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Taxonomy of the genus *Melinis* (Poaceae) in Thailand, with lectotypification of three names

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ABSTRACT

A taxonomic study of the genus *Melinis* (Poaceae) in Thailand was conducted. Two species, *M. nerviglumis* and *M. repens*, are found with both species being introduced to Thailand. *Melinis repens* was introduced to Thailand for use as pasture and has become naturalized in all floristic regions as a weed; *M. nerviglumis* has no record of utilization in Thailand and is recorded from the Northern and North-Eastern regions but was not found during recent field surveys. Morphological descriptions, distribution data, and ecological information are provided; lectotypes are designated for *M. bachmannii*, *M. nyassana* and *M. villosipes*, synonyms of *M. nerviglumis*. Both species are illustrated and a key to the species, based on morphological characters is provided.

KEYWORDS: Gramineae, grasses, lectotype, morphology, taxonomy

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INTRODUCTION

The genus *Melinis* P.Beauv. belongs to tribe Paniceae, subtribe Melinidinae and consist of 22 species (Soreng *et al.*, 2017). It is characterized by paniculate inflorescences, the ligule having a fringe of hairs, solitary and laterally compressed spikelets and the upper lemma being chartaceous, cartilaginous or crustaceous, as well as being smooth and shiny. The genus is closely related to the genus *Tricholaena* Schrad., also with paniculate inflorescences, laterally compressed spikelets and smooth the upper lemma but *Melinis* differs in having a minute lower glume and lower lemma with an awn, whereas *Tricholaena* has the lower glume well developed and an awnless lower lemma (Clayton & Renvoize 1986; Zizka, 1988; Salariato *et al.*, 2010).

This genus is native to Africa and the Arabian Peninsula (POWO, 2019). Some species have been introduced to other countries for utilization. For, Molasses grass, *Melinis minutiflora* P.Beauv. is used widely as fodder, Ruby grass, *M. nerviglumis* (Franch.) Zizka is used as an ornamental and Natal grass, *M. repens* (Willd.) Zizka has been reported for both pasture and as an ornamental. However, some species have become weeds or strongly invasive in several countries (Radanachaless & Maxwell, 1997; Chen & Phillips, 2006; Kueffer *et al.*, 2010; Veldkamp *et al.*, 2019).

The genus was introduced into Thailand for use as forage. However, there is no previous taxonomic treatment for the Thai taxa and the treatments presented here will contribute to the Poaceae account for the Flora of Thailand.

MATERIALS AND METHODS

This study was carried out using taxonomic literature together with herbarium specimens in the following herbaria: AAU, BK, BKF, K, KKU, and PSU. Other sources of data were digitized specimen images from B, K, L, M, P, S, U and W and additional specimens collected on recent field surveys made throughout Thailand. Morphological characters, ecological and phenological data were recorded; specimens were deposited at BK and BKF. Morphological characters were observed thoroughly under a stereo microscope.

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TAXONOMIC TREATMENT

Melinis P.Beauv., Ess. Agrostogr.: 54. 1812; Zizka, Biblioth. Bot. 138: 1. 1988; Duistermaat, Gard. Bull. Singapore Suppl. 57: 89. 2005; S.L.Chen & S.M.Phillips in C.Y. Wu *et al.*, Fl. China 22: 539. 2006; Veldkamp *et al.*, in D.J. Middleton *et al.*, Fl. Singapore 7: 390. 2019.— *Suardia* Schrank, Pl. Rar. Hort. Monac.: t. 58. 1820.— *Tristegis* Nees, Horae Phys. Berol.: 47. 1820.— *Rhynchelytrum* Nees, J. Lindley, Intr. Nat. Syst. Bot., ed. 2: 378. 1836; Bor, Grass Burm. Ceyl. Ind. & Pakist.: 355. 1960.— *Monachyron* Parl. ex Hook., Niger Fl.: 190. 1849.— *Mildbraediochloa* Butzin, Willdenowia 6: 288. 1971.— Type species: *Melinis minutiflora* P.Beauv.

Annual or perennial. *Culms* erect, geniculate, ascending, decumbent or rambling, rooting from lower nodes. *Ligules* a fringe of hairs. *Leaf blades* filiform, linear or narrow lanceolate. *Inflorescence* opened or contracted panicle. *Spikelets* solitary, laterally compressed, symmetrical or gibbous, falling entire. *Pedicels* filiform, rarely sessile. *Rachilla* internodes short, elongated between glumes, or elongated below the lower floret. *Florets* 2; lower floret male or sterile. *Lower glume* absent, obscure or well-developed, oblong or ovate, membranous or hyaline, 1-nerved or nerveless. *Upper glume* as long as spikelet, hairy. *Lower lemma* usually awn. *Upper floret* bisexual, chartaceous, cartilaginous or crustaceous, and awnless. *Stamens* 3. *Pistils* style 2, stigma plumose.

A genus of 22 species, two species in Thailand.

