

*Setaria sphacelata* (Schumach.) Moss *ex* Stapf & Hubb., a  
Grass Newly Naturalized to Taiwan

台灣新歸化禾草—南非鴿草

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## Abstract

This paper describes *Setaria sphacelata* (Schumach.) Moss *ex* Stapf & Hubb. as a newly naturalized grass to Taiwan with its line drawing. Also, a key to the species of the genus *Setaria* in Taiwan is provided for identification.

## 摘要

本文報導新近發現於台灣的新歸化禾本科植物—南非鴿草(*Setaria sphacelata* (Schumach.) Moss *ex* Stapf & Hubb.)，文中並提供該物種之描述、手繪圖及台灣產狗尾草屬植物之檢索表。

**Key words:** *Setaria sphacelata*, Poaceae, naturalized grass, Taiwan

**關鍵詞：**南非鵪草、禾本科、歸化種、台灣

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## Introduction

The genus *Setaria* P. Beauv., belonging to the tribe Paniceae of the family Poaceae, is comprised of about 100-140 species throughout the tropical and warm temperate regions of the world (Clayton and Renvoize 1986; Watson and Dallwitz 1992; Liu 2000). Nine species and one variety have been reported from Taiwan (Hsu 1975, 1978). Of them *Setaria viridis* (L.) P. Beauv. var. *pachystachys* (Franch. & Sav.)

Makino & Nemoto, was recently treated as a synonym of the species by Liu (2000).

Recently, we found *Setaria sphacelata* (Schumach.) Moss ex Stapf & Hubb., as a newly naturalized species to Taiwan. It is an important fodder species (Koyama 1987; Watson and Dallwitz 1992) and a significant weed (Watson and Dallwitz 1992). This paper provides a description of the species with its line drawing and a key to the species of the genus *Setaria* in Taiwan for identification.

## Taxonomic Treatment

Key to species of *Setaria* in Taiwan

1. Panicle loosely opened; blades folded; fan-fashion between longitudinal veins.
  2. Blade 3-7 cm wide; upper floret ovate, obscurely rugose.....*S. palmifolia*
  2. Blade 1-3 cm wide; upper floret narrowly ovate, transversely rugose.....*S. plicata*
1. Panicle contracted, cylindrical; blades not plicate.
  3. Lower palea distinctly shorter than lower lemma or reduced; sheath margins hairy.
    4. Main axis of panicle serrulate; bristles retrorsely barbed.....*S. verticillata*
    4. Main axis of panicle hairy; bristles antorsely barbed.
      5. Upper glume 2/3-3/4 as long as spikelet.....*S. faberii*
      5. Upper glume subequal to spikelet.
        6. Glumes and lower lemma persistent; cultivated species.....*S. italica*
        6. Glumes and lower lemma falling off together with upper floret; wild species.....*S. viridis*
    3. Lower palea as long as lower lemma; sheath margins glabrous.
      7. Spikelets 3-4 mm long; lower floret usually staminate.....*S. glauca*
      7. Spikelets 2-2.5 mm long; lower floret usually sterile.
        8. Plants rhizomatous, perennials; lower palea obviously narrower than upper floret.
          9. Inflorescence 2-7 cm long.....*S. geniculata*
          9. Inflorescence 10-50 cm long.....*S. sphacelata*
        8. Plants not rhizomatous, annuals or biennials; lower palea as broad as upper floret...*S. pallide-fusca*

*Setaria sphacelata* (Schumach.) Moss *ex* Stapf & Hubb., Flora of Tropical Africa 9(5): 795-798. 1930; Hitchcock, Manual of the Grasses of the United States (ed. 2, revised by A. Chase) 720. 1951; Clayton and Renvoize, Gramineae (Part 3), Flora of Tropical East Africa 527. 1982; Webster, The Australian Paniceae (Poaceae) 213. 1987; Clayton, Davidse, Gould, Lazarides and Soderstrom, A Revised Handbook to the Flora of Ceylon 8: 412. 1994; Veldkamp, Blumea 39: 382. 1994. Fig. 1

*Panicum sphacelatum* Schumach. *Beskrivelse af Guineeske planter* 58-59. 1827.

