



## *Zingiber hainanense* (Zingiberaceae), a new species from Hainan, China

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### Abstract

*Zingiber hainanense* (Zingiberaceae), a new species from Hainan, China, is described and illustrated. It is compared to two most similar members from *Z. sect. Cryptanthium*, *Z. guangxiense* from Guangxi, China and *Z. kawagooi*, an endemic species from Taiwan, China. *Zingiber hainanense* differs from *Z. guangxiense* mainly by labellum and staminodes being purple red (vs. yellowish white throughout in *Z. guangxiense*), and differs from *Z. kawagooi* by labellum and lateral staminodes being linear or narrowly ovate (vs. obovate-oblong in *Z. kawagooi*). The pollen morphology and chromosome number count as well as a color plate of the new species are also presented in this study.

### Introduction

*Zingiber* Miller (1754: unpagged) is a large ginger genus with 100 to 150 species distributed from tropics to warm temperate Asia (Wu & Larsen 2000), with its center of diversity in South East Asia (Theilade 1999). It is distinct from other genera of Zingiberaceae by the following characters: the lateral staminodes connate to the labellum, the horn-shaped anther crest which wraps around the style, and the presence of the swollen and pulvinus-like petiole (enabling to recognize the genus even in sterile stage).

The current infrageneric classification of *Zingiber* recognizes four sections, based on the habit of inflorescence: (1) *Z. sect. Cryptanthium* Horaninow (1862: 27), characterized by a radical inflorescence composed of spike appearing at the ground level on a subterranean peduncle; (2) *Z. sect. Zingiber*, having a spike on a long erect peduncle; (3) *Z. sect. Pleuranthesis* Benth. (1883: 634), with a spike breaking through the leaf sheaths laterally; (4) *Z. sect. Dymczewiczia* Benth. (1883: 634), with a terminal inflorescence. While *Z. sect. Cryptanthium* can be clearly separated from the other three sections according to the molecular evidence (Theerakulpisut *et al.* 2012) as well as pollen features (Liang 1988, Triboun 2006, Theilade *et al.* 1993), it was repeatedly suggested that *Z. sect. Dymczewiczia* should be amalgamated with *Z. sect. Zingiber* due to variability of the position of the inflorescence in certain species (Valeton 1918), similarity in pollen morphology (Theilade 1993), as well as the phylogenetic studies based on ITS sequences (Theerakulpisut *et al.* 2012).

China, with 42 species, of which 36 are endemic (Wu & Larsen 2000), has the second most abundant diversity of the genus *Zingiber* after Thailand, which harbors 56 species (Triboun 2006). Most of the species in China belong to the *Z. sect. Cryptanthium* and species of this section can be distributed further north than species from the other three sections, which are restricted to southern part of Yunnan, Guangxi, Guangdong and Hainan, with exception of the widely cultivated species, *Z. officinale* Roscoe (1807: 348).

In 2005, during an exploration to Yinggeling Nature Reserve (Hainan Island, China), an interesting *Zingiber* from *Z. sect. Cryptanthium* with extraordinarily narrow labellum and lateral staminodes, was collected. With the progressing revision of the genus *Zingiber* of China by the second author, this species has been identified to be new and therefore it is described and illustrated below. It is compared with the morphologically most similar members of the *Z. sect. Cryptanthium*, *Z. kawagooi* Hayata (1921: 35) and *Z. guangxiense* D. Fang (1980: 18). The pollen morphology of the new species has been studied and the chromosome number is also reported here.