J. Plant Biol. 39(2) : 145~148 (1996)

Indigofera grandiflora (Leguminosae), a New Species from Korea

Choi, Byoung-Hee
Department of Biology, Inha University, Incheon, 402-751, Korea

A new species, *Indigofera grandiflora* B. Choi et S. Cho, was described from southern Korea. The new species is related to *I. kirilowii* and *I. koreana* in the Far East. However, the species differs from these two species in having larger flowers and leaflets and hairiness on leaflets. The new species is also allied to *I. decora* in southeast China and Japan, but clearly distinguished from the latter by its larger flowers, shorter inflorescences, and hairiness on leaflets.

Key words: New species, Leguminosae, *Indigofera, Indigofera grandiflora.*

While studying the *Indigofera kirilowii* Maximowicz et Palibin and its related species in the Far East, we found a population of *Indigofera* that does not belong to any taxa hitherto known from eastern Asia in the genus. The plants grow along the roadside of the eastern slope of Mt. Kaya, together with other plants including *Larix gmelini* var. *principis-ruprechtii* Pilger (planted), *Quercus mongolica* Fischer, *Symplocos paniculata* Miquel, *Lespedeza bicolor* Turcz., *Rhododendron yedoense* var. *poukhanense* Nakai, *Zanthoxylum schinifolium* Sieb. et Zucc., *Prunus* sp., and *Athyrium vidalii* Nakai.

MATERIALS AND METHODS

The plants collected from the Kaya-san National Park located in southern Korea were examined for external morphology. In addition, its morphological characteristics were compared with those of related species in eastern Asia. Flower and fruit structures of the species were sketched (Fig. 2) and somatic chromosome number was investigated from the root tip using conventional orcein-squash method. The plants collected across all over the southern Korea and the specimens at the following herbaria were examined; E, IUI, MAK, PE, SKK, SNUA, TI, and TUS. I am grateful to the curators of the herbaria for loans of specimens and/or permissions to observe specimens.

*Corresponding author: Fax +82-32-874-6737

RESULTS

The plants represent a species considered to be new to science and belong to the section *Indigofera* subsection *Decorae* Y.Y. Fang et C.Z. Zheng (=section *Psiloceratiae* (Gillett) Schrire subsection *Psiloceratiae*; Schrire, 1995) which comprises *I. kirilowii, I. koreana* Ohwi, and *I. decora* Lindley in the Far East (Fang & Zheng, 1989; Wei, 1994).

The new species (Figs. 1 & 2) appears to be closely related to *I. kirilowii* in Korea and E. China and *I. koreana* in southwestern Korea. However, the new species differs from the latter two species in having larger flowers, 17-22 mm long (as against 12-16 mm in *I. kirilowii* and 8-12 mm in *I. koreana*), larger, 4-6 cm long, ovate to elliptic, acute or acuminate-apex leaflets (as against 1.5-4.0 cm, broadly ovate to ovate, acute or obtuse-apex in those two species), pubescent on both surfaces of leaflets, denser beneath than above (as against two times above denser than beneath in *I. kirilowii* and glabrous beneath in *I. koreana*), calyx-teeth lanceolate, subequeal altogether (as against deltoid, lateral ones slightly longer than upper one in those two species) and 40-50 cm tall (as against usually 30-40 cm in them).

The new species also seem to be allied to *I. decora* in appearance. However, it is distinguished from the *I. decora* var. *decora* in having larger flowers, thin and ovate to elliptic leaflets with hairs on

Fig. 1. Holotype of *Indigofera grandiflora* B. Choi et S. Cho.

both surfaces and obscure veinlets, and loose inflorescences which are much shorter than subtending leaves. In *I. decora* var. *decora*, flowers are 15-18 mm long and leaflets are thick and narrowly oblong with conspicuous veinlets and glabrous upper surfaces. In addition, the inflorescences are dense and as long as or longer than subtending leaves. Three related species of *I. decora* were described by Craib (1913) from China, *i.e.*, *I. ichangensis* Craib, *I. chalara* Craib, and *I. cooperi* Craib, but these species have been treated as varieties of *I. decora* recently (Fang & Zheng, 1989). However, the new species mainly differs from these three taxa by larger flowers and calyces and hairiness on upper surface of leaflets with obscure veinlets.