KEY TO THE SPECIES

1. Densely tufted. Basal leaf sheaths strongly overlapping. Leaf blades mostly involute. Rachis of inflorescence slightly scabrous with spreading hairs. Lower glume 0.3–0.5 mm long. Rachilla between lower glume and upper glume ca 0.1 mm long or absent **1. M. nerviglumis**

1. Loosely tufted. Basal leaf sheaths slightly or not overlapping. Leaf blades flattened or conduplicate. Rachis of inflorescence slightly scabrous without spreading hairs. Lower glume 1–1.2(–1.5) mm long. Rachilla between lower glume and upper glume 0.3–0.5 mm long **2. M. repens**

1. Melinis nerviglumis (Franch.) Zizka, Biblioth. Bot. 138: 111. 1988.— *Tricholaena nerviglumis* Franch., Bull. Soc. Hist. Nat. Autun 8: 357. 1895.— *Rhynchelytrum nerviglume* (Franch.) Chiov., Nuovo Giorn. Bot. Ital., n.s., 26: 78. 1919. Type: Congo, Brazzaville, *Brazza & Thollon 380* (lectotype **P** [P00442102], photo seen, designated by Zizka (1988); isolectotype, **K** [K000281730!]).

— *Tricholaena congoensis* Franch., Bull. Soc. Hist. Nat. Autun 8: 355. 1895. Type: Congo, Brazzaville, *Brazza & Thollon 381* (holotype **P** n.v.; isotype **K** [K000281731!]).

— *Tricholaena setifolia* Stapf in Harvey, Fl. Cap. 7(3): 442. 1899.— *Melinis setifolia* (Stapf) Hack., Oesterr. Bot. Z. 51: 464. 1901.— *Rhynchelytrum setifolia* (Stapf) Chiov., Annuario Reale Ist. Bot. Roma 8: 310. 1908. Type: South Africa, Oakfort, *Rehmann 8456* (holotype, **K** [K000281563], photo seen).

— *Panicum gracillimum* Mez, Bot. Jahrb. Syst. 34: 131. 1904. Type: Gabon, Grand Corisco Island, Oct. 1862, *Mann 1889*, (holotype **B** n.v.; isotype **K** [K000281727!]).

— *Panicum elongatum* Mez, Bot. Jahrb. Syst. 34: 132. 1904. Type: Zaire, *Demeuse 102* (holotype **B** n.v.; isotype **K** [K000281736!]).

— *Melinis bachmannii* Mez, Bot. Jahrb. Syst. 57: 198. 1921. Type: South Africa, Pondoland, *Bachmann 191* (lectotype **B** [B100167755], photo seen, designated here; isolectotype **K** [K000281567!]).

— *Melinis villosipes* Mez, Bot. Jahrb. Syst. 57: 199. 1921. Type: Tanzania, Rungwe District, Kyimbila, 7 Nov. 1911, *Stolz 967* (lectotype, **B** [B100167714], photo seen, designated here; isolectotypes **K** [K000281667!], **M** [M0103882], **S** [S14-19155], and **W** [W19150005179], photo seen).

— *Melinis nyassana* Mez, Bot. Jahrb. Syst. 57: 199. 1921.— *Rhynchelytrum nyassanum* (Mez) Stapf & C.E.Hubb., Fl. Trop. Afr. 9: 892. 1930. Type: Tanzania, Kyimbila, 25 Jan. 1912, *Stolz 1095* (lectotype **B** [B100167733], photo seen, designated here; isolectotypes **K** [K000281668!], **L** [L1327594], **M** [M0103883], **S** [S14-19152], **U** [U1508789], and **W** [W19150005081], photo seen).

— *Rhynchelytrum ramosum* Stapf & C.E.Hubb., Fl. Trop. Afr. 9: 895. 1930. Type: Angola, Sumba Plateau,

Gossweiler 8603 (holotype **B** [B100168842], photo seen; isotype **K** [K000281630], photo seen).

— *Rhynchelytrum stuposum* Stapf & C.E.Hubb., Fl. Trop. Afr. 9: 897. 1930. Type: Malawi, Mt Malosa, 8 Dec. 1896, *Whyte s.n.*, (holotype **K** [K000281589!]). Figs. 1 & 3: D.

