Mimosa diplotricha (Fabaceae): A New Report of Invasive Weed from Eastern Tarai of Nepal

Lila Nath Sharma1, Bhaskar Adhikari2, Mahesh Raj Bist3 and Bharat Babu Shrestha3*
1Forest Action Nepal, Kathmandu
2Royal Botanic Garden, Edinburgh, UK
3Central Department of Botany, Tribhuvan University, Kathmandu
*Email: shresthabb@gmail.com

Abstract

Mimosa diplotricha C. Wright (Fabaceae), an invasive weed is recorded for the first time in Nepal from South-eastern lowland of Tarai. A key to the Nepalese species of Mimosa, taxonomic description of M. diplotricha, notes on its habit, habitat, and distribution is provided. A variety M. diplotricha var. inermis (Adelb.) Veldkamlis also reported from the same area.

Introduction

Mimosa L. belongs to the sub family Caesalpinioideae in the family Fabaceae (The Legume Phylogeny Working Group [LPWG], 2017). The genus is one of the largest genera in the Fabaceae with more than 500 species mainly native to the New World (Barneby, 1991; Simon et al., 2011; Gehlot et al., 2013). The genus is much diverse in Americas (from United States to Argentina) with 496 species reported, less diverse in Madagascar with 34 species, and only few species are reported from east Africa and Asia (Simon et al., 2011). The genus is represented by only three species in China (Wu & Nielsen, 2010), eight species in India (Gamble, 1920; Debnath et al., 2017), and two in Nepal (Rajbhandari & Rai, 2019). The report of M. diplotricha from Eastern Tarai, hence, brings the total number of species of Mimosa in Nepal to three.

The genus Mimosa grows in wide range of habitats from lowland tropical regions to subtropical forests in different types of soil conditions. It thrives well in soils with low level of nutrients and organic matter with low pH (Gehlot et al., 2013). Because of its ability to grow in different soil conditions, few species have become the pantropical weeds, and M. diplotricha is one of them. Other well-known invasive weeds are M. pigra L. and M. pudica L., M. pigra is among 100 of the world’s worst invasive alien species (Lowe et al., 2000). M. pigra has not been reported from Nepal yet but M. pudica is among the 26 most problematic invasive weeds of Nepal (Tiwari et al. 2005; Shrestha, 2019).

The genus is usually characterized by the armed stem, pinnate and often sensitive leaves, globose inflorescence arising from the axils of leaves, and compressed flat pods divided transversely into one-seeded segments.

The specimens of Mimosa were collected and photographed during the field work in Eastern Tarai from August to November 2019. The specimens were identified as M. diplotricha and reported here for the first time of its presence in Nepal. A key to distinguish it from other species of Mimosa in Nepal is given below. Moreover, a variety M. diplotricha var. inermis (Adelb.) Veldkamlis also recorded.

Materials and Methods

This study is based on the field studies of populations of M. diplotricha in eastern Nepal in Jhapa and Morang districts (Figure 1), and herbarium studies of specimens (including the types) deposited at National Herbarium and Plant Laboratories (KATH), Tribhuvan University Central Herbarium (TUCH), Royal Botanic Garden Edinburgh (E), and Royal Botanic Gardens Kew (K) (online images). The specimens were checked against the relevant floras and checklists (Gamble, 1920; Ohashi, 1979; Gierson & Long, 1987; Press et al., 2000; Nielsen & Wu, 2010; Rajbhandari & Rai, 2019) to confirm its identification. The photographs were studied and
the identification was further confirmed by the expert of invasion ecology (pers.comm. K.V. Sankaran, Kerala Forest Research Institute, India; 4 December 2019). All the specimens collected during the field work were deposited at TUCH and KATH herbarium.

**Taxonomic treatment**

**Key to the species of *Mimosa* of Nepal**

1a. Leaves pinnae 2-4 (1-2 pairs)........... *M. pudica*  
1b. Leaves pinnae 12-20 (6-10 pairs)................. 2  
2a. Pods 7-11 cm long.................. *M. himalayana*  
2b. Pods 1.5-3 cm long................. *M. diplotricha*

English name: creeping sensitive plant, giant false sensitive plant; giant sensitive plant (Centre for Agriculture and Bioscience International [CABI], 2019)

Annual or perennial gregarious subshrub. Stem scrambling or prostrate, ascending stems up to 5 m long, profusely branched, 4-angled, hirsute, with or without prickles. Leaves bipinnate, 10–18 cm long, stipulate, stipules linear up to 4 mm, hirsute. Petiole 3-7 cm, with or without prickles; pinnae 6-8 pairs, 3-5 cm. Leaflets 20–28 pairs per pinnae, linear-oblong, 4–7 × 2–3 mm, base obtuse, margin entire, apex mucronate, white villous both sides. Inflorescence, axillary, solitary or in pairs, heads globose up to 1.5 cm in diameter; peduncles 0.5–1.0 cm, hirsute. Flowers sessile, bisexual. Calyx small, ca. 3 mm. Corolla narrowly infundibuliform, ca. 2 mm, 4-lobed, outside slightly pubescent. Stamens 8, filaments up to 8 mm long, unequal, hairy, anthersca. 2 mm. Pods in clusters up to 30, slightly curved, 1.5–3 × 0.4–0.6 cm, 2-5 seeded, compressed, hirsute, suture with bristles up to 3 mm. Seeds yellow-brown, up to 3 mm.

**Flowering:** October-November
Fruiting: November-January

Habitat: Grows in flood plains, riverbanks, roadsides, abandoned fields and forest fringes

Distribution: It is native of neotropics and Caribbean, invasive in wet tropics and subtropics including south and south East Asia, Africa and Pacific islands (Sankaran & Suresh 2013).

Key to the varieties
1a. Stems with downward facing prickles ..............
   .......................... M. diplotricha var. diplotricha
1b. Stems without prickles ................................
   ............................. M. diplotricha var. inermis

*Mimosa diplotricha* var. *diplotricha* (Figure 2).

Synonym: *Mimosa invisa* Mart.

Specimens examined:


---

Figure 2: *Mimosa diplotrcha* var. *diplotricha*. a. Dense mat of the species in open habitat, b. Stem showing inflorescence, c. Flower head close up, d. Pods in clusture, e. Single pod

Figure 3: *Mimosa diplotricha* var. *inermis*. a. Dense mat of the species in open habitat, b. Stem showing fruits, c. Stem showing inflorescence, d. Pods in a clusture
Specimens examined:

Acknowledgements
We would like to thank Mr. Biram Baral, Mr. Chhatra Paudel, Mr. Sanjaya Tamang, Mr. Bed Prakash Bhandari and Mr. Chiranjibi Paudel for helping us in specimen collections. We are also thankful to the curators of E, TUCH and KATH for allowing us to use their facilities for specimen examination and photography. This research is a part of Darwin Initiative UK funded project (ref 26-022). The Royal Botanic Garden Edinburgh is supported by the Scottish Government’s Rural and Environment Science and Analytical Services Division.

References


evolutionary history of Mimosa (Leguminosae): toward a phylogeny of the sensitive plants. *American Journal of Botany, 98*(7), 1201–1221
