

A Revision of *Hemisorghum* (Poaceae, Sorghinae) in Thailand

O. NEAMSUVAN¹, J.F. VELDKAMP² AND T. SEELANAN^{1,3}

¹Department of Botany, Faculty of Science, Chulalongkorn University,
Bangkok 10330, Thailand

²National Herbarium Nederland, Leiden University, P.O. Box 9514,
2300 RA Leiden, The Netherlands.

³E-mail: tosak.s@chula.ac.th

Abstract

Hemisorghum C.E. Hubb. (Poaceae, Sorghinae) has a single species in Thailand: *H. mekongense* (A. Camus) C.E. Hubb. It occurs from Burma to Laos and Cambodia. In Thailand it is rare along riverbanks. A lectotype is designated.

Introduction

According to recent literature the genus *Hemisorghum* C.E. Hubb. in Bor (Poaceae, Sorghinae) would contain two species (Clayton and Renvoize, 1986). One, *H. venustum* (Thwaites) C.D. Clayton, occurs in Sri Lanka and the Western Ghats of India, the other, *H. mekongense* (A. Camus) C.E. Hubb., in S Burma, NE Thailand, W Laos, and W Cambodia. However, during the present revision the two turned out to be so different in so many aspects that the first has recently been placed in a new genus, *Lakshmia* Veldk. (Veldkamp, 2009). Clayton and Renvoize (1986) regarded it as basal in the *Sorghinae*, but no molecular studies seem to have been done to support this. At least *H. mekongense* is very similar to *Sorghum* Moench:

- 1a. Panicle branches bearing long, lax racemes, rachis internodes and pedicels scabrid; lower glume of sessile spikelet thinly coriaceous, flat on the back, margins 2-keeled for most of its length ***Hemisorghum***
- 1b. Panicle branches bearing short, dense racemes, rachis internodes and pedicels ciliate; lower glume of sessile spikelet coriaceous, convex on the back, apically 2-keeled and winged ***Sorghum***

Nanakorn and Norsangsri (2001) is the first and only work where *Hemisorghum mekongense* is reported for Thailand. Because this is a checklist no description was given. The present work extends this record with a description, notes, and illustrations.

Materials and methods

This study was based on taxonomic literature and a study of herbarium specimens at the Faculty of Science, Chiang Mai University (CMU), Royal Botanic Gardens, Kew (K), National Herbarium of The Netherlands, Leiden University (L), l'Herbier, Laboratoire de Phanérogamie, Paris (P). Field work was carried out throughout Thailand with specimens deposited in the herbarium of the Chulalongkorn University, Bangkok (BCU).

Hemisorghum C.E. Hubb. in Bor, Grass. Burma, Ceylon, India and Pakistan: 686. 1960. – **Type species:** *Hemisorghum mekongense* (A. Camus) C.E. Hubb.

Tufted **annuals**. Ligule collar-shaped, fringed or ciliolate, membranous; **leaf-blades** linear, broad, flat. **Inflorescence** a lax, espatheate panicle; the lowermost branches solitary to whorled, tenacious, glabrous; racemes long, with numerous pairs of sessile and pedicelled **spikelets**; rachis internodes and pedicels filiform, scaberulous, articulation transversal. Sessile spikelets tardily deciduous, with an obtuse, glabrous callus, dorsally compressed, 2-flowered; lower floret epaleate, neuter; upper floret perfect; lower **glumes** thinly coriaceous, flat on the back, 7-11-nerved, laterally 2-keeled, the margins sharply inflexed; upper glumes dorsally rounded, becoming 1-keeled upwards, 7-nerved, margins inrolled; lower **lemmas** hyaline; upper lemmas finely 1-nerved, awnless; upper **palea** hyaline or suppressed; lodicules cuneate, glabrous; stamens 3. Pedicels free of the rachis. Pedicelled **spikelets** very much reduced to 1 or 2 glumes rarely with a much reduced lemma, barren, deciduous, dorsally compressed, awnless.