Perennial, densely tufted. *Culms* erect, 60–80 cm high; nodes hairy; internodes terete, 9–14 cm long, 1–2 mm in diam., glabrous. *Leaf sheaths* 7–15 cm long, basal leaf sheaths strongly overlapping, pubescent at base and glabrous toward the apex. *Ligules* a fringe of hairs, 0.5–0.8 mm long. *Collar* hairy or glabrous. *Leaf blades* linear, 22–55 cm × 1.5–3 mm, apex acute, base rounded or attenuate, margins scabrous, chartaceous, mostly involute, glabrous on both surfaces and usually hairy at base on the upper surface. *Inflorescence* a panicle, 35–40 × 1–3 cm; central axis angle, 9–17 cm long, with spreading long hairs; peduncle terete, 13–20 cm long, glabrous; raceme 1–3 cm long, along a central axis, rachis slender, slightly scabrous with spreading hairs. *Spikelets* solitary, laterally compressed, lanceolate, 4–6 × 1–1.5 mm (excluding awn). *Pedicels* slender, 1.5–3 mm long, with or without hairs below the expanded tip. *Lower glume* oblong, 0.3–0.5 × 0.1–0.2 mm, apex obtuse or acute, membranous, villose up to 1 mm long, obscure 1-nerved or nerveless. *Upper glume* laterally compressed, oblong-ovate, 3.8–4 × 1–1.5 mm, apex emarginate or rounded, awn from sinus, awn 0.5–1 mm long and scabrous, margins hairy, chartaceous, villose up to 5 mm long, densely at the middle, glabrous upwards, 5-nerved. *Rachilla* between lower glume and upper glume ca 0.1 mm long or absent. *Florets* 2. *Lower floret* male. *Lower lemma* laterally compressed, oblong-ovate, 3.6–4 × 1–1.5 mm, apex emarginate or rounded, awn from sinus, awn 1–2.5 mm long and scabrous, margins hairy, chartaceous, villose up to 5 mm long, densely at the middle, glabrous upwards and hairy or glabrescent downwards, 5-nerved. *Lower palea* oblong or narrow elliptic, 3–3.5 × 0.2–0.5 mm, apex acuminate, margins folded, 2-keeled with ciliate along keels, membranous or hyaline, glabrous, 2-nerved. *Upper floret* bisexual. *Upper lemma* ovate, 2.5–3 × 0.5–0.8 mm, apex emarginate or mucronate, margins entire, cartilaginous, glabrous, 5-nerved. *Upper palea* ovate, 2–2.2 × ca 0.5 mm, apex acuminate, margins hyaline, cartilaginous, glabrous, obscure 1-nerved. *Lodicules* 2, ca 0.2 mm long, emarginate. *Stamens* 3; filaments ca 1 mm long; anthers brown, 1.5–1.6 mm long. *Ovary* oblong, 0.6–0.8 × 0.1–0.2 mm long; styles 2; stigma 1.5–2 mm long, plumose. *Caryopsis* ellipsoid, ca 1.5 × 0.8 mm.

Thailand.— NORTHERN: Chiang Mai [Ob Luang, along road from Bo Luang to Om Koi, 12 June 1968, *Beusekom & Phengklai 1168* (**K!**)]; NORTH-EASTERN: Loei [Phu Kradueng, Pha Mak Duk, 11 July 1959, *Smitinand 5904* (**K!**); ibid., 22 Mar. 1971, *Smitinand 11472* (**K!**)].

Distribution.— Native in Congo to South-West Ethiopia, South Africa and Madagascar, introduced to Hawaii, Thailand, Vietnam.

Ecology.— Scattered on rocky ground, along the edge of cliffs, and open areas in pine-deciduous dipterocarp forests at 1,200–1,300 m alt.

Phenology.— Flowering and fruiting March–July.

Vernacular name.— Ya yang (หญ้ายาง)(General).

Conservation status.— In Thailand, *Melinis nerviglumis* is only recorded from two localities in Chiang Mai and Loei provinces. The species was not found during the recent field surveys in Thailand. It is only known from the herbarium specimens. Therefore, the population size in Thailand is unknown. It must be assessed as Data Deficient (DD).

Notes.— This species can be recognized as a densely tufted plant with leaf blades involute and the narrowly oblong to ovate panicle; note the species can be variable in the spikelet indumentum with plants ranging from glabrescent to densely villose at the same locality.

Mez (1921) described *Melinis bachmannii* based on *Bachmann 191* from Pondoland, South Africa but did not mention the herbaria in which the specimens were present. Zizka (1988) selected the specimen kept in **B** as the holotype but his designation did not constitute a typification; we located the specimens of *Bachmann 191* at **B** [B100167755] and **K** [K000281567]. According to Art 9.6 of the ICN (Turland *et al.*, 2018), they constitute syntypes. The lectotype should be provided.

During 1910–1935, Carl Mez, author of the species, worked at the Könisberg Botanical Garden. After the Könisberg University Herbarium was destroy in 1944, many of Mez's designated types may be kept in **B**, **M** or **G** (Stafleu & Cowan, 1979).

