

***Agrostis dimorpholemma* (Gramineae), a New Record from Southern Taiwan and Its Morphological Variation**

Chang-Sheng Kuoh⁽¹⁾

(Manuscript received 20 February, 2003; accepted 7 April, 2003)

ABSTRACT: A new record of grass, *Agrostis dimorpholemma* Ohwi from Taiwan is described and illustrated. This species is presently known and only found at Hsin-I Hsiang, on roadside of Provincial road No. 18 near Yu-shan National Park, between 2,200-2,500 m alt. Meanwhile, the possible hybrid origin of the plants is also discussed.

KEY WORDS: *Agrostis dimorpholemma*, Gramineae, Hybrid, New record, Poaceae, Taiwan.

INTRODUCTION

The genus *Agrostis* consists of about 220 species in temperate regions and tropical mountains throughout the world (Clayton and Renvoize, 1986), of which about twenty species or more are recognized in China (Keng, 1965; Kuo, 1987) and five species occur in Taiwan (Hsu, 1978). Veldkamp (1982) recognized, *A. clavata* Trin. and *A. rigidula* Steud., two species, and four varieties of *A. rigidula* for Taiwan. Recently, in our botanical inventory of Taiwan an additional species, *Agrostis dimorpholemma* Ohwi, was observed.

TAXONOMIC TREATMENT

Agrostis dimorpholemma Ohwi, Bot. Mag. Tokyo 55: 351. 1941; Koyama, Grass. Jap. Neighb. Reg. 197. 1987; Osada, Illustrated Grasses of Japan-Enlarged Edition 310. 1993.

Fig. 1

Perennial, with slender stolons. Culms erect from a shortly prostrate or geniculate-ascending base, 60-75 cm tall, 1-2.5 mm thick, smooth, with 5 or 6-nodes, often branching from each node. Leaves basal and cauline; sheath glabrous; ligules ovate-oval, 1.5-3.5 mm long, the apex truncate to obtuse and usually erose, dorsally minutely scabrid; blades linear, 15-18 cm long, 1.5-2 mm wide, thinly herbaceous, soft, flat, green, scabrous above. Panicle erect, exserted or the base enclosed, 15-24 cm long; branches 2-9-(15)-nate, unequal, scabrous, the longest one up to 10 cm long, naked at the base with spikelets in the upper half of the branches. Spikelets light-green and often tinged with purple, 2-2.5 mm long. Glumes slightly unequal with the lower glume longer than the upper one, lanceolate, acute, 1-nerved, the keel scabrous. Lemmas occurring in two main forms, one awned and other one muticous, but with various intermediate forms within the same panicle. Awned lemmas usually are present in the terminal spikelets of primary branches, membranous-hyaline, hairy on the adaxial surface, 1.6-1.8 mm long, 3-nerved, the apex toothed from the lateral nerves, the awn arising from immediately above the base of the lemma, 1.5-2 mm long, rarely reduced to a minute tooth;

1. Department of Biology, National Cheng-Kung University, Tainan 700, Taiwan. Fax: 886-6-2742583; E-mail: kuohpopo@mail.ncku.edu.tw