*Pennisetum sphacelatum* (Schumach.) Durand & Schinz, *Conspectus Florae Africae* 5: 784. 1894.

Perennials; rhizomatous. Culms erect or decumbent at base, usually branched from the lower and middle nodes, 20-200 cm tall. Leaf sheaths keeled, glabrous, the margin hyaline. Ligule membranous, fringed with hairs, 1-2 mm long, membrane 0.8-1.5 mm long, cilia 0.2-1.5 mm long. Leaf blades herbaceous, flat or convolute, linear, 10-50 cm long, 2-17 mm wide, acuminate at apex, glabrous to slightly hairy on both surfaces, margin entire. Inflorescence a dense, cylindrical and terminal panicle, 10-50 cm long. Spikelets sessile, elliptic, acute at apex, 2-2.8 mm long, moderately dorsally compressed, falling entirely when mature, 1-4 in a cluster, surrounded by 6-15 persistent bristles; the bristles 1.5-12 mm long, antrorsely scaberulous, with 2 florets, the lower one sterile (sometimes staminate) and the upper one fertile. Lower glume membranous, ovate, glabrous, obtuse to acute at apex, 1/4-1/2 of spikelet length, 3- (5)-nerved. Upper glume membranous, ovate, glabrous, acute at apex, 1/3-3/4 of spikelet length, 5-nerved, margins eciliate; membranous, ovate, 3/10-3/5 of spikelet length. Lower florets sterile or staminate; lower lemma membranous,

ovate, 5-veined, as long as spikelet; lower palea fully developed, elliptic, hyaline. Upper florets bisexual and fertile, 1.8-2.6 mm long, elliptic to ovate-elliptic, acute at apex; upper lemma ovate, acute at apex, surface rugose; upper palea embraced by upper lemma, acute at apex, 2-keeled.

Native to tropical and South Africa; widely introduced to tropical areas worldwide (Webster 1987; Clayton *et al.* 1994). Cultivated in Taiwan for pasture and erosion control; escaped and naturalized in the central and northern part of the island.

**Specimen examined:** HSINCHU: Kuanhsi, Yang & Wang 8288 (TNM). NANTOU: Hsitou, Chen 5622; Chungliiao, Chen 5677 (herbarium of Endemic Species Research Institute); Yuchih, Kuoh *s. n.* Mar. 30, 2002 (NCKU).

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## Literature Cited

- Clayton, W. D. and S. A. Renvoize. 1986. Genera Graminum. Her Majesty's Stationary Office, London.
- Clayton, W. D., G. Davidse, F. Gould, M. Lazarides and T. R. Soderstrom. 1994. A Revised handbook to the flora of Ceylon Vol: 8 Poaceae. Amerind Publishing Co. Pvt. Ltd., New Delhi.
- Hsu, C. C. 1975. Taiwan grasses. Taiwan Provincial Education Association, Taipei. (in Chinese).
- Hsu, C. C. 1978. Gramineae. *In*: Li, H. L., T. S. Liu, T. C. Huang, T. Koyama and C. E.



**Fig. 1.** *Setaria sphacelata*: 1, habit; 2, ventral view of spikelet with bristles; 3, lower glume; 4, upper glume; 5, lower lemma; 6, lower palea; 7, dorsal view of upper fertile floret; 8, joint of leaf sheath and leaf blade.

- DeVol (eds.). Flora of Taiwan, 1st ed. 5: 598-610. Epoch Publishing Co., Taipei.
- Koyama, T. 1987. Grasses of Japan and its neighboring regions. Kodasha Ltd., Tokyo.
- Liu, H. Y. 2000. Paniceae. In: Huang T. C. *et al.* (eds.). Flora of Taiwan, 2nd ed. 5: 509-515. Editorial Committee, Dept. Bot., NTU,

Taipei.

- Watson, L. and M. J. Dallwitz. 1992. The Grass genera of the world. Cab International, Wallingford.
- Webster, R. 1987. The Australian Paniceae (Poaceae). J. Cramer, Berlin.