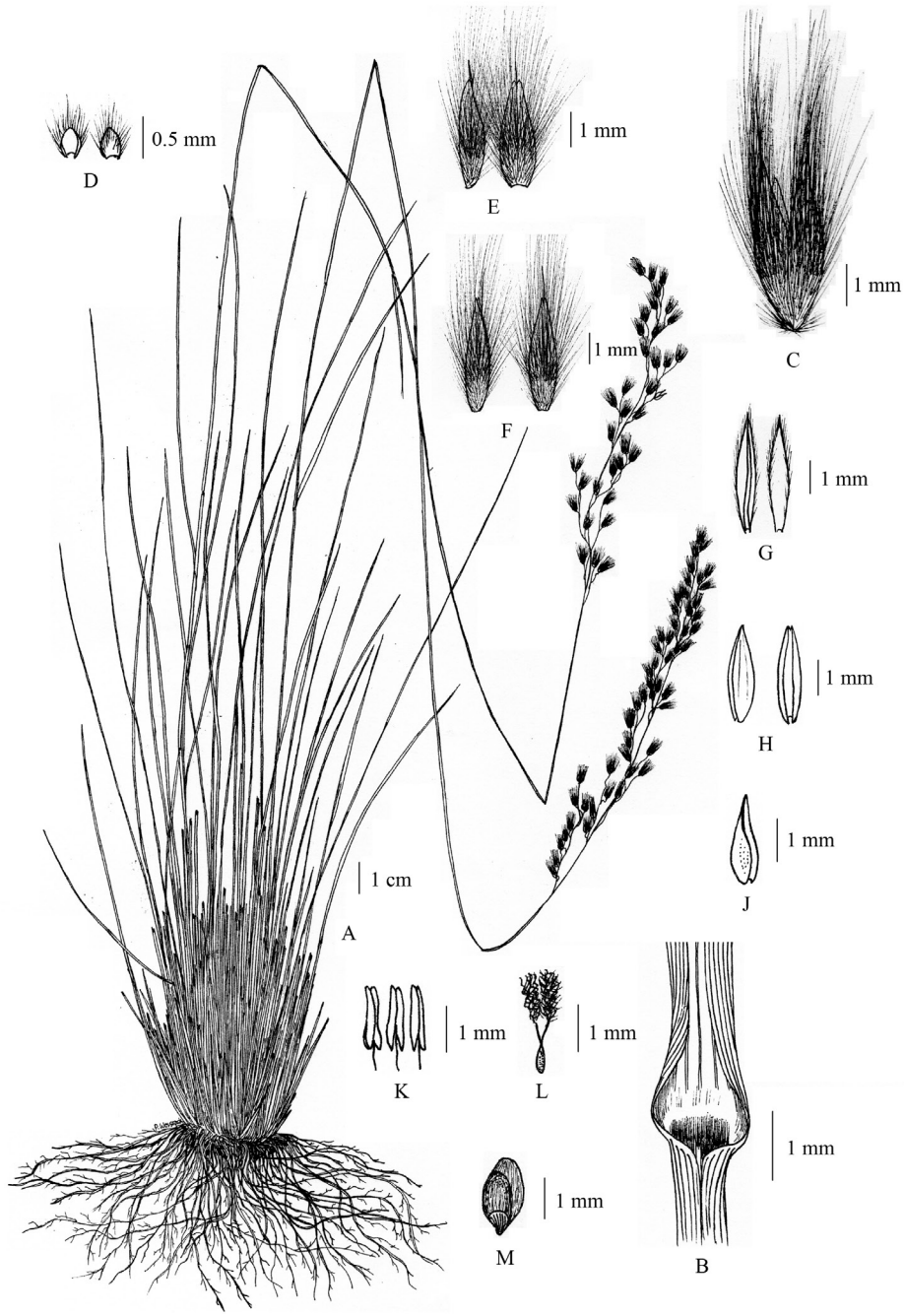

Figure 1. *Melinis nerviglumis* (Franch.) Zizka: A. habit; B. ligule; C. spikelet; D. lower glume; E. upper glume; F. lower lemma; G. lower palea; H. upper lemma; J. upper palea; K. stamens; L. pistil; M. caryopsis. Drawn from *Smitinand 11472* by Paweena Wessapak.

We selected the sheet in **B** [B100167755] as the lectotype of *M. bachmannii*, in accordance to Art 9.3 and 9.12 of the ICN (Turland *et al.*, 2018), because it contains handwritten annotations on the sheet by Mez and also is a well preserved and complete specimen, while the sheet in **K** has only spikelets present and bears a drawing made on the basis of a specimen from **B** (Fig. 4).

Melinis villosipes was described by Mez (1921) and two collections (*Buchanan 244* and *Stolz 967*) were cited but neither was indicated as a type. According to Art 9.6 of the ICN (Turland *et al.*, 2018), they constitute syntypes. We located one sheet of *Buchanan 244* in **B** [B100167715] and five sheets of *Stolz 967* in **B** [B100167714], **K** [K000281667], **M** [M0103882], **S** [S14-19155] and **W** [W19150005179]. Some of them are marked as a type but these annotations were not made by the author of the species. According to Mez's working place in 1921, the original material available to the author may be deposited either **B** or **M** ([B100167714] and [M0103882]). This study found the specimens of *Stolz 967* in **B** and **M** have Mez's handwriting on the sheets but there is no annotation on the *Buchanan 244* sheet. There is a high possibility that the original materials are both specimens of *Stolz 967* in **B** and **M**, however, Mez did not annotate any sheets as a type. Therefore, we compared both specimens with diagnostic characters and found that the collection of *Stolz 967* (**B** [B100167714]) is a well preserved and complete specimen and is chosen here as the lectotype in accordance to Art 9.3 and 9.12 of the ICN (Turland *et al.*, 2018) (Fig. 5).

Likewise, *Melinis nyassana* was named by Mez (1921) based on the type *Stolz 1095* from Tanzania, Kyimbila but he did not mention the herbaria in which they were deposited. We found that the collection labelled *Stolz 1095* consists of 7 specimens deposited at **B** [B100167733], **K** [K000281668], **L** [L1327594], **M** [M0103883], **S** [S14-19152], **U** [U1508789] and **W** [W19150005081], and according to Art 9.6 of the ICN (Turland *et al.*, 2018) they constitute syntypes.

