



ISSN 0974-7907 (Online)  
ISSN 0974-7893 (Print)

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The genus *Momordica* L. is an Old World genus that comprises 60 species (Schaeffer & Renner 2011) distributed in the warm tropics, predominantly in Africa. Six species have been reported from India (Joseph & Antony 2010) including two monoecious and four dioecious species. Later Renner & Pandey (2013) included two more species under this genus viz. *Momordica denudata* (Thwaites) C.B. Clarke and *M. cymbalaria* Fenzl ex Naudin in their enumeration of the species of Indian Cucurbitaceae, but this awaits proper justification. During the survey and field collection of crop genetic resources in Tuensang District of Nagaland, the authors came across male and female populations of *Momordica subangulata* Blume. After critical study it was found that the taxon conspicuously differs from subsp. *renigera* (Assamese: Bhat karela) in general habit, floral and fruit characters, which is commonly found in the wild in the northeastern hill region and also cultivated for its edible immature fruits. After consulting relevant literature and matching digital images of herbarium specimens of Paris Herbarium (P), the taxon is identified as *Momordica subangulata* Blume subsp. *subangulata*.

### *Momordica subangulata* Blume subsp. *subangulata*

Blume in Bijdr. Fl. Ned. Ind. 15: 928. 1826; Backer in Backer & Bakh.f., Fl. Java 1: 299. 1963; Keraudren in Aubreville & J.-F. Leroy, Fl. Cambodge, Laos & Vietnam

## AN OCCURRENCE OF INDO-CHINESE TAXON *MOMORDICA SUBANGULATA* BLUME SUBSP. *SUBANGULATA* (CUCURBITACEAE) IN NAGALAND: A NEW DISTRIBUTION RECORD FROM INDIA

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15:41. 1975; de Wilde & Duyfjes in Bot. Zhurn. (Moscow & Leningrad) 87(3): 145–148. 2002; A. Lu & C. Jeffrey in Fl. China 19: 28–30. 2011 (Images 1 & 2).

Perennial herbaceous climber, up to 5m long. Stems: slender, angular-sulcate, glabrous. Leaves: simple; petioles 6–7 cm long, glabrous, eglandular; lamina thin, dark green above and pale green below, broad ovate-reniform, subangulate, 8.5–9.5 x 8–8.5 cm, glabrescent, base deeply cordate (sinus narrow) with 3–5 prominent reticulate veins, apex acute-acuminate, margins undulate and coarsely denticulate, each tooth terminating in slightly protruding vein tips. Tendrils: simple, short. Flowers: solitary in leaf axils, deep yellow, ca. 5cm in diameter. Staminate flowers: at bud stage rotund, subtended and enclosed within a bract;



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*Momordica subangulata*



DOI: <http://dx.doi.org/10.11609/jott.1754.7.14.8182-8184>

Editor: N.P. Balakrishnan, Retd. Joint Director, BSI, Coimbatore, India.

Date of publication: 26 November 2015 (online & print)

Manuscript details: Ms # o4230 | Received 09 January 2015 | Final received 04 June 2015 | Finally accepted 14 September 2015

Citation: Soyimchiten, K. Pradheep, K.J. John & E.R. Nayar (2015) An occurrence of Indo-Chinese taxon *Momordica subangulata* Blume subsp. *subangulata* (Cucurbitaceae) in Nagaland: a new distribution record from India. *Journal of Threatened Taxa* 7(14): 8182–8184; <http://dx.doi.org/10.11609/jott.1754.7.14.8182-8184>

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Funding: This work was carried out under the project (PGR/PGC-BUR- DEL-01.02) funded by the parental institute i.e. ICAR-NBPGR, New Delhi.

Conflict of Interest: The authors declare no competing interests.

