwari & Anis Ahmad Ansari, ***sp. nov.*** Figs. 1 & 2

Typus: INDIA, Uttar Pradesh, Etawah district, Chakarnagar, along the edges of Chambal river, N 26°46' E 76°38', 130 m alt., 26 Oct. 2010, *Arjun Prasad Tiwari* 70477 (holotypus BSA, Isotypus CAL).

Erect, annual or short-lived perennial, suffruticose herbs, *c.* 60 cm high; stems and branches terete, pubescent. Leaves 3-foliolate; stipules absent; petioles 1.3–2.6 cm long; petiolules *c.* 1 mm long; leaflets linear-lanceolate to lanceolate, 1.8–4.0 × 0.3–1.0 cm, acute or cuneate at base, acute and mucronate at apex, glabrous and punctate above, pubescent beneath, mid vein very distinct, lateral veins few and indistinct, margins ciliate. Racemes leaf-opposed and terminal, 5–15 cm long, 5–14 flowered, lax, axis pubescent. Flowers 5–6 × 3–4 mm; bracts linear-subulate, 1.0–1.5 mm long, slightly falcate, pubescent, margins ciliate, bracteoles absent; pedicels 2–3 mm long, pubescent, with few extra bracts. Calyx 5-lobed, pubescent, tube campanulate, 2.0–2.5 mm long, lobes lanceolate, 3.0–3.5 mm long, acuminate, divided to more than half of its length. Corolla yellow; vexillum with reddish-purple veins, orbicular, 5–6 × 6–7 mm, with 2 appendages (callosities) at the base, claw *c.* 1 mm long; wing petals obovate-oblong or oblong, 5–6 × 2.0–2.5 mm, claw *c.* 1 mm long, ridges distinct, marginally ciliate at base; keel petals 6.0–6.5 × 2.5–3.0 mm, marginally ciliate at base, claw *c.* 1 mm long, beak *c.* 1 mm long, twisted, not incurved. Stamens 10, monadelphous, dimorphous; staminal sheath *c.* 2 mm long; free filaments 2.0–3.5 mm long; longer anthers linear-oblong, *c.* 1 mm long; shorter anthers orbicular-

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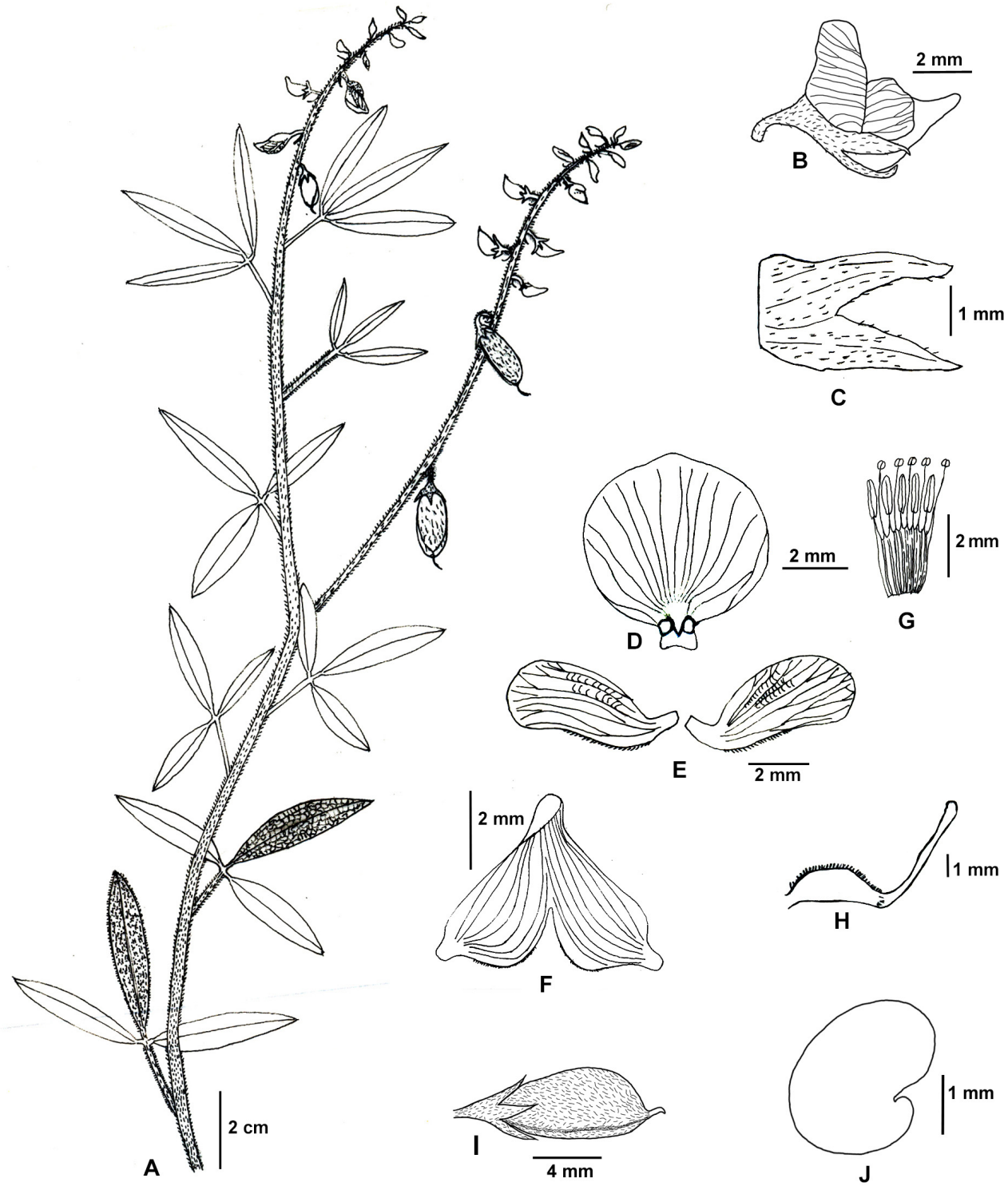


