New records of *Curcuma* L. (Zingiberaceae) in Thailand

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ABSTRACT. *Curcuma flaviflora* S.Q. Tong and *C. rubrobracteata* Skornickova, M. Sabu & M. Prasanthkumar are newly recorded from northern and western Thailand respectively.

INTRODUCTION

K. Larsen published a preliminary checklist of Zingiberaceae in Thailand in 1996. Since then, a few species of *Curcuma* have been described from neighbouring countries (Mood & Larsen, 2001; Sirirugs & Newman, 2000 and Skornickova et al., 2003). While revising this genus for the Flora of Thailand, the authors found *C. flaviflora* S.Q. Tong and *C. rubrobracteata* Skornickova, M. Sabu & M. Prasanthkumar, as new records for Thailand.


Leafy shoot 30–50 cm tall. *Bladeless sheaths* 4–5, pubescent, apex mucronate, 3–23 cm long. *Leaf sheaths* pubescent, 20–30 cm long; ligules bilobed, glabrous, lobes rounded to obtuse, ciliate, 2–4 mm long; petiole pubescent, 2–5 cm long; blades oblanceolate, green, sometimes with a red patch on either side of midrib, upper surface glabrous, lower surface pubescent, base cuneate, apex acuminate, 18–30 by 6–8.5 cm. *Inflorescence* lateral, appearing before the leafy shoot. *Scape* pubescent, 5–15 cm long; scapose scale linear-lanceolate, pubescent, 10 cm long; spike 3–5 cm long. *Bracts* 3–4.5 by 1.3–1.5 cm, lanceolate, acuminate, pubescent on both surfaces, connate part 1.5 cm, free part 3.0 cm. *Bracteoles* absent. *Calyx* tubular, hairy along ridges, apex 3-lobed, 21 mm long, split down one side 7 mm. *Corolla* tube pubescent, 3.8–4.2 cm long; corolla lobes 15–17 by 5–7 mm, scattered hairy; dorsal one concave, hooded, apex acute-cucullate; lateral ones shallowly concave, hooded, apex rounded. *Staminodes* ovate, glandular hairy on inner surface, apex obtuse, 20 by 12 mm. *Labellum* obovate, yellow with bright yellow mid-band, rarely with red streaks at sinus, glandular hairy more, densely on either side of mid-band, apex deeply bifid, 20 by 15 mm, cleft 7 mm deep. *Stamen* pubescent; filament shallowly concave, 5 by 4 mm; crest emarginate, 1 mm long; spurs acute conical, pointed forwards, diverging at apex, glabrous, 5 mm long. *Ovary* barrel-shaped, pubescent, 5 mm long; stylodes slender, apex acute, 7 mm long; stigma with lateral opening, ciliate, 1.5 mm across.

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Thailand.— NORTHERN: Chiang Mai, Mae Hong Son.

Ecology.— Found in open areas in pine forests, 1,200 m above sea level or higher. Flowers in May–July.

Distribution.— South China (Yunnan).

Notes.— This species is found only at high altitude from 1,200 m and up. The unique character is the pure yellow flower. The original description mentions red streaks on labellum but this is rarely found in Thai plants. Similar species found in northern Thailand are *C. bicolor* J. Mood & K. Larsen, *C. ecomata* Craib, *C. glans* K. Larsen & J. Mood and *C. singularis* Gagnep. which have large, blunt and forward pointed anther spurs. These species also share many common characters such as rounded to cordate leaf-base, terminal inflorescence, without coma bracts and staminodes free from dorsal corolla-lobe.

Specimens examined.— NORTHERN: Chiang Mai [Doi Angkang, Fang, 21 July 2003, Maknoi 356 (AAU, PSU, QBG); same locality, 15 May 2004, Maknoi 535 (AAU, PSU, QBG); Chiang Dao, Norsaengsri 1476 (QBG); Doi Angkang, Fang, 12 June 1999, Srisanga 721 (QBG); Khun Huai Mae Kok, Chiang Dao, 5 June 2001, Wongprasert 015-05 (BKF)]; Mae Hong Son [15 km N.W. of Mae Hong Son, 18 June 1973, Geesink, Panichapol & Santisuk 5960 (C, E); Doi Pui, Huai Hi, Mueang, 25 July 2003 Maknoi 382 (AAU, PSU, QBG)].


Plant 80–100 cm tall. Bladeless sheaths 2, 12–27 cm long, glabrous. *Leaf sheaths* 20–30cm long, glabrous or densely hairy; ligule bilobed, 2 mm long, sparsely hairy, with rounded apex; petiole 6–14 cm long, glabrous; blade ovate, 25–40 by 11–17 cm, upper surface with hairs along secondary nerves, lower surface glabrous, base broadly cuneate, apex acuminate. Inflorescence terminal; scape 3–12 cm long, densely hairy; spike 7–10 cm long. *Bracts* 4.5–5 by 2–3 cm, hairy on both surfaces, apex rounded to obtuse; coma bracts absent. *Bracteoles* broadly ovate, 32 by 27 mm, hairy, apex obtuse. *Calyx* tubular, 8–10 mm long, hairy, apex indistinct, 3-lobed, not split down one side. *Corolla* tube 30–35 mm long, sparsely hairy outside, with a hairy ring inside; corolla lobes 15–16 by 7–15 mm, glabrous; dorsal one hooded with acuminate-cucullate apex, lateral ones concave, apex rounded. *Staminodes* broadly obovate, 15–17 by 11–12 mm, glandular hairy, apex obtuse; labellum 3-lobed, 20 by 17–20 mm, glandular hairy near base, apex retuse. Stamen glandular hairy; filament flat, 4 by 4–5 mm; anther 5 by 2 mm; spurs flat, triangular, 2.5–3 mm long, apex acuminate, s-shaped; crest ca. 1 mm long, apex rounded. *Ovary* barrel-shaped, 2–3 mm long, hairy; stylodes clavate or cylindrical, 4 mm long, apex obtuse; stigma 1.5 mm wide, ciliate, laterally opened.

