Systematics and biogeography of the Dissochaeta alliance (Melastomataceae)

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CHAPTER 5

A taxonomic revision of *Pseudodissochaeta* (Melastomataceae, Dissochaeteae)

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A taxonomic revision of *Pseudodissochaeta* (Melastomataceae, Dissochaeteae)

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Abstract

The mainly Southeast Asian genus *Pseudodissochaeta* (Melastomataceae, Dissochaeteae) is revised based on a study of herbarium collections. The relationships of *Pseudodissochaeta* to *Dissochaeta* and *Medinilla* are discussed and some important characters distinguishing it from its relatives, including habit, leaf base and margin and floral characters, are provided. Five species are recognized without any infraspecific taxa. A key to the species, descriptions of each species, distribution (maps), ecology, habitat, images and a list of the specimens examined are given.

Keywords

Melastomataceae, *Pseudodissochaeta*, revision, shrub, Southeast Asia.

Introduction

Pseudodissochaeta M.P.Nayar (1969a) was established for a small homogenous group of species that resembles *Dissochaeta* Blume (1831a) in inflorescence/infructescence types, but it comprises erect shrubs or small trees instead of scrambling shrubs or woody climbers. The genus can be distinguished from allied genera by the erect woody habit and the leaves with generally serrulate margins, flowers with 8 equal or subequal and isomorphic stamens, connectives with dorsally spurred and ventrally bilobed or biauriculate appendages (Nayar 1969a, Maxwell 1984, Renner et al. 2001b). *Pseudodissochaeta* is derived from the Greek word “pseudo” meaning false or fake, in reference to *Dissochaeta*, which it resembles (Maxwell 1984).

Before the establishment of the genus by Nayar (1969a), some of the species of *Pseudodissochaeta* were placed under seven different genera, i.e. *Allomorphia* Blume, *Anerincleistus* Korth., *Anplectrum* A.Gray, *Backeria* Bakh.f., *Diplectria* (Blume) Rchb., *Medinilla* Gaudich. ex D.C., *Oritrephes* Ridl. (Clarke 1879, Kuntze 1891, Smith 1911, Craib 1913, Guillaumin 1921, Li 1944, Raizada 1968). Morphologically, *Pseudodissochaeta* shares some general (superficial) similarities with these genera. Some authors have even considered the genus to have capsular fruits, which is typical for the Oxysporeae Triana

(Smith 1911, Guillaumin 1921a). In fact, the fruits of *Pseudodissochaeta* are berries, just like other genera of Dissochaeteae (Naudin) Triana (Li 1944).

Pseudodissochaeta has been treated under *Medinilla* during the past few decades based on their morphological similarity (Chen 1983, 1984, Chen & Renner 2007, Cho et al. 2016). Its habit and floral characters better resemble *Medinilla* than *Dissochaeta* (Chen & Renner 2007). Nevertheless, recent molecular phylogenetic studies indicate that *Medinilla* is nested in Asian Sonerileae Triana, while *Pseudodissochaeta* consistently formed a strongly supported clade with *Dissochaeta* and alliances (Zhou et al. 2019, Kartonegoro et al. 2021). The wood anatomy of the genus also supports a close relationship with *Dissochaeta* rather than the *Medinilla*-alliance (Van Vliet 1981, Van Vliet et al. 1981, Kartonegoro et al. 2021). Morphologically, *Pseudodissochaeta* can be distinguished from *Dissochaeta* and *Medinilla* by its sometimes serrulate leaf margin (vs. entire) or oblique leaf base (vs. equal) or a combination of the two characters. Inflorescences in *Pseudodissochaeta* are thyrses with tetramerous flowers which are more similar to *Dissochaeta* than to *Medinilla*. However, the shape of stamens with dorsally spurred and biauriculate appendages is found in *Medinilla*. Based on the above molecular, anatomical and morphological evidences, *Pseudodissochaeta* is excluded from *Medinilla* and recognized as a distinctive genus. The morphological differences among *Dissochaeta*, *Medinilla* and *Pseudodissochaeta* are shown in Table 5-1.

Table 5-1. Differences in morphological characters among *Dissochaeta*, *Medinilla* and *Pseudodissochaeta*

Character	***Dissochaeta***	***Medinilla***	***Pseudodissochaeta***
Habit	Scrambling shrubs	Erect, climbing, spreading or epiphytic shrubs or rarely small trees	Erect or spreading shrubs
Leaf base	Regular	Regular	Oblique or regular
Leaf margin	Entire	Entire	Serrulate (except *P. spirei*)
Floral merosity	4-merous	4-, 5-, or 6-merous	4-merous
Calyx lobes	Semi truncate with triangular tip	Truncate with teeth-like or triangular tip	Truncate with teeth-like tip
Stamen shape	Dimorphic	Iso- or dimorphic	Isomorphic
Connective appendages	Dorsally triangular, ventrally biligulate or inappendiculate	Dorsally spurred, ventrally bilobed or biauriