above-ground parts during vegetative stage of soybean was greater under elevated CO_2 levels with normal soil moisture. Root nodulation and nitrogen fixation were found to increase under increased CO_2 levels, but partitioning of carbon towards grain and leaves needs further investigations. RGR and NAR were greater under normal soil moisture with elevated CO_2 levels associated with increased number of leaves, leaf area, SLA, LAR, etc.

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ACKNOWLEDGEMENTS. We thank NLAE-USDA Laboratory, Iowa State University, Iowa, USA; USAID and USDA for technical and financial support under USDA-GRA fellowship programme.

Received 26 August 2015; revised accepted 28 June 2016

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Aconite from Sikkim Himalaya, India

While working on the taxonomy of genus *Aconitum* from India, we collected specimens from East region of Sikkim Himalaya during September 2014, where we came across a small population of *Aconitum* taxon which was apparently different from other existing populations in the surrounding area. On critical examination, we observed that these specimens were strikingly different from the rest of the collections in Sikkim Himalaya. Detailed morpho-taxonomic studies revealed it to be an undescribed taxon, showing close affinity with *A. spicatum*. This new species is named as *Aconitum arunii* after Arun Kumar Pandey (Department of Botany, University of Delhi, India) to honour his remarkable contributions to the knowledge of angiosperm systematics of Indian flora. The new species is described here.

Aconitum arunii sp. nov. (Figure 1).

Type: India, East Sikkim, Kupup, 3943 m, 12.09.2014, *T. Husain & P. Agnihotri* 257637 (holo. LWG; iso. LWG).

Diagnosis: *A. arunii* is closely allied to *A. spicatum* Stapf, but differs from it in having clawed bracts, hairy linear bracteoles, upwardly directed beak of upper sepal, flattened and conspicuously veined lobes of petal lip and prominent staminal teeth.

Erect herbs, 1 m high, stems much branched, densely strigose towards apex, obscurely angular, hollow. Leaves cauline; petioles up to 8 cm long, sheathing with dilated base, retrorsely strigose; lamina reniform, 1.5–5 × 5–14 cm wide, deeply cordate at base, three-palmatipartite; central lobe narrowly rhomboid, apically 2–3-lobulate; lobules dentate; teeth ovate or triangular, mucronate at apex; lateral lobes obliquely flabellate, unequally parted forming two sub-lobes, all lobes similar, cuneate at base, other sub-lobes 2–3-lobulate, lobules dentate. Racemose panicles 22–26 cm long, retrorsely dense hairy; bracts 1.6–2.2 cm long, tripartite; central lobe 1.4–1.8 cm long, lobed; sub lobes 1–2 lobulate, lobules obovate or acuminate; lateral lobes ca. 8–8.5 mm long, similar to central lobe; densely adpressed hairy above and on veins beneath. Flowers blue; pedicels up to 4 cm long, obscurely angled near base, densely spreading hairy; bracteoles two, opposite, near the middle of lower

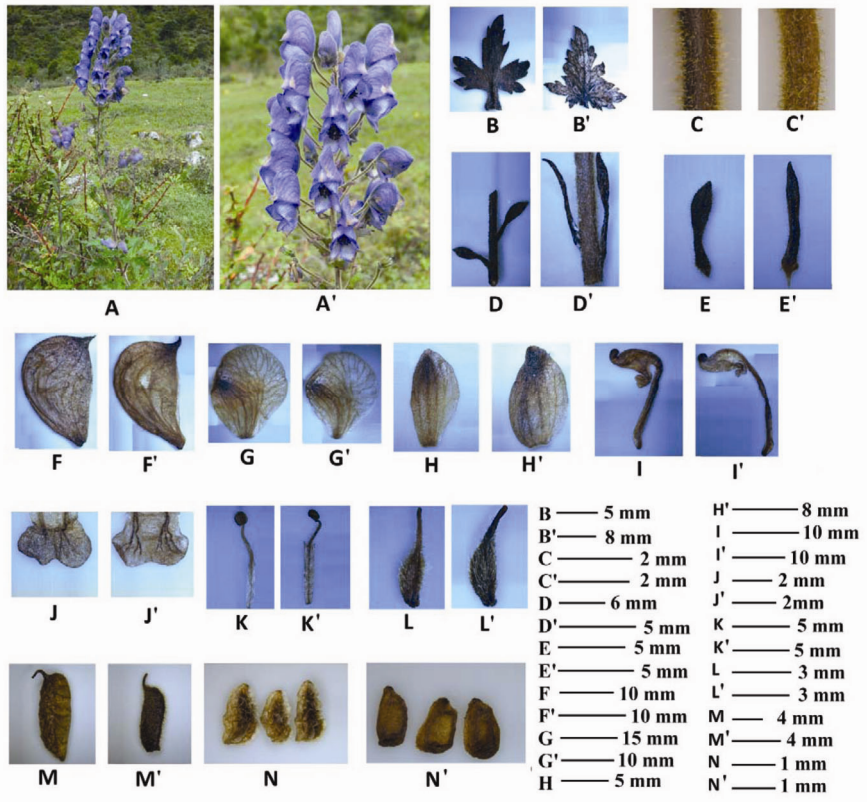

Figure 1. *Aconitum arunii*. (**A**) Habit and (**A'**) inflorescence. (**B–N**) *A. spicatum* from T. Husain & P. Agnihotri 257631 LWG. (**B'–N'**), *A. arunii* from T. Husain & P. Agnihotri 257637 LWG. **B** and **B'**, Bract; **C**, **C'**, Pedicel; **D** and **D'**, Attachment of bracteoles on pedicel. **E**, **E'**, Bracteole; **F**, **F'**, Upper sepal; **G**, **G'**, Lateral sepal; **H**, **H'**, Lower sepal; **I**, **I'**, Petal; **J**, **J'**, Lobes of petal lip; **K**, **K'**, Stamen; **L**, **L'**, Carpel; **M**, **M'**, Fruit and **N**, **N'**, Seed.

half of pedicel, linear ca. 7 mm, hairy. Sepals five, upper sepal helmet-shaped, 2.5 cm long, 2.2 cm high, 14–15 mm wide, erect, indistinctly clawed, helmet obliquely semiorbicular, shallowly depressed near beak; beak minute, directed upward; lateral sepal orbicular, 15.8–16.2 × 20 cm, not clawed, yellow tinged on one side, turning dark when dry, pubescent; lower sepal broadly elliptic 7–7.5 × 12–13 mm, densely so at apex on outer surface. Petals two, pubescent; claw 2.1–2.2 cm long, leaning forward, hood oblique to almost horizontal, gibbous at apex on the back, ca. 1.2 mm diameter, black when dry; lip ca. 3 mm long from a broad base, scarcely bilobed. Stamens numerous, ca. 9 mm long; filaments ca. 8 mm long, upper part hairy, distally membranous, staminal teeth prominent; anthers ca. 0.8 × 1 mm, glabrous. Carpels five, 5–5.8 mm long; ovary 3–3.6 mm long, densely hairy on one side, hairs on anterior side curled or twisted; style ca. 2 mm, lower part hairy; stigma indistinct. Follicles five, obliquely oblong, truncate at base, 6–7.2 × 1.8–2 mm, densely hairy; seeds ovate, 0.6–0.7 × 1.2–1.3 mm.

Flowering and fruiting: September–October.

Distribution and habitat: Grows on moist soils in Kupup, East Sikkim at 3943 m altitude.

ACKNOWLEDGEMENTS. We thank the Director, CSIR-NBRI, Lucknow, for providing the necessary facilities and DST, New Delhi for financial assistance under SERB. We also thank the Principal Director of Forest, Government of Sikkim for granting us permission for field work.

Received 27 August 2015; revised accepted 26 July 2016

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Caragana versicolor Benth. (Fabaceae), a keystone species of high conservation concern in the Hindu Kush Himalayan region

Situated in the highly elevated areas well above 3000 m, where alpine shrubs and grasses are the dominant vegetation, rangelands provide diverse ecosystem services[1] to local and downstream communities. Spread over more than a third of the globe[2] and about 54% of the Hindu Kush Himalayan (HKH) region[3], these serve as the main feed resource for traditional livestock rearing systems in many parts of the world and include about 70% of the feed for domestic ruminants[1]. The HKH region is one of the largest and most assorted mountain settings in the world inhabited by more than 210 million people representing diverse ethnic and socio-cultural groups[4]. The alpine arid rangelands (AAR) in HKH are usually located at elevations above 4000 m with a unique characteristic ecology and biogeography. In Himalaya, these rangelands are positioned in the rain shadow zone and north of the Greater Himalaya. It is estimated that as many as ten million people currently reside in and depend on mountain rangelands in the Himalaya[5]. In the Trans-Himalayan region of India, the AAR are spread across two biogeographic provinces, viz. Ladakh mountains in the