Somatic chromosome number of *I. grandiflora* was 2n=16. The plants examined for chromosome counting were collected from the same population of Mt. Kaya on 2 August 1995.

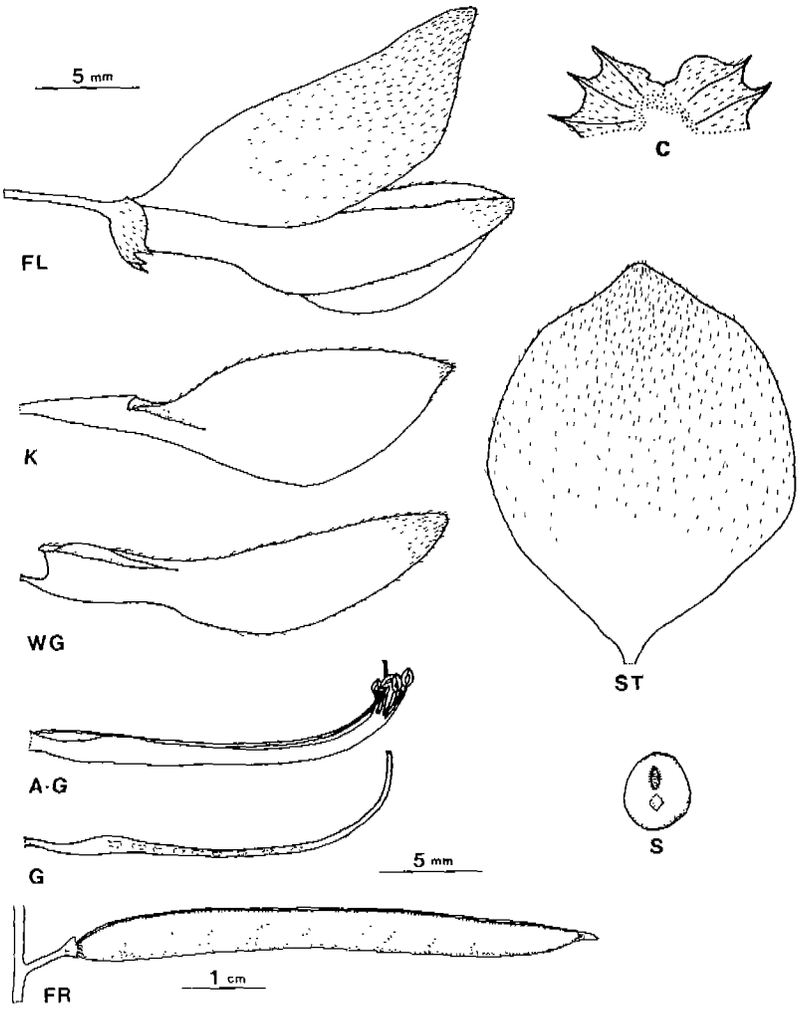

Fig. 2. *Indigofera grandiflora* B. Choi & S. Cho. FL, flower; C, calyx from inside; K, keel-petal; WG, wing; ST, standard; A.G, androecium and gynoecium; G, gynoecium; S, seed; FR, fruit. All the same magnification except fruit. Flowers were drawn from isotype (B.H. Choi, S.K. Cho & K.H. Chung 6654, IUI), and fruit and seed frawn from isotype (2 Aug. 1995, H.D. Park and K.H. Chung 130, IUI).

A Key of the *Indigofera grandiflora* and its related species.

Flowers 1.5-2.2 cm long; leaflets narrowly oblong, elliptic to ovate, 2.5-6.0 cm long.

Leaflets narrowly oblong, 2.5-4.0 cm long, thick, glabrous above, veinlets conspicuous; racemes dense, as long as or longer than subtending leaves; 1.5-1.8 cm long. ---------- *I. decora.*

Leaflets ovate to elliptic, 4.0-6.0 cm long, thin, pubescent above, veinlets obscure; racemes loose, shorter than subtending leaves; flowers 1.7-2.2 cm long ---------- *I. grandiflora.*

Flowers 0.8-1.6 cm long; leaflets broadly ovate to ovate, 1.5-4.0 cm long.

