

New Addition to Flora of Allahabad

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Abstract: The author conducted floristic exploration of family Tiliaceae in Uttar Pradesh resulted in addition of three species of genus *Triumfetta* to the flora of Allahabad (U.P.) viz. *T. annua*, *T. rhomboidea*, *T. rotundifolia*. A detailed description, updated citation, phenology, habit, distribution and photographs are provided.

Keywords- Tiliaceae, *Triumfetta annua*, *Triumfetta rhomboidea*, *Triumfetta rotundifolia*, Uttar Pradesh, Allahabad, new addition.

1. Introduction-

The genus *Triumfetta*, occurring mostly in open waste land and along road side which is distributed in the tropics and sub-tropics of the world and comprises about 70 species. It is represented by 9 species in Flora of British India [1], 4 species in Flora of Upper Gangatic Plain [2], 8 species in Flora of India [3], 5 species in Uttar Pradesh [4], of which, 2 species have been reported in flora Allahabad [5] till now. During the reinvestigation we have collected and identified three species as new addition to the flora of Allahabad. The species are *T. annua*, *T. rotundifolia* and *T. rhomboidea* recorded first time from Allahabad. All the three species has been identified with the help of The Flora of British India [1], Flora of Madhya Pradesh [6], Flora of China [7] and Flora of Pakistan [8].

Allahabad district located in eastern Uttar Pradesh and is a part of Gangetic plains of India. The area is characterized by alluvial deposits

3. Key to species-

- 1a. Spines on capsule pubescent all over. - *T. rotundifolia*
- 1b. Spines on capsule glabrous. - 2
- 2a. Stem glabrous except for a 1-2 line of hairs. - *T. annua*
- 2b. Stem hairy all around. - *T. rhomboidea*

3.1 *Triumfetta annua*

L., Mant. Pl. 1: 73.1767; Sims in Curtis, Bot. Mag. t. 2296. 1822; DC., Prodr. i 507. 1824; Miq., Fl. Ind. Bot. i pt. 2, 196. 1856; Mast., in Oliv., Fl. Trop. Afr. 1:256. 1868; Mast., in Hook. f., Fl. Brit. Ind. 1:396. 1874; Sprague & Hutch.,

drained by Ganga river. The landscape constitute with agricultural field, grass land, waste places and wet lands. The climate is generally tropical monsoon, divided in mainly three seasons: winter (November-February), summer (March-mid June) and rainy season (mid June-October). All The species are presented here with identification key, upto date nomenclature, brief description, phenology, ecology, distribution and photographs.

2. Material & method-

The extensive floristic studies were conducted during 2014-2015 in the district Allahabad of Uttar Pradesh and plants were collected from various places in the month of June to November. The specimen were identified with the help of various flora (Duthie 1903-1929, Hooker 1875-1879, M. I. Hanfi, 1993, Wu Zhengyi, Peter H. Raven & Hong Deyaun, 1994, Abdul Ghafoor, 1974). The collected specimens are transported in a vasculum to prevent wilting, every collected specimen must be tagged with a field number and necessary information should be recorded in a field diary. The specimens are placed between the folds of blotting sheets avoiding overlapping of parts. The blotting sheets with plant specimen should be placed in the plant press for drying. The dried specimens prepare for poisoning and then specimens paste on herbarium sheets. Voucher specimen are recorded with their name, place & date and made herbarium by standard methodology. These specimens were deposited in Duthie Herbarium, Botany department, University of Allahabad.

Journ. Linn. Soc. 39:268. t. 17. fig. 10. 1909; Bamber, Punj. Pl. 234. 1916; Hanfi, Fl. M.P. 1:233. 1993; Danial & Chandrabose, Fl. Ind. 3:518. 1993; Haines, The Botany of Bihar & Orissa 1:24. 1921-1925. *T. triclada* Link, Enum. Hort. Berol. Alt. 2:5. 1822. *T. polycarpa* Wall. Cat. 1079, 1829. *T. trichoclada* Link. ex DC., Prodr. i. 507.1824. *T. indica* Lam. Dict. iii, 420, 1791. *T. schimperii* Hochst. ex A. Rich., Tent. Fl. Abyss. 1:83. 1847.