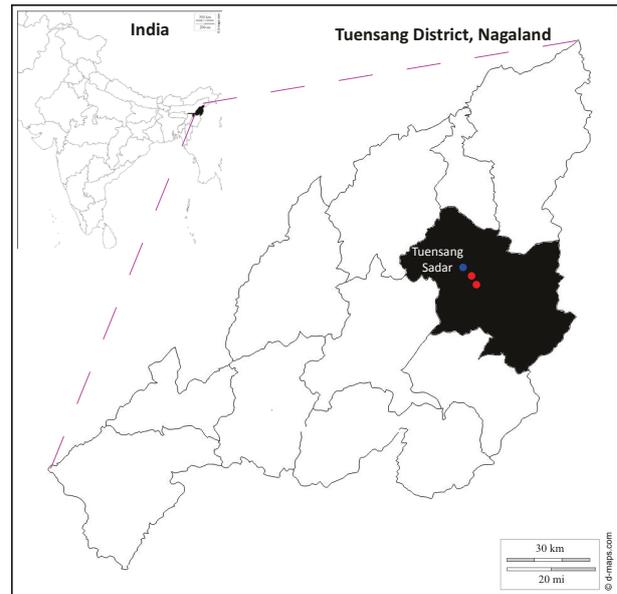
Acknowledgements: The authors express their sincere thanks to the Director, NBPGR, New Delhi for the facilities rendered during the course of study.





**Image 1.** *Momordica subangulata* Blume subsp. *subangulata*  
 A - Habit – female plant with fruit; B - Habit – male plant with flower; C - Female flowering twig showing muriculate ovary with subulate sepals; D - Male flowering twig depicting dark purple calyx (inset cucullate bract); E - Female flower having diffused black spots in petals and 3 stigmas; F - Immature fruit with longitudinal ribs; G - Male flower with black spots in petals.  
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peduncles 6–7 cm long, pedicels 0.4–0.5 cm long; bracts slightly velvety, yellow, cucullate, broadly ovate with greenish dorsal longitudinal veins, 2.5 x 2.5 cm, base cordate, apex mucronate; calyx saucer-shaped, purplish black, sepals 5 united at base, lobes obovate-spathulate, 0.6–0.7 x 0.9–1 cm, glabrous, apex retuse; corolla broadly campanulate, petals five, free, oblong-elliptic, 3–3.5 x 1.5–1.7 cm, apex subobtusate, velvety, two dark blotches each at the base of three inner petals; stamens three, filaments free, 0.3cm long, dark purple, anthers three, two 2-theous, one 1-theous, 0.5cm long. Pistillate flowers: solitary, peduncles 12–14 cm long, bract minute, rudimentary, greenish, located at about 1cm above the base of peduncle; sepals five, greenish, subulate 0.5 x 0.15 cm, persistent; corolla as in male, but possesses only one slightly big, diffused, black blotch in each of the three inner petals at the base; ovary inferior, 3-carpellate, oblong, 1 x 0.4 cm, muriculate; style stout, simple below, branched just below stigma, pale yellow, 0.4–0.5 cm long; stigmas three, coalesce, deep yellow, each 2-lobed; Fruit: stalk 12–15 cm long; immature one dark green; pepo ovoid-ellipsoid, glabrous, 4–5 x 3 cm, irregularly ribbed or with broken ridges primarily along five longitudinal lines. Mature fruits and seeds not seen.



**Image 2.** Sites (indicated as red dots) of *Momordica subangulata* subsp. *subangulata* collection in Tuensang District, Nagaland, India

Flowering: June–August; Fruiting: August–October.

Ecology: Found creeping on ground or climbing over bushes in subtropical broad-leaved wet-hill forests, along mountain slopes near forest margin and roadsides, at altitudes between 1650m and 1850m. Associated species are *Girardinia diversifolia* (Link) Friis, *Trichosanthes* sp. and *Urena lobata* L.

Distribution: World: China (Guangdong, Guangxi, Guizhou, Yunnan), Indonesia, Laos, Malaysia, Myanmar, Thailand and Vietnam (Lu & Jeffrey 2011); India: Nagaland.

Uses: Apart from immature fruits, young shoots are eaten in Thailand after cooking in a curry or steaming or boiling and eating with chilli sauces (JIRCAS 2010).