Thailand.— NORTHERN: Chiang Mai, Lampang, Mae Hong Son, Phitsanulok, Tak; SOUTHWESTERN: Kanchanaburi.

Ecology.— Found in deciduous and evergreen forests, from 220–700 m above sea level. Flowers in May–August.
Distribution.— India and Myanmar.

Notes.— This species has been collected many times since 1922. The distinguishing characters are the orange red bracts with light yellow or white base and compact terminal inflorescence which appears laterally. This species belongs to subgenus Curcuma (*Eucurcuma* K. Schum.).

Specimens examined.— NORTHERN: Chiang Mai [Doi Chiang Dao, Me Na Liao, 12 July 1950, Garrett 1334 (K); Mae Rim, 15 km N. of Chiang Mai, 17 July 1968, Larsen et al. 2586 (AAU, BKF); along the road Fang-Chiang Mai, 27 July 1968, Larsen et al. 2766 (AAU, BKF); Mae Sa Noi WF, QBG, 18 July 2003, Maknoi 337 (AAU, BKF, PSU, QBG); Mae Mao reservoir, Fang, 22 July 2003, Maknoi 358 (AAU, BKF, PSU, QBG); Doi Nawong Hoy, Maerim Samoeng road, 10 Aug. 1989, Maxwell 89-1019 (CMU, E); Doi Chiang Dao, S.E. foot hill, 25 June 1989, Maxwell 89-807 (CMU); Hawk Fa Falls, along Mae How stream, 18 August 1990, Maxwell 90-890 (CMU); Ban Wieng Pa, Sidongyen subdistrict, Fang, 8 July 1991, Maxwell 91-619 (AAU, CMU, E, P); N part of Wahng Hahng Falls, Doi Suthep-Pui, 10 September 1992, Palee 74 (CMU)]; Lampang [Doi Khun Than NP, Hang Chat, 29 July 1994, Maxwell 94-821 (CMU); Jae Son NP, near HQ, Mueang Pan, 24 Aug. 1995, Maxwell 95-576 (BKF, CMU); Jae Son NP, Pha Ngaem (Nahn Kaht) cave, 25 Aug. 1995, Maxwell 96-1137 (BKF, CMU); Jae Son NP, Wang Nuea, 2 June 1996, Maxwell 96-781 (CMU); Jae Son NP, Wang Nua, 27 June 1996, Maxwell 96-918 (CMU); Jae Son NP, Mueang Bahn (Pan), 24 May 1996, Panatkool 53 (CMU); Muang Ngao, 15 July 1931, Put 3998 (C, K, L); Mae Hong Son [19–24 km E. of Mae Sariang, 17 July 1998, Kress 98-6213 (AAU); Ban Pang Pake, Pai, 24 July 2003, Maknoi 377 (AAU, BKF, PSU, QBG)]; Phitsanulok [Thung Salaeng Luang NP, 25 July 1966, Larsen et al. 878 (AAU, BKF, P)]; Tak [Thung Yai (Burmese side), 17 June 1922, Kerr 6145 (BK, BM, C, K); Me Mue, Muan, 20 June 1922, Kerr 6145A (BK, BM, K); Mu Kee Haw (Karen) village, Pawo, Mae Sot, 18 Aug. 1994, Maxwell 94-893 (BKF, CMU); Khao Phawo, ca. 70 km W. of Tak, 23 July 1973, Murata et al. T16871 (AAU, BKF); Mae Sot, 14 July 1999, Ngamriabsakul 45 (BKF, E); Chedi Ko, Mae Sot, 11 July 1972, Smitinand & Seidenfaden 11621 (AAU, BKF, L)]; SOUTHWESTERN: Kanchanaburi [Between Huai Ban Kao and Kriti, 2 July 1973, Geesink et al. 6071 (C); Ka Tha Lai, 25 km E. of Wangka, 4 June 1946, Kostermans 798 (BKF, K, P); Thung Kang Yang, 2 July 1963, Larsen et al. 10431 (AAU); Thung Kang Yang, 6 July 1963, Larsen et al. 10441 (AAU); Thung Kang Yang, 7 June 1963, Larsen et al. 10538 (AAU); W. of Sisawat, 26 June 1974, Larsen et al. 33800 (AAU, K, QBG); Tong Pha Phum to Sangkhla Buri, 11 Aug. 2003, Maknoi 453 (AAU, BKF, PSU, QBG); Thong Pha Phum, 6 July 1973, Maxwell 73-174 (AAU, BK); Huai Ban Kao, Kanchanaburi, 13 July 1973, Maxwell 73-293 (AAU, BK); Thung Yai Naresuan WS, Sangklaburi, 17 June 1993, Maxwell 93-645 (CMU); Klu Nam Ron, 27 June 1934, Put 32 (K); Hin Dat, 29 June 1926, Put 39 (K)].
REFERENCES


ACKNOWLEDGEMENTS

This study is supported by Royal Golden Jubilee Scholarship (4BPS45E1) and DANIDA (CBBP-QBG).

Figure 1. A.–B. Curcuma flaviflora S.Q. Tong; C.–D. C. rubrobracteata Skornick., M.Sabu & Prasanthk.