According to the author's work place, both sheets from **B** and **M** are best considered to be the original material available to the author. Among which the specimens of *Stolz 1095*, we found the hand writing of Mez on the sheets in **B** and **M**. We compared the two sheets ([B100167733] and [M0103883]) and the better preserved and complete specimen is in **B**, as it shows diagnostic characters, both vegetative and inflorescence parts, and is selected here as the lectotype in accordance to Art 9.3 and 9.12 of the ICN (Turland *et al.*, 2018) (Fig. 6).

2. Melinis repens (Willd.) Zizka, Biblioth. Bot. 138: 55. 1988; Duistermaat, Gard. Bull. Singapore Suppl. 57: 89. 2005; S.L.Chen & S.M.Phillips in C.Y. Wu *et al.*, Fl. China 22: 539. 2006; Veldkamp *et al.*, in D.J. Middleton *et al.*, Fl. Singapore 7: 391. 2019.— *Saccharum repens* Willd., Sp. Pl., ed. 4, 1: 322. 1797.— *Erianthus repens* (Willd.) P.Beauv., Ess. Agrostogr.: 14. 1812.— *Rhynchelytrum repens* (Willd.) C.E.Hubb., Bull. Misc. Inform. Kew 1934: 110. 1934; Bor, Grasses Burma, Ceyl. Ind. & Pakist.: 355. 1960; Gilliland, Revis. Fl. Malaya 3: 150. 1971. — *Tricholaena repens* (Willd.) Hitchc., Misc. Publ. U.S.D.A. 243 (Man. Grasses IV. Indies): 331. 1936. Type: 'Habitat in Guinea', *Isert s.n.* (lectotype **B** [B-W01499010], photo seen, designated by Fosberg, Smithson. Contr. Bot. 47: 3. 1981; isolectotypes **C**, **S** n.v.).

— *Tricholaena rosea* Nees in Schauer, Index Seminum. Hort. Bot. Vratisl. 1835: [3]. 1836; Nees, Fl. Afr. Austral. 3: 17. 1841.— *Melinis rosea* (Nees) Hack., Oesterr. Bot. Z. 51: 464. 1901.— *Rhynchelytrum roseum* (Nees) Stapf & C.E.Hubb. ex Bews, World's Grasses: 223. 1929.— *R. repens* (Willd.) C.E.Hubb. var. *roseum* (Nees) Chiov., Miss. Biol. Borana, Racc. Bot., Angiosp.-Gymnosp.: 275. 1939.— *Tricholaena repens* (Willd.) Hitchc. var. *rosea* (Nees) Alberts., Bull. Imp. Bur. Pastures. 37: 10. 1947. Type: South Africa, *Drège 4319* (lectotype **B** [B100715446a], photo seen, designated by I.M.Turner *et al.*, Gard. Bull. Singapore 71(14): 1. 2019; isolectotype **P** [P00442106], photo seen). Figs. 2, 3: A–C.

Annual or short-lived perennial, loosely tufted. *Culms* erect, geniculate or ascending, rooting at the lower node, 0.5–1.2 m high; nodes hairy; internodes terete, 3.5–18 cm long, 1–2.5 mm in diam., hairy or glabrous. *Leaf sheaths* 3.5–11 cm long, margins entire, basal leaf sheaths slightly or not overlapping, pilose or spreading tubercle-based hairs. *Ligules* a fringe of hairs, 1–1.2 mm long. *Collar* mostly glabrous sometimes spreading tubercle-based hairs. *Leaf blades* linear, 4–25 x 0.2–0.6 cm, apex acute, base rounded, margins scabrous, chartaceous, flattened or conduplicate, both surfaces glabrous or spreading