Distribution: Monotypic, in Myanmar, Thailand, Laos, Cambodia; one in Thailand.

Hemisorghum mekongense (A. Camus) C.E. Hubb. in Bor Grass. Burma, Ceylon, India and Pakistan: 162, 687. 1960. -*Sorghum halepense* var. *mekongense* A. Camus, Bull. Mus. Hist. Nat. (Paris) 25: 497. 1919. -*Sorghum mekongense* (A. Camus) A. Camus, Fl. Indo-Chine 7: 323, f. 35. 1922. -**Lectotypus:** Muong Mai, Laos, *Thorel s.n.* (P!; designated here). **Fig. 1.**

Culms up to 2 m high, nodes minutely puberulous, with prop roots. **Leaf-sheaths** terete, distally keeled, 10-15 cm long, glabrous; ligules 1-2 mm long; leaf-blades 25-60 by 1-4 cm, glabrous, margin scaberulous, apex long-acuminate. **Panicles** 30-50 cm long, primary branches 5-15 cm long, branched

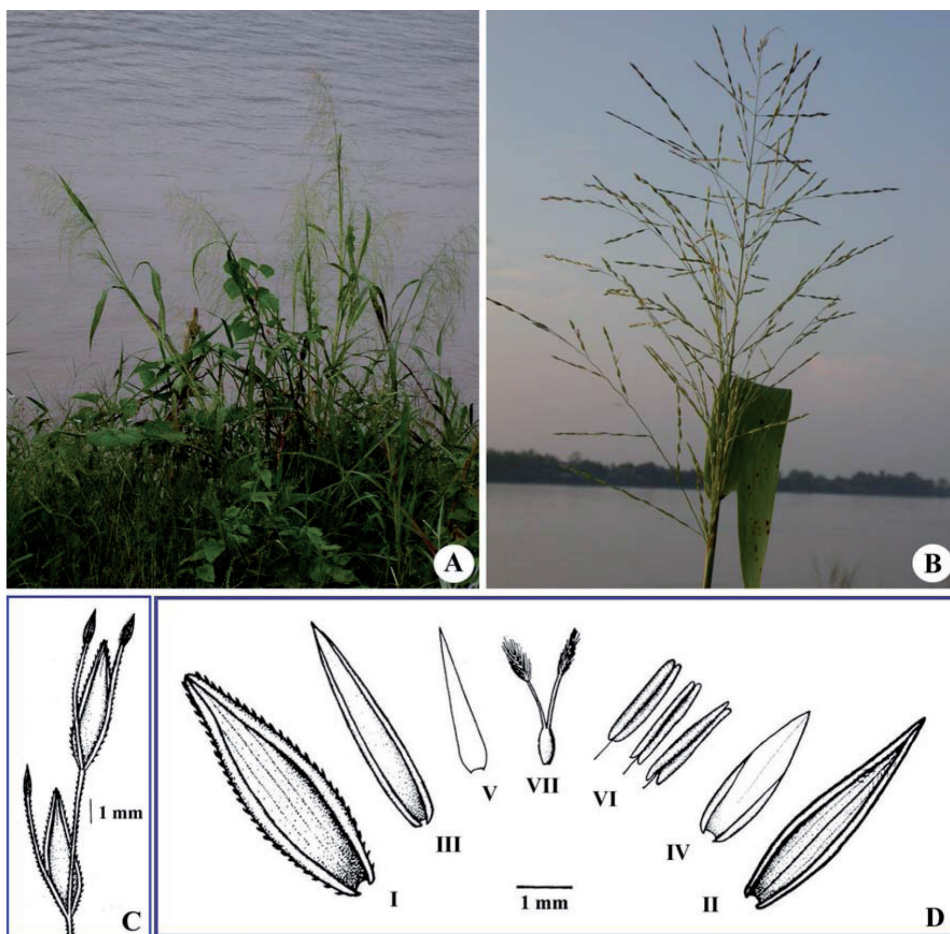


Figure 1. *Hemisorghum mekongense*: A. habitat; B. inflorescence; C. a part of raceme showing sessile and pedicelled spikelets; D. sessile spikelet dissection: I. lower glume, II. upper glume, III. lower lemma, IV. upper lemma, V. upper palea, VI. stamens, VII. pistil.