Fig. 1. ***Crotalaria shuklae.*** **A: Habit. B: Flower. C: Calyx-lobes. D: Standard petal. E: Wing petals. F: Keel petals. G: Androecium. H: Gynoecium. I: Young pod. J: Seed.**

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Fig. 2. ***Crotalaria shuklae*****. A: Flowering twig with pods. B: Upper surface of leaves. C: Lower surface of leaves. D: Flower. E: Calyx. F: Calyx-lobes. G: Standard petal. H: Wing petals. I: Keel petals. J: Gynoecium. K: Seed. L: Young pod. Bars: D–I = 1mm, J–L = 2 mm.**

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Table 1. Differentiation between *Crotalaria lanceolata* and *Crotalaria shuklae*

S.N.	*Crotalaria lanceolata* E. Meyer	*Crotalaria shuklae* Arjun Prasad Tiwari & Anis Ahmad Ansari
1.	Mature stems and branches sub-glabrous, ribbed.	Mature stems and branches pubescent, not ribbed.
2.	Petioles 3–6 cm long; leaflets 5–9 (–12) × 0.5–1.0 cm, lamina sparsely pubescent or glabrous on both surfaces.	Petioles 1.3–2.6 cm long; leaflets 1.8–4.0 × 0.3–1.0 cm, lamina glabrous and punctate above, pubescent beneath.
3.	Racemes terminal on the main stems and branches.	Racemes terminal and leaf-opposed.
4	Bracteoles normally present, inserted at the base of calyx.	Bracteoles absent.
5	Calyx-lobes triangular or deltoid, mucronate, divided to less than half of its length.	Calyx-lobes lanceolate, acuminate, divided to more than half of its length.
6	Vexillum broadly elliptic to orbicular, *ca* 1 cm in diam.	Vexillum orbicular, 5–6 × 6–7 mm.
7	Keel shallowly rounded at the middle with incurved beak.	Keel not shallowly rounded at the middle, beak not incurved.
8	Pods narrowly cylindrical, 2–4 × 0.4–0.6 cm, black on maturity, apically curved, several to numerous seeded.	Pods ellipsoid or oblong-ellipsoid, 1.3–2.0 × 0.5–0.8 cm, yellowish-brown on maturity, apically not curved, *c.* 10 seeded.
9	Seeds obliquely cordate.	Seeds reniform.

ovoid, *c.* 0.5 mm long. Ovary ellipsoid or oblong-ellipsoid, 3.0–3.5 × 1.0–1.1 mm, pubescent, with dense hairs on one side; style geniculate, 4.0–5.0 mm long; stigma globose, hairy. Pods yellowish-brown, ellipsoid or oblong-ellipsoid, 1.3–2.0 × 0.5–0.8 cm, pubescent when young, puberulent at maturity. Seeds *c.* 10, pale yellow, reniform, 3.0–3.5 × 2.0–2.5 mm, smooth.

Notes: The ovary is densely hairy, gradually becoming less hairy and the pods are sparsely hairy.

Flowering & Fruiting: October–December.

Ecology: Rarely found along edges of Chambal river in damp grassland in ravine area. It grows in open localities with adequate sunshine at 130 m altitude. A small population of 15–20 mature individuals was observed in an area of *c.* 2 km^2.

Etymology: The specific epithet "*shuklae"* is named after Dr. B. K. Shukla, retired Scientist - D, Botanical Survey of India, Central Regional Centre, Allahabad in recognition of his contribution to the flora of Chambal area.

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印度豆科新種 *Crotalaria shuklae*

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摘要：本文發表在印度北方邦的埃塔瓦縣發現的豆科新種*Crotalaria shuklae*，並提供分類描述、手繪圖與彩色照片以利辨認。

關鍵詞：*Crotalaria shuklae*、埃塔瓦縣、豆科、印度、新種、北方邦。

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