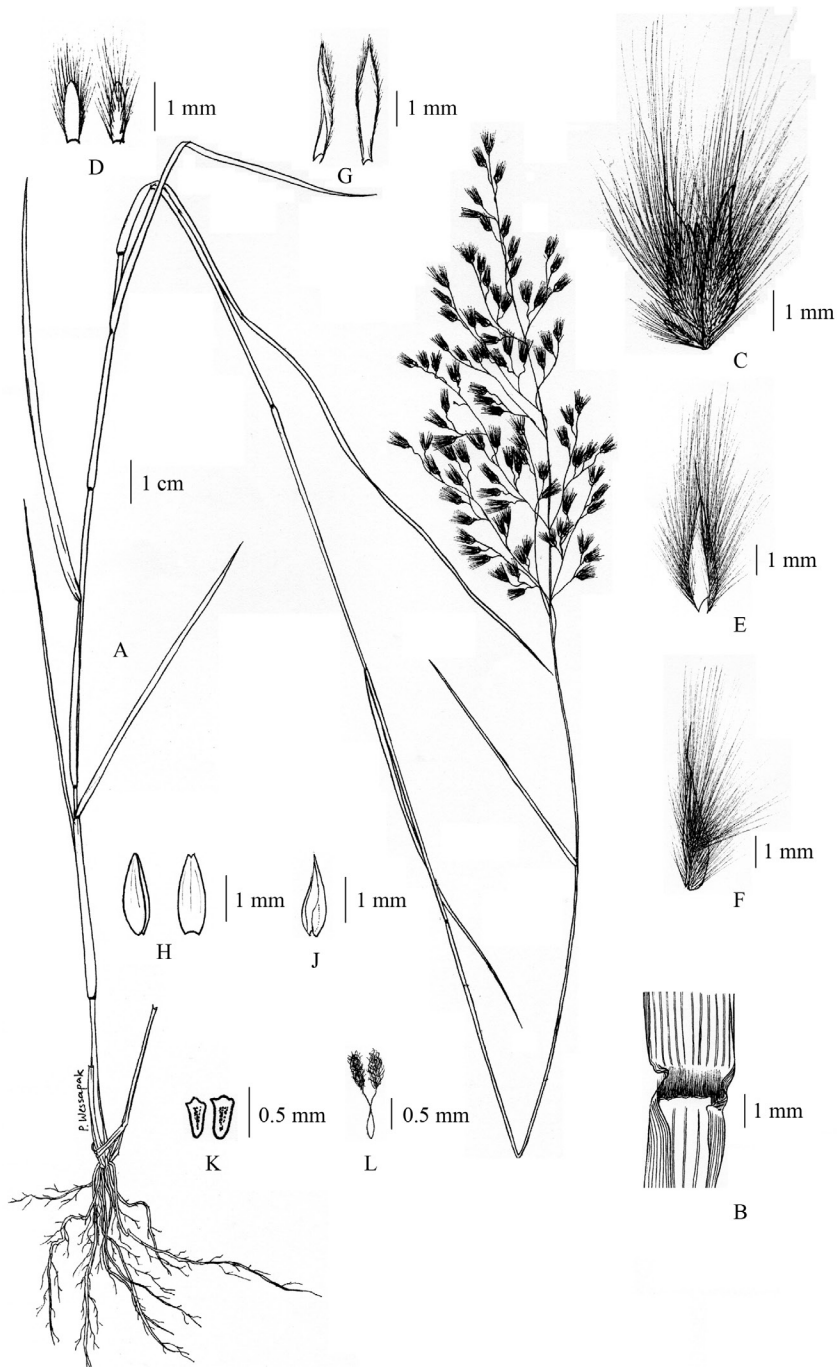

Figure 2. *Melinis repens* (Willd.) Zizka: A. habit; B. ligule; C. spikelet; D. lower glume; E. upper glume; F. lower lemma; G. lower palea; H. upper lemma; J. upper palea; K. lodicules; L. pistil. Drawn from Wessapak 358 by Paweena Wessapak.

tubercle-based hairs at base. *Inflorescence* a panicle, 20–60 × 3–9 cm; central axis angular, 8–20 cm long, glabrous; peduncle terete, 12–45 cm long, glabrous; raceme 1–9 cm long, along a central axis, rachis slender, scabrous without spreading hairs. *Spikelets* solitary, laterally compressed, lanceolate, 3.2–4(–4.5) × 1.5–2 mm long (excluding awn). *Pedicels* slender, 1–3 mm long, with long hairs below the expanded tip. *Lower glume* oblong, 1–1.2(–1.5) × 0.2–0.4 mm, apex emarginate, truncate or obtuse, membranous, villose up to 2 mm long, obscurely 1-nerved or nerveless. *Upper glume* laterally compressed, distinctly gibbous on side view, lanceolate or ovate, 3.5–4.5 × 1–1.5 mm, apex emarginate, awn from sinus, awn 0.8–1.5(–2) mm long and scabrous, chartaceous, villose up to 6 mm long, densely at the middle, glabrous upwards, 5-nerved. *Rachilla* between lower glume and upper glume 0.3–0.5 mm long. *Florets* 2. *Lower floret* male or sterile. *Lower lemma* laterally compressed, lanceolate or ovate, 3–3.5(–4) × 1–1.5 mm, apex emarginate, awn from sinus, awn 1–2.5 mm long and scabrous, chartaceous, villose up to 6 mm long, densely at the middle, glabrous upwards, 5-nerved. *Lower palea* oblong, narrow elliptic or narrow lanceolate, 3–3.2 × 0.5–0.8 mm, apex acute, margins folded, 2-keeled with ciliate along keels, membranous or hyaline, glabrous, 2-nerved. *Upper floret* bisexual. *Upper lemma* ovate, 2–2.5 × 0.5–1 mm, apex emarginate, margins entire and hyaline, cartilaginous, glabrous, 5-nerved. *Upper palea* ovate, 2–2.2 × 0.5–1 mm, apex acute, margins entire, cartilaginous, glabrous, 2-nerved. *Lodicules* 2, ca 0.2 mm long, emarginate. *Stamens* 3; filaments ca 1 mm long; anthers yellow, 1.4–1.8 mm long. *Ovary* oblong or lanceolate, 0.5–0.7 × ca 0.1 mm; styles 2; stigma 1.5–2 mm long, plumose. *Caryopsis* ellipsoid, 1.5–1.8 × 0.3–0.5 mm.