again, bearing 5-10 racemes; racemes 2-6 cm long, each with 2-7 **spikelet** pairs; rachis internodes slightly shorter than the sessile spikelet, filiform. Sessile spikelets 4-5 mm long, incl. callus; lower **glumes** ovate-lanceolate, 4-5 by 1.5-2 mm, 7- or 9-nerved, puberulous, keels serrate, apex acute; upper glumes lanceolate, 4-4.8 by 1.3-1.5 mm, 7-nerved, apically 1-keeled, chartaceous, puberulous, apex acute; lower lemmas ovate-lanceolate, 3.5-4 by *ca* 1 mm, hyaline, 2-nerved, apex acute; upper lemmas ovate, 2.5-3 by 0.8-1.2 mm; upper **paleas** narrowly ovate-lanceolate, *ca* 2.3 by 0.3 mm, apex narrow, acute; lodicules *ca* 0.3 mm long; anthers 1.5-1.8 mm long. Pedicels filiform, 3-4 mm long, 0.6-0.8 times as long as the sessile spikelet, serrulate on the edges. Pedicelled **spikelets** usually very much reduced, rarely more

or less developed; lower glumes narrowly ovate-lanceolate, 0.5-4 by 0.5-1 mm, 0-7-nerved, laterally 2-keeled, keels serrulate, chartaceous, glabrous to sparsely puberulous, margin inflexed, apex acute; upper glumes ovate-lanceolate, 0.5-4 by 0.6 mm, 0-5-nerved, membranous, apex acute, margin hyaline, ciliolate.

Specimens examined: MYANMAR: *Griffith 6825 (K), Maung Po Khant 13417 (K)*. THAILAND: *Kerr 21356 (K); Neamsuvan 262, 263 (BCU)*. LAOS: *Thorel s.n. (P); Maxwell 98-477 (CMU, L)*. CAMBODIA: *Maxwell 07-459 (CMU)*.

Collector's notes: Annual. Culms tufted, pale green to stramineous. Blades green to dull dark green above, pale to dull green beneath. Inflorescence axes green. Spikelets cream, very pale green, with green nerves. Stigmas, styles pale light green.

Vernacular name: *Ya Phong (Nong Khai)*

Ecology: Open sandy, weedy area along river, seasonally submerged, 75 m alt., flowering August-May.

Distribution: Myanmar (Tenasserim), Thailand, Northeastern (Nakhon Phanom, Nong Khai), Laos (Attapeu, Bolikhamsai, Champasak, Khammouane, Sayaboury, Vientiane), Cambodia (Kratie).

Notes: In Thailand, *Hemisorghum mekongense* is similar to *Sorghum halepense* (L.) Pers., but the two species can be differentiated in the following key –

- 1a. Panicles 30-50 cm long. Rachis internode and pedicel serrate. Spikelets rather slender; lower glume of sessile spikelet 2-keeled throughout, keels scabrous ***H. mekongense***
- 1b. Panicles 10-30 cm long. Rachis internode and pedicel ciliate. Spikelets stout; lower glume of sessile spikelet becoming 2-keeled near the tip, keel winged, ciliolate ***S. halepense***

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References

- Clayton, W.D. and S.A. Renvoize. 1986. *Genera graminum: Grasses of the world*: 339. Her Majesty's Stationery Office, London, U.K.
- Nanakorn, W. and M. Norsangsri. 2001. *Species enumeration of Thai Gramineae*: 36. Herbarium Queen Sirikit Botanic Garden, Chiang Mai.
- Veldkamp, J.F. 2009. *Lakshmia* (Gramineae), a new genus from Sri Lanka and W India. *Rheedea* **18**: 81-85.