Leaflets pubescent above, glabrous beneath; flower 0.8-1.2 cm long; racemes 5-13 cm long. ---------- *I. koreana.*

Leaflets glabrous above, pubescent beneath; flower 1.2-1.6 cm long; racemes 10-18 cm long. ---------- *I. kirilowii.*

Indigofera grandiflora* B. Choi et S. Cho *sp. nov.

Affinis *Indigofera kirilowii* et *I. koreana*, sed flore et folioliis majioribus, pilis in pagina inferiore superiore densioribus differt. Species *I. decorae* similis, ab ea folioliis ovatis vel ellipticis, tenuibus; pu-

bescentibus in superficiebus folioliis; inflorescentia foliis breviore; flore majiore differt.

Planta perennis, 35-70 cm alta. Caules teretiusculi, prope basin 2-3 mm crassi, brunneo-corticati, glabri. Folia 7-11-foliolata, alterna, vulgo (petiolo 4-7 cm longo incluso) 13-23 cm longa, imparipinnata; rachi fere albo-pilosa. Foliola opposita, anguste ovata vel ovata, supra pilosa vel fere glabra infra pilosa, vulgo 4-6 cm longa 2-3 cm lata; apice acuto vel acuminato; basi obtusa; margine integera; nervis supra obscuris; petiolulo albo-pilosa, circa 2 mm longo. Stipellae lineares, deciduae, 1 mm longae, quam petiolulus brevior. Inflorescentia axillaris solitaria, 8-16 cm longa, folia brevior, glabra, 8-17-floribus pedunculus (racemo excluso) 3.5-7.5 cm. Bracteae anguste triangulares, extus pubescentes intus glabrae, circa 5 mm longae, deciduae. Pedicellus 4-5 mm longus, glaber. Bracteolata 1-1.5 mm longae, anguste triangulares. Calyx campanulatus, 3.5-4 mm longus, extus pilosus intus glaber, supra medium 5-fidus; tobe 2-2.5 mm longo, laciniis longiore; laciniis subaequalibus, 1 mm longis, triangularibus vel late triangularibus. Petala rosca, omnia subaequalia, 17-22 mm longa. Vexillum obovatum vel late ellipticum, supra pilosum; apice obtuso. Alae unguiculatae, 4-5 mm latae, margine et apice ciliato; laminis anguste ovatis, apice obutuso, basi breviter auriculata; unguc 1 mm longo. Carina obovata, 6 mm lata, supra margine et apice ciliato, apice obutuso. Stamina diadelpha, vexillari 15-19 mm longo, ceteris alte connatis 16-20 mm longis. Pistillum 17-21 mm longum, stipitatum (stipite circa 1.5 mm longo); ovario 5-9-ovulato, glabro; stylo glabro. Legumen dehiscens, sessile, lineare 5-6 cm longum 5 mm latum, glabrum, integrum; pagina aequata. Semina lata vel transverse lata elliptica, circa 3.5 mm longa 3.5 mm lata, glabrum.

Holotype: Korea, Prov. Kyungbuk, Songju-gun, Suyu-myeon, Kaya-san National Park, on the eastern slope of Mt. Kaya, 31 May 1992. B.H. Choi, S.K. Cho & K.H. Chung 6684 (IUI-Fig. 1).

Isotype: TUS

Korean name: Kun-kkog-ttang-bi-ssa-ri.

LITERATURE CITED

Craib, W.G. 1913. The *Indigofera* of China. *Not. Roy. Bot. Gard. Edinburgh* **8**: 47-77.

Fang, Y.-Y. and C.-Z. Zheng. 1989. A study on the genus *Indigofera* Linn. from China. *Act. Phytotax. Sinica* **27**: 161-177. (in Chinese).

Schrire, B.D. 1995. Evolution of the tribe Indigofereae (Leguminosae-Papilionoideae). *In* Advances in Legume Systematics, 7: Phylogeny. M. Crisp and J.J. Doyle (eds.), Royal Botanic Gardens, Kew. pp. 161-244.

Wei, Z. 1994. *Indigofera* L. *In* Flora R.P. Sinicae, 40; Angiospermae, Leguminosae (2), Sophoreae-Indigofereae. Z. Wei (ed.), Science Press, Beijing. pp. 239-269.

(Received April 17, 1996)