Figure 3. Morphology of *Melinis* in Thailand; *M. repens* (Willd.) Zizka: A. habitat; B. inflorescence; C. spikelet; *M. nerviglumis* (Franch.) Zizka: D. spikelet.

Thailand.— NORTHERN: Chiang Mai [Samoeng to Hang Dong, 23 Dec. 1985, *Paisooksantivatana y1687-85* (**BK!**)]; NORTH-EASTERN: Loei [Phu Ruea NP, 27 Nov. 2005, *Jaroenchai 240* (**KKU!**)]; Sakon Nakhon [Phu Phan NP, 18 Oct. 1990, *Chantaranothai & Parnell 90/787* (**K!**, **KKU!**); Kasetsart University, Sakon Nakhon Campus, 7 Oct. 2017, *Wessapak et al. 406* (**BK!**, **BKF!**)]; Khon Kaen [Khon Kaen University, 6 Nov. 1997, *Boonchalee 16* (**KKU!**); ibid., 9 July 1975, *Rogers 32* (**KKU!**); Phu Wiang, Khok Phu Ta Ka, 30 Apr. 2003, *Jaroenchai 7* (**KKU!**); Phu Wiang, 237 m alt., 28 May 2016, *Wessapak et al.* 318 (**BK!**, **BKF!**)]; EASTERN: Nakhon Ratchasima [13 km to Korat from Pak Chong, 15 Jan. 1982, *Paisooksantivatana y821-82* (**BK!**)]; Buri Ram [Chaloem Phra Kiat, Isan Khet, 185 m alt., 21 Oct. 2017, *Wessapak 411* (**BK!**, **BKF!**)]; Si Sa Ket [Kantharalak, Nam Om, 160 m alt., 22 Oct. 2017, *Wessapak 416* (**BK!**, **BKF!**)]; SOUTH-WESTERN: Kanchanaburi [Bo Phloi, 26 Mar. 2017, *Wessapak 356* (**BK!**, **BKF!**); Sai Yok, 15 Aug. 2004, *Sirimongkol 137* (**L**)]; Phetchaburi [Kaeng Krachan NP, Khao Sam Yod, 12°48'N, 99°26'E, 350 m alt., 28 Aug. 1995, *Parnell et al. 95-507* (**K!**); Huay Sai, 9 Sept. 2017, *Wessapak et al. 392* (**BK!**, **BKF!**)]; Prachuap Khiri Khan [Hua Hin, 50 m alt., 1 Aug. 1976, *Maxwell 76-463* (**BK!**); Khao Tao, 12 Nov. 2017, *Wessapak 436* (**BK!**, **BKF!**)]; SOUTH-EASTERN: Chachoengsao [Mueang Chachoengsao, Bang Tin Pet, 8 m alt., 29 Apr. 2017, *Wessapak 358* (**BK!**, **BKF!**)]; Chon Buri [Phanat Nikhom, Wat Bot, 6 m alt., 29 Apr. 2017, *Wessapak 360* (**BK!**, **BKF!**); Pattaya, Chom Thian beach, 2 m alt., 4 Jan. 1992, *Wieringa 1013* (**AAU!**)]; Rayong [Mueang Rayong, Phe, 17 m alt., 29 Apr. 2017, *Wessapak 362* (**BK!**, **BKF!**); Khao Chamao, Nam Pen, 33 m alt., 30 Apr. 2017, *Wessapak 367* (**BK!**, **BKF!**)]; PENINSULAR: Chumphon [Donyang, 16 Jan. 1987, *Supapol 298* (**PSU!**)]; Phatthalung [Khuankhanun, 2 Dec. 2012, *Na sawat 1* (**PSU!**)]; Satun [Mueang Satun, 19 Apr. 1969, *Chermsirivathana & Kasem 1407* (**BK!**); Tarutao, 8 Nov. 1979, *Congdon 137* (**PSU!**)]; Songkhla [Songkhla Rubber Research Institute, 5 May 1970, *Sutheesorn 1669* (**BK!**); Chana, Ban Pak Chot, 26 June 2012, *Aya 15* (**PSU!**); Chana, Khao Reng, 250–400 m alt., 29 Aug. 2009, *Inuthai 543* (**PSU!**); Hat Yai, Prince of Songkhla University, 35 m alt., 2 Feb. 1979, *Congdon 246* (**PSU!**); ibid., 18 Dec. 1975, *Yiamudom 29* (**PSU!**); Hat Yai, 14 Sept. 2001, *Maseng 4* (**PSU!**); Hat Yai, Khao Kho Hong, 20 Dec. 1965, *Umpai 261* (**BK!**); Mueang Songkhla, Ko Yo, 23 Nov. 2016, *Wessapak et al. 338* (**BK!**, **BKF!**)]; Pattani [28 July 1970, *Sutheesorn 1792* (**BK!**)].

Distribution.— Native to Africa and the south-western Arabian Peninsula, introduced to America, India, Asia and New Zealand.

