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# *Arisaema siangense* (Araceae), a new species from Arunachal Pradesh, India

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***Abstract.*** – Arisaema siangense *G.Gusman is described as a new species from northeast India.* A. siangense *is a member of section* Sinarisaema *Nakai; its morphological characters are discussed in relation to other species of this section considered closely related to* A. siangense.

## Introduction

During a visit to Arunachal Pradesh (North East Frontier Agency of Assam, India), populations of *A. siangense* were encountered. At first glance, they recall in foliage and inflorescence *A. concinnum* Schott, a species to which they were related (Gusman & Gusman 2006: 402). Today, however, after observations in the wild and in cultivation, it turns out that these plants have to be recognised as a new species in section *Sinarisaema*.

## Description

***Arisaema siangense*** G.Gusman **sp. nov.**, foliis similibus affinis *A. concinno* Schott sed habitu altiore tuberculo majore annulato haud stolonifero atque spathae tubo roseo cum albis striis limboque aurantiaco valde differt. – *Type*: India, North East Frontier Agency of Assam, Arunachal, Siang District, c. 1300 m, July 1997, *Gusman* GG97144 (holo- BR; iso- CAL & BM).

Perennial paradioecious herb up to 1.85 m tall and 80 cm wide. Subterranean stem an annulate tuber, subglobose or elongated, c. 6-12 cm across and 5-14 cm long, brown outside, with offsets elongate and pyriform; phyllotaxis spirodistichous. Roots thick, pink to white. Pseudostem the size of or longer than the petiole, 30-60 cm long and 3-4 cm wide at base, olive-green or pale red-brown with transverse vermillion markings and/or carmine stripes. Cataphylls usually 3, 5-50 cm long, similar in colour to the pseudostem. Leaf solitary. Petiole 50-60 cm long and 1.5-2 cm across at base, smooth, olive-green with carmine stripes. Blade radiate. Leaflets up to 11 in number, elliptic-obovate, shiny green with deeply impressed veins above, underside glaucous with strongly prominent veins, 25-40 cm long and 7-9 cm wide; margins undulate, green, entire or serrate; apex long acuminate; base cuneate or decurrent, subsessile or with a green petiolule, up to 10 mm long.

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*Figure 1.* Arisaema siangense
*A, plants in the wild; B, specimen flowering in cultivation; C, tuber with two tuberlets.*


*Figure 2.* Arisaema siangense *(cultivated specimens)*
*A, inflorescence; B, male spadix with a long appendage;*
*C, male spadix with a very short appendage; D, female spadix.*

Inflorescence emerging when the leaf unfolds and carried beneath the foliage. Peduncle shorter than the petiole, 5-20 cm long and 6 mm across at base, red-brown, with a mottling similar to the pseudostem. Spathe tube subcylindrical, 6-10 cm long and up to 15 mm wide above, narrowing in the upper third, c. 8 mm across, then flaring again at mouth; outside dark pink with faint paler stripes becoming olive-green near the spathe mouth; inside white-yellow with dotted purple stripes mainly in the lower half; mouth-margins straight to slightly recurved and olive-green. Spathe limb horizontal, ovate-lanceolate, shorter than the tube, 4-8 cm long (not counting the tip) and 3-5 cm wide, outside and inside dull orange-yellow with pale pink stripes. Spathe tip acuminate, prolonged into a tail, 8-15 cm long, olive-green turning pink at the end. Spadix appendix usually hardly exserted from the spathe tube, erect, subcylindrical, 4-7 cm long, exceptionally extremely short, ending in a clavate, knobbly and light carmine apex; middle part white-yellow with pink stripes, smooth, 2-4 mm wide; lower part white-yellow, pink striped, with neuter organs, stiff, short and upcurved, 1-3 mm long, white-yellow, few in number or absent in m spadices; sessile. Spadix fertile zone ♂ or ♀, slightly conical, 1.5-3 cm long and 7-10 mm wide. Male flowers loosely arranged, 2-4-androus; anthers pink, subsessile; thecae dehiscent by an elongated pore; pollen cream. Pistillate flowers densely arranged; ovaries bottle-shaped, yellow-green with stigma white and penicillate, sessile. Fruiting spike conical, 7-14 cm long and 3-6 cm wide, borne on an upright peduncle. Receptacle cream-coloured. Berries densely packed, 10-12 mm long and 6-7 mm across, bright red, rounded, upper part flat, each berry containing up to 3 seeds. Seeds subglobose, c. 10 mm long and 5-7 mm across, with a cream testa. Germination eophyll trifoliolate. – Fig. 1, 2.