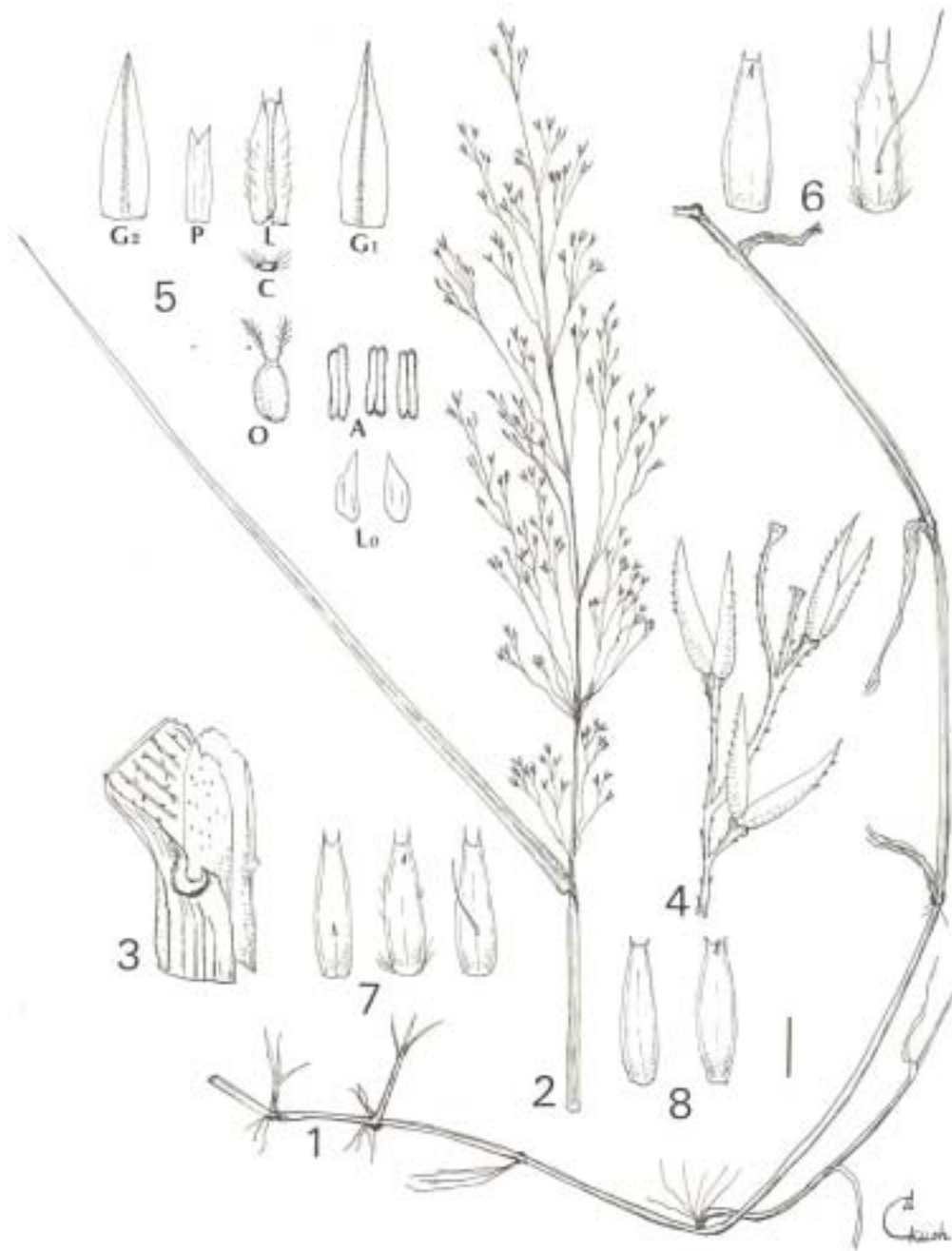


Fig. 1. *Agrostis dimorpholemma* Ohwi. 1. habit; 2. part of inflorescence; 3. part of leaf; 4. part of branch; 5. dissected spikelet showing the callus (C), lower glume (G1), upper glume (G2), lemma (L), palea (P), lodicule (Lo), anthers (A) and ovary (O); 6-8. backs of lemma, note the difference of awn. Bar = 1cm for figs. 1-2. Bar = 1 mm for figs. 3-4. Bar = 0.6 mm for figs. 5-8.

trichodium-net present; callus bearded with long hairs attaining 0.2-0.25 as long as the lemma. Palea hyaline, 0.5-0.6 times as long as the lemma, apex bifid, weakly 2-nerved. Awnless lemmas usually occur in the other spikelets, membranous-hyaline, 1.6 mm long, 3-nerved, apex obtuse, entire or minutely 2-toothed, midrib with a minute tooth arising from near the apex or middle of the lemma, glabrous; trichodium-net present; callus glabrous. Palea hyaline, 0.5-0.6 times as long as the lemma, apex bifid, weakly 2-nerved. Anthers 3, 0.8-1.2 mm long.



Fig. 2. The map of Taiwan and the collection locality (*) of *Agrostis dimorpholemma* Ohwi.

Distribution and notes: Extremely rare, presently known only from Nantou Hsien, Hsin-I Hsiang, on roadside, Provincial road number 18, at 91 Km (N 23°32'17".4; E 120°50'13".3) near Yu-shan National Park., between 2,200-2,500 m alt., on 18, Aug. 2000, C. S. Kuoh 18888 (NCKU, Herbarium of National Cheng-Kung University). (Fig. 2). The plant occurs along roadsides, and was associated with *Anemone vitifolia* Buch.-Ham. ex DC., *Astilbe longicarpa* (Hayata) Hayata, *Carex filicina* Nees, *Chamaecyparis formosensis* Matsum., *Dactylis glomerata* L., *Polygonum cuspidatum* Sieb. & Zucc., and *Prunus campanulata* Maxim.