Herb, erect, branched, up to 1 m high, nearly glabrous; stem glabrous except a single line of hairs on one side alternating at each node; leaves 4-5 x 3-4 cm, ovate or ovate-lanceolate, acuminate-acute, serrate, hairy on upper surface, 3-5 nerved,

petioles up to 4 cm long, hairy on upper surface; stipules 5 mm long, hairy; flower about 7-8 mm across, pedicels 2 mm long, orange-yellow, sepals 4 mm long, petals nearly 4 mm long, orange-yellow, stamens 10; carpels 4; ovary globose, hairy, 4 loculed; capsule 5-7 mm across, globose, glabrous, covered with conical, uncinata, 4-5 mm long, glabrous spines.

Flowering & Fruiting: August-October.

Habitat- Common in waste land and along roadside.

Distribution- Pantropical region. Tropical Africa, Namibia, Nigeria east to Ethiopia and Eritrea to South Africa, Madagascar, southern and eastern Asia. India: throughout the country. In Uttar Pradesh, Allahabad- Koraw, Archana Rawat: 28060.

3.2 *Triumfetta rhomboidea*

Jacq., Enum. Syst. Pl. 22, 1760; DC., Prodr. i. 507. 1824; Mast., in Oliv., Fl. Trop. Afr. 1:257. 1868-partly; Mast. in Hook.f., Fl. Brit. Ind. 1:396. 1874; Duthie, FUGP.1: 318. 1903; Haines, The Botany of Bihar & Orissa 1:24. 1921-1925; Parker, For. Fl. Punj. ed. 3. 54. 1956; Tackholm, Stud. Fl. Egypt 234.1956; Hutch. & Dalz., Fl. W. Trop. Afr. ed. 2. 1(2):309. 1958; Cooke. Fl. Bomb. Pres., 1:156. 1958; Santapau in Bull. Bot. Surv. Ind. 3:21. 1961; Maheshwari, Fl. Delhi 89. 1963; Bennet, Fl. Howrah 232, 1979; Maheshwari., Fl. Delhi 1:89. 1979; Hanfi, Fl. M.P. 1:234. 1993; Danial & Chandrabose, Fl. Ind. 3:520. 1993. *T. angulata* Lam., Encycl. 3:421, 1791; Wight & Arn., Prodr. 74. 1834; Wight Ic. T. 320. 1840; Miq., Fl. Ind. Bat. pt. i. 197.1856; Thwaites Enum. 31. 1861; Dazl. & Gibs. Bomb.Fl. 25. 1861; Wall., Cat. 1075, 2, C. 1829. *T. bartramia* L., Syst. Nat. ed. 10, 2: 1044. 1759, nom. Illeg. *Bartramia indica* L., Lay in AMBG 37:382, 1950; Matthew, FPK 18, 1981; L., Sp. Pl. 378. 1753, non *Triumfetta indica* Lam. Encycl. 3:420, 1791; Roxb., Fl. Ind. ii, 463.1832; Wall. Cat.1075 D & E. *T. vestita*; Wall. Cat. 1078, 1892. *T. trilocularis* Roxb., Fl. Ind. 2: 462. 1832. *T. tungarensis* Billore in J. Econ. Tax. Bot. 3: 621. 1982. Chikiti, Chiriyari

Herb, erect, branched, up to 0.5-1 m high; stem stellate pubescent; leaves 3-9 x 2.5-8 cm, generally rhomboid, ovate-elliptic, 3 lobed, serrate, rounded at the base, 3-7 nerved, petioles up to 0.5 cm long; stipules 3-4 mm long, pubescent; flowers yellow 5-6 mm long, cymes with shortly pedicel, 5-6 mm across, sepals 4 mm long, oblong, hairy; petals yellow, nearly as long as sepals; stamens 8-15; ovary subglobose, hairy, 2-3 loculed; capsule 3-4

mm across, globose or sub-globose; spines 1-2 mm long, uncinata, glabrous.

Flowering & Fruiting: August-November.

Habitat- Common along roadside.

Distribution- Pantropical region, Malay Islands, continental Africa, including south Africa, Cape Verde, Madagascar, Seychelles, Réunion and Mauritius and in Australia. Throughout tropical and subtropical India, ascending to 4000 ft. in the Himalaya. In Uttar Pradesh- Pratapgarh, Allahabad- Karchhana, Archana Rawat; 28054.

Specimen examined- A.P. Tiwari, Markundi; 71231.