*Flowering period.* May - June. *Fruit ripening period.* November - December.

*Distribution.* Asia: NE India, Arunachal (W Siang).

*Habitat.* Grows at the base of deciduous trees, among bamboos and ferns, in clay, near streamlets and in bogs, at c. 1300 m altitude. *A. siangense* thrives along roads, often near riverbanks and among shrubs. Some specimens were over 1.80 m high and this species may rank as the tallest in section *Sinarisaema*.

*Etymology. A. siangense* is named after its type locality.

## Discussion

*A. siangense* is a tuberous species with a spirodistichous phyllotaxis. Its blade is radiate and the presence of neuter organs at the base of the sessile and clavate spadix appendix, just above the fertile part, shows that it is a member of section *Sinarisaema*. Reliable morphological characters that separate *A. siangense* from related species are summarized in table 1.

*A. siangense* is most closely related to *A. concinnum* and *A. exappendiculatum* H.Hara. At first sight, *A. siangense* and *A. concinnum* look very similar and one might even think that *A. siangense* is but a huge form of *A. concinnum*. A careful inspection, however, reveals that both species differ by significant morphological characters, a result confirmed later when studying these two species in cultivation. The most striking difference was found in the huge, annulate tubers, up to 1 kg in weight, producing elongate, pyriform bulblets (fig. 1C) but not stoloniferous as in *A. concinnum*. The absence of a spadix appendage is an exceptional character in the genus *Arisaema*, and could suggest a possible relation with *A. exappendiculatum*, also a member of section *Sinarisaema*, the

**Table 1. Morphological characters showing similarities and differences between *A. siangense* and other closely related species.**

| *Arisaema* Character | *consanguineum* | *erubescens* | *concinnum* | *exappendiculatum* | *siangense* |
|---|---|---|---|---|---|
| Tuber | not stoloniferous | stoloniferous | stoloniferous | stoloniferous | not stoloniferous |
| Fruiting peduncle | nodding | erect | erect | erect | erect |
| Spadix appendix | long | long | long | absent (exceptionally very short) | long (exceptionally very short) |
| Anthers | separate | separate | separate | confluent | separate |
| Eophyll | 1-foliolate | 1-foliolate | 3-foliolate | 3-foliolate | 3-foliolate |

only species known in which the spadix lacks an appendage. In fact, although *A. exappendiculatum* usually has no appendage, a short one, to 1.5 cm long, may sometimes be present. By contrast, *A. siangense* usually has a long appendage (fig. 2B, 2D), which exceptionally may be extremely short (fig. 2C). In any case, *A. exappendiculatum* is easily differentiated by its stoloniferous behaviour and anthers becoming "confluent into a completely circular, undivided ring" (Mayo 1987). Anthers in *A. siangense* are separate (table 1). The author came across *A. siangense* in the eastern part of the Himalaya, in Siang District, where neither *A. concinnum* nor *A. exappendiculatum* are found.

The colour of the spathe (fig. 2A) is also quite peculiar in *A. siangense* and resembles the typical forms of the Nepalese *A. erubescens* (Wall.) Schott, but the non-stoloniferous tubers and the eophyll being compound in *A. siangense* differentiate it from *A. erubescens*.

*A. siangense* could also be compared to *A. consanguineum* Schott, a species present in Siang District. But important differences can be pointed out such as the fruiting peduncle, erect even when ripening in *A. siangense*, whilst nodding in *A. consanguineum*. Furthermore, the eophyll is simple in *A. consanguineum* and 3-foliolate in *A. siangense*.

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