DISCUSSION

A. dimorpholemma was published by Ohwi (1941) based on a specimen collected at Hakone in Honshu (holotype in KYO), later it was found in Izu and also in Pref. Fukuoka and Oita, northern Kyushu, Japan. Comparing with the specimen (Koji, Yonekura, 93454, Japan, Pref. Miyagi, Sendai-shi, Aoba-ku, Goroku, Kuzuoka Kuzuoka-boen, N 38°16'02".0; E 140°49'30".4, alt. 180-190 m; HAST) and the descriptions of several Japanese authors (Ohwi, 1941; Koyama, 1987; Osada, 1993), the plant in Taiwan (15-24 cm long) is longer than that of *A. dimorpholemma* in Japan (5-15 cm), while the numbers of branches at each node in the former (up to 9-nate, occasionally more than this) is also higher than the latter (up to 5-nate). The lemmas are clearly dimorphic in *A. dimorpholemma*, as reflected in the specific epithet, and there are no intermediate forms of lemma as the plant in Taiwan. Ohwi described his plant as a hybrid (1941). In addition, Koyama (1987) also treated *A. dimorpholemma* as a probable hybrid, suggesting a *Calamagrostis* sp. as one of the parents and *A. alba* as one of the other parents. The rarity of the plant in Taiwan and the variable lemma and awn morphology also suggest the possible hybrid status of *A. dimorpholemma* in Taiwan.

ACKNOWLEDGEMENTS

Sincere thanks are due to Dr. J. F. Veldkamp for helpful comments and two anonymous reviewers recommendation on the manuscript. Thanks are also given to the curators of the herbaria TAI and HAST for permission to consult the specimens of *Agrostis*. The study was supported in part by research grants from the National Science Council, and the Council of Agriculture, Taiwan.

LITERATURE CITED

- Clayton, W. D. and S. A. Renvoize. 1986. Genera Graminum, Grasses of the World. Her Majesty's Stationary Office, London. pp. 134-135.
- Hsu, C.-C. 1978. Gramineae. In: Li, H.-L., T.-S. Liu, T.-C. Huang, T. Koyama, and C. E. DeVol (eds.). Flora of Taiwan, vol. 5. Epoch Publishing Co., Ltd., Taipei. pp. 397- 402.
- Keng, Y.-L. 1965. Flora Illustrata Plantarum Primarum Sinicarum. Gramineae. Science Press. Beijing, pp. 529-548.
- Koyama, T. 1987. Grasses of Japan and its Neighbouring Regions. Kodansha Ltd. Tokyo. p. 197.
- Kuo P.-C. 1987. Flora Reipublicae Popularis Sinicae. Tomus, vol. 9(3), Science Press. Beijing, pp. 229-251.
- Ohwi, J. 1941. Tribe *Agrosteae* of Japan. Bot. Mag. Tokyo **55**: 351.
- Osada, T. 1993. Illustrated Grasses of Japan. Heibonsha Ltd., Publishers Tokyo. pp. 310-311.
- Veldkamp, J. F. 1982. *Agrostis* (Gramineae) in Malesia and Taiwan. Blumea **28**:199-228.

台灣新紀錄禾草：多形剪股穎 (*Agrostis dimorpholemma*)及其形態變異

郭長生⁽¹⁾

(收稿日期：2003 年 2 月 20 日；接受日期：2003 年 4 月 7 日)

摘 要

本文發表一種台灣特產之禾本科新紀錄植物，多形剪股穎 (*Agrostis dimorpholemma*)，並提供該植物描述、繪圖及分布圖以資辨識。多形剪股穎目前僅知分布於鄰近玉山國家公園，海拔約 2,200 至 2,500 公尺之信義鄉 18 號省道，生長於多霧之林下路旁。此外，另就此物種可能為雜交種加以探討。

關鍵詞：多形剪股穎、禾本科、雜交種、新紀錄種、台灣。

1. 國立成功大學生物系，台南市 700，台灣。Fax: 886-6-2742583; E-mail: kuohpopo@mail.ncku.edu.tw