3.3 *Triumfetta rotundifolia*

Jacq., Enum. Syst. Pl. 22, 1760; Lam., Encycl. 3:421: 1792; DC., Prodr. 1:507. 1824; Wight. & Arn., Prodr. 75. 1834; Miq., Fl. Ind. Bat. i.506. 1856; Roth, Nov. Sp. 222. 1861; Dalz. & Gibs., Bomb. Fl. 25.1861; Mast. In Hook. f., Fl. Brit. Ind. 1:396. 1874; Duthie, FUGP.1: 318.1903; Wall. Cat. P.237, 1076 B, C, D, E; Bamber, Punj. Pl. 75. 1916; Parker, For. Fl. Punj. ed. 3. 54. 1956; Cooke, Fl. Bomb. Pres.,1:157. 1958; Hanfi, Fl. M.P. 1:236. 1993; Danial & Chandrabose, Fl. Ind. 3:521. 1993; Haines, The Botany of Bihar & Orissa 1:25. 1921-1925. *T. orbiculata*, Koenig in Roxb. Hort. Beng. 36. 1814. *T. suborbiculata*, DC., Prodr. i. 506. 1824; *T. bilocularis*, Wall. Cat. 1081.1829. *Lapta*

Herb, erect, branched, up to 50-60 cm high, hairy; Stem greyish-white; stipules 4mm long, hairy; leaves 2-4 x 2-4 cm, rotundate, obovate to orbicular, obtuse at base, rugose above, yellowish-white beneath, serrate, 3-5 nerved, petioles 1-3 cm long; flowers yellow, 6 cm across, sepals 4-6 mm long, petals yellow 4-5 mm long, stamens 10-25; capsule 5-6 x 3-5 mm, globose, pubescent, spines 2 mm long, uncinata, pubescent, dilated at the base; seeds oblong-ovate, nearly 2 mm long, black.

Flowering & Fruiting: April-October.

Habitat- Rare along the agriculture field and roadside.

Distribution- South Asia, Myanmar, Pakistan, China, Peru. In India: Peninsular India, Central India from Bundelkhand to Maisoor. In Uttar Pradesh-Banda, Jaloun, Ghazipur. Allahabad-Pulpur, Archana Rawat: 28061.

Specimen examined-Banda B.K. Sinha; 5144, Manikpur, B.K. Sinha; 5998, Jaloun, G. Shukla; 7555, Ghazipur, Pramod Kumar; 24187.

4. Discussion-

The present study results three species of *Triumfetta* which were found new addition to Flora of Allahabad. Uttar Pradesh is dominated by cultivated fields and highly populated area with closely established old and new villages, town area and districts. Most of the forests are cleared for the development and remain only waste places, road side, seasonal wet lands, water channels and river side in which waste places and road side in the study area have much higher species richness as compared to the agricultural field and little forest areas. The plant *Triumfetta* is came after summer season during rainy season. *T. rotundifolia* is different from other two species due to its leaf shape (round) and color (beneath white). *T. rhomboidea* is sometimes confused with *T. pentandra* due to its morphological similarities. Only difference between these two species i.e. its capsule. The bristles on the capsule of *T. pentandra* is hispid ciliate where as the bristles on the capsule of *T. rhomboidea* is glabrous. The main characteristic of identification of *T. annua* is the glabrous or 2-3 line of hairs on the stem. The fruiting and flowering season of these species are mostly similar but the *T. rotundifolia* is came earlier in the month of April.

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6. References-

1. Maxwell T., Masters F. R. S., 1883. Tiliaceae. In HOOKER, J.D. (Ed.), The flora of British India, 4. Rep. 2003. Bishan Singh Mahendra Pal Singh, Dehradun.
2. Duthie, J.F., 1903-29. Flora of Upper Gangetic Plain and of the adjacent Siwalik and Sub Himalayan tracts. (completed by Parker R.N. and Turill W.B.) 1 vols. Calcutta.
3. Danial P., Chandrabose M., 2012. Flora of India. vol. 1.
4. Khanna. K. K., Mudgal V., Uniyal, B. P., 1999. Dicotyledonous of Uttar Pradesh (A checklist). Bishan Singh, Mahendra Pal Singh, Dehradun.

5. Mishra, B.K. and B.K. Verma, 1992. Flora of Allahabad district U.P., India. Bishan Singh, Mahendra Pal Singh, Dehradun.
6. Hanfi M. I., 1993. Tiliaceae. Flora of Madhya Pradesh. Vol. 1: 223-236.
7. Ya Tang, Michael G. Gilbert & Laurence J. Dorr 2003. Tiliaceae. Flora of China, Vol. 12: 240-281.
8. Ghafoor A., 1974, Tiliaceae. Flora of Pakistan. Vol. 74.
9. Kanjilal, P.C., 1996. A Forest Flora for the plains of U.P. Part 1. Lucknow.



Fig1. T. annua



Fig2. T. rotundifolia



Fig3. T. rhomboidea