



Pueraria grandiflora (Fabaceae), a new species from Southwest China

BO PAN^{1*}, BING LIU², ZHI-XIANG YU³ & YONG-QIONG YANG³

¹ Centre for Integrative Conservation, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Menglun, Mengla, Yunnan 666303, China;

² State Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, No. 20 Nanxincun, Xiangshan, Beijing 100093, China

³ Panzhihua Cycad Nature Reserve, No. 386 Renmin Road, Panzhihua, Sichuan 617000, China

* Author for correspondence. Email: pb@xtbg.org.cn

Abstract

A new species, *Pueraria grandiflora*, (Fabaceae, Phaseoleae), is described and illustrated. It resembles *Pueraria tuberosa*, but differs in lobed leaflets, larger flowers, single or once branched inflorescences, and flowering and fruiting season. This species is only known from dry-hot valleys in Sichuan and Yunnan, and is rare and narrowly distributed.

Key words: Dry-hot valley, Fabaceae, Phaseoleae, tuber

Introduction

Pueraria Candolle (1825; Fabaceae, Phaseoleae) comprises ca. 20 species, occurring in tropical and E. Asia (Wu & Thulin, 2010), with *P. tuberosa* DC. as the type species (Van der Maesen, 1985). Kudzu, *Pueraria montana*, is a well-known traditional medicine in China, and notorious invasive weed in North America (Van der Maesen, 1985). *Pueraria* has pinnately 3-foliolate and stipulate leaves, and axillary inflorescences, with 3 to several blue or purple flowers clustered at each node of the rachis. Bracts are very caducous. Some species produce edible tubers. Stipules are either basifixed or dorsifixed (Van der Maesen, 1985; Wu & Thulin, 2010). Four groups or three sections have been suggested (Lackey, 1977; Van der Maesen, 1985), while molecular studies have suggested that *Pueraria* is not a monophyletic group (Lee & Hymowitz, 2001). Ten species have been recorded in China, of which 3 species are endemic (Wu & Thulin, 2010).

During our field and herbarium work in 2012 and 2014, we discovered a new *Pueraria* species in Sichuan and Yunnan, which is very distinctive and has not been described before.

Taxonomy

Pueraria grandiflora Bo Pan & Bing Liu, *sp. nov.* (Fig. 1–2)

Type:—CHINA. Sichuan: Panzhihua Cycad Reserve, on montane slopes, 1500 m, 20 Aug. 2014, *Bo Pan 2014001* (Holotype: HITBC! Isotypes: KUN!). Panzhihua Cycad Reserve, 1300 m, 16 Jul. 2010, Panzhihua Cycad Expedition Team 360 (PE).

Liana 3–8 m long. *Roots* tuberous, ovoid in shape, elongate or compressed, 2.5–8 × 3–9 cm, 4 to many clustered underground. *Stems* usually woody at the base, with young parts grey pubescent, sometimes glabrescent. *Leaves* trifoliolate and alternate; stipules medifixed and split at the base, sagittate, 8–16 mm long, with striate lines; stipules linear-lanceolate, 5–8 mm; petioles 5–12 cm long with appressed, short hairs; petiolules 5–8 mm long; leaflets broad ovate or compressed ovate, entire or 2–3 lobed, veins 4–6 pairs, short pubescent on both surfaces; the terminal one 4–11 × 3–10.5 cm, base round or broad cuneate, apex acuminate; lateral leaflets oblique and sometimes very unequal (Fig. 2N), smaller, 3–10.5 × 3–9.5 cm, base broad cuneate to truncate. *Inflorescences* axillary or terminal pseudoracemes,

Lezuoni, in valley, 26°1' N, 102°44' E, 1100 m, 7 Jun. 1982, *Heng Li et al.*, 20166 (KUN, HITBC). Luquan County, Pudu River Nature Reserve, Zhongping, dry and steep slope, 1170 m, 26°9'31.5"N, 102°50'45.5" E, 7 Aug. 2008, *Hua Peng et al.* 9910 (KUN). Chuxiong, Tuanshan, rocky slope, 1000 m, 17 Sept. 1939, *Ming-Kang Li 31* (KUN). Yuanjiang, Dudu, 1100 m, 15 Sept. 2011, *Jian-Wu Li 1007* (HITBC).

TABLE 1 Morphological differences between *Pueraria grandiflora*, *P. tuberosa*, and *P. montana*.

Character	<i>P. grandiflora</i>	<i>P. tuberosa</i>	<i>P. montana</i>
Leaflet	entire, or 2–3 lobed	entire	entire, or 2–3 lobed
Stipules	sagittate	sagittate	linear
Inflorescence	unbranched or with 1 branch	many branched	unbranched or with 1 branch
Flower	22–25 mm	ca. 15 mm	8–22 mm
Calyx lobe	lower lobe slightly longer than the others	lower lobe slightly longer than the others	lower lobe much longer than the others
Flowering	June–September, with leaves	March–April, without leaves	July–September, with leaves
Roots	ovoid	ovoid	slender to elongate
Hairs	appressed	appressed	appressed or hirsute
Pods	constricted between seeds	constricted between seeds	not constricted
Distribution	Sichuan, and Yunnan (SW China)	India, Pakistan, and Nepal	Tropical and E Asia

Acknowledgements

This research was financially supported by the One-thousand Scholar Program (Y2QR011B01). We thank Prof. Richard T. Corlett for improving the manuscript, and Dr. Shu-Feng Li for editing the distribution map.

References

- Candolle, A.P. de (1825) *Pueraria*. *Annales des Sciences Naturelles* 4: 97. [Paris]
- Lackey, J.A. (1977) *A synopsis of the Phaseoleae (Leguminosae, Papilionoideae)*. Ph.D. dissertation, Iowa State University, Ames, Iowa, 293 pp.
- Lee, J. & Hymowitz, T. (2001) A molecular phylogenetic study of the subtribe Glycininae (Leguminosae) derived from the chloroplast DNA *rps16* intron sequences. *American Journal of Botany* 88 (11): 2064–2073.
<http://dx.doi.org/10.2307/3558432>
- He, Y.B., Lu, Z.P. & Zhu, T. (2000) Causes of the formation of dry-hot valleys in Hengduan Mountain Plateau. *Resources Sciences* 22 (5): 69–72.
- IUCN (2001) IUCN Red List Categories and Criteria, Version 3.1. Available from: <http://www.iucn.org/> (accessed 10 March 2015)
- Van der Maesen, L.J.G. (1985) *Revision of the genus Pueraria DC. with some notes on Teyleria Backer (Leguminosae)*. Agricultural University, Wageningen, pp. 5–13. [The Netherlands]
- Wu, D.L. & Thulin, M. (2010) *Pueraria*. *Flora of China* 10: 244–248.