Specimens collected: 1684 (NHCP21664), 12.viii.2014, (female twig), 3km from Tuensang Town to Kuthur, Tuensang District, Nagaland, India, 1827m, 26°12'23.89"N & 94°48'37.11"E, coll. K. Pradheep & Soyimchiten; 1685 (NHCP21665), 12.viii.2014, (female twig), 3km from Tuensang Town to Kuthur, Tuensang District, Nagaland, India, 1827m, 26°12'23.89"N & 94°48'37.11"E, coll. K. Pradheep & Soyimchiten; 1686 (NHCP21666), 12.viii.2014, (male twig), 2km from Tuensang Town to Kuthur, Tuensang District, Nagaland, India, 1679m, 26°12'47.77"N & 94°48'45.63"E, coll. K. Pradheep & Soyimchiten. All three specimens were deposited at NHCP, NBPGR, New Delhi (Image 3).

Population: Authors could observe only five plants (3-female, 2-male) in two sites located within 1km distance. Its rarity has been apparent from villagers

**Table 1. Morphological attributes that can assist in distinguishing *Momordica subangulata* subsp. *subangulata* from subsp. *renigera*.**

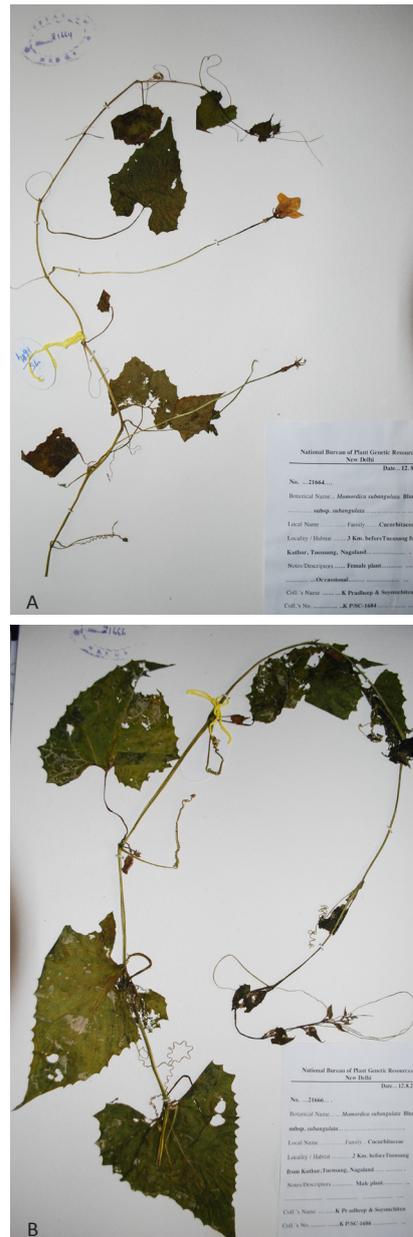
Character	Subsp. <i>subangulata</i>	Subsp. <i>renigera</i>
Habit	Slender	Robust
Flower colour	Deep yellow	Mostly creamish-yellow
Sepal apex	Retuse	Acuminate
Fruit length (cm)	4–5 cm	5–8 cm
Fruit surface	Irregularly ribbed or with broken ridges primarily along five longitudinal lines	Hispid-verrucose tubercles throughout

(n=8) unaware of its presence.

Notes: *Momordica subangulata* subsp. *subangulata* can be easily distinguished from the commonly available *M. subangulata* subsp. *renigera* by the characters mentioned in Table 1. It was mentioned in the literature (de Wilde & Duyfjes 2002; Lu & Jeffrey 2011) those perianths of female flowers are similar to that of the male flower. However examination of female flowers in our collection indicated that sepals were greenish, thin, subulate (not dark-purplish, broad, ovate as in the male flower), and their peduncles also longer (13–14 vs. 6–7(–10) cm reported); both the observations match with the line diagram in the Flora of China (Lu & Jeffrey 2011) and the Flora of Guangxi (Li & Liang 1991). We observed one female plant with flowers having big bracts in the middle of peduncle similar to that of male flowers (without rudimentary bracts below). Such a kind of sex reversal has been occasionally found among the members of Cucurbitaceae. The germplasm of this dioecious taxon should be conserved as it might be a future potential candidate for food security.

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**Image 3. Herbarium of *Momordica subangulata* subsp. *subangulata* deposited in NHCP, New Delhi**  
A - Female plant; B - Male plant

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