Ecology.— Usually naturalized in wastelands, disturbed and open areas by roadsides, margins of rice fields, deciduous dipterocarp forests, and mixed deciduous forests, in sandy soils and rock crevices at sea level to 400 m alt.

Phenology.— Flowering and fruiting throughout the year.

Vernacular name.— Ya dok chomphu (หญ้าดอกชมพู), ya dok daeng (หญ้าดอกแดง)(Central).

Conservation status.— *Melinis repens* is a very common weed in several countries (Haselwood & Motter, 1966.). This species is naturalized and widespread in Thailand. It is therefore assessed as Least Concern (LC).

Notes.— *Melinis repens* is considered a weed in many countries (Haselwood & Motter, 1966; Radanachaless & Maxwell, 1997; Batianoff & Butler, 2002). It is recognized by the silvery or pinkish hairs on the spikelet. It is distinguished from *M. nerviglumis* by its loosely tufted and linear leaves.

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Figure 4. Lectotype of *Melinis bachmannii* Mez. Digital image © The Trustees of The herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (**B**).

Figure 5. Lectotype of *Melinis villosipes* Mez. Digital image © The Trustees of The herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (**B**).

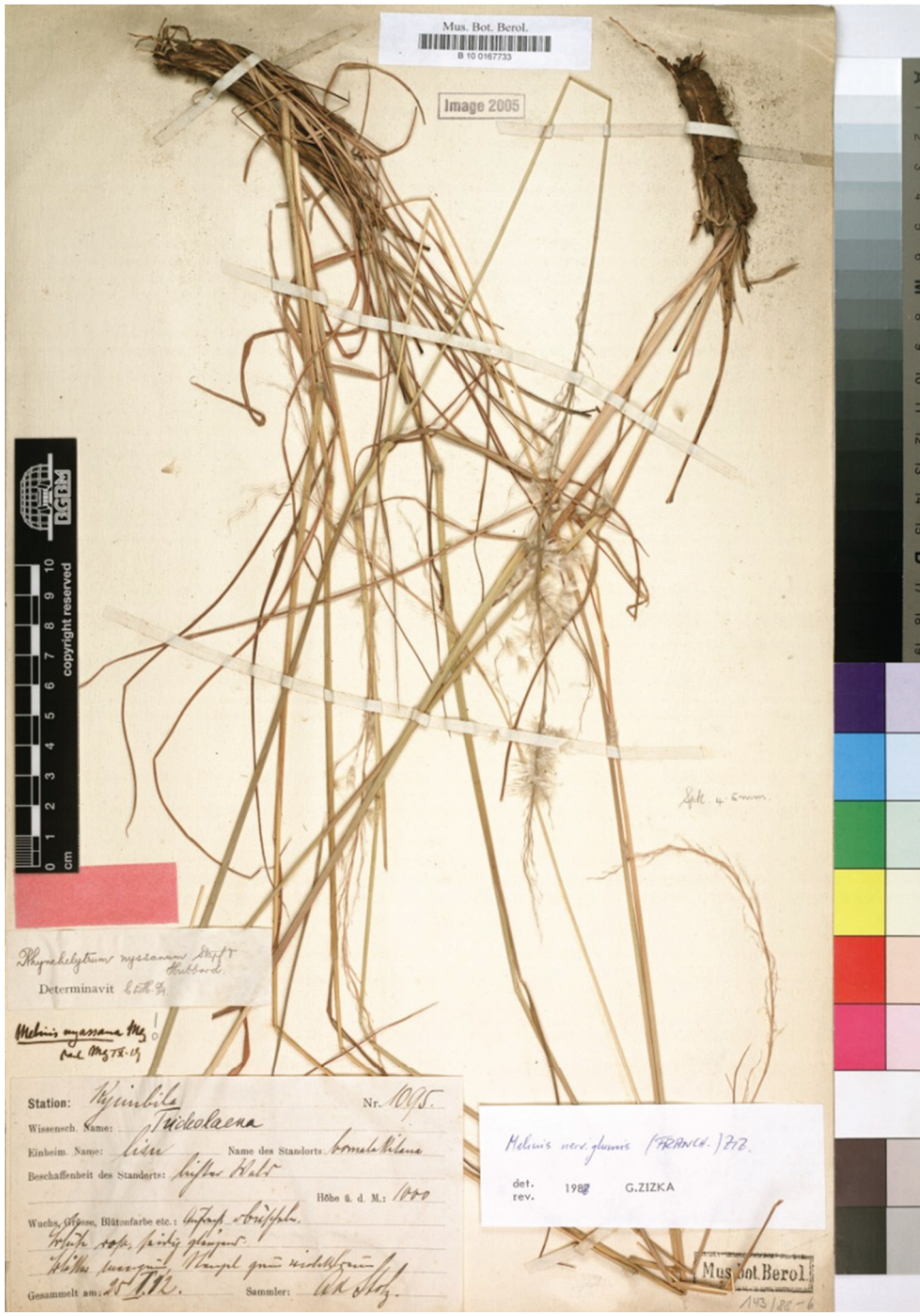

Figure 6. Lectotype of *Melinis nyassana* Mez. Digital image © The Trustees of The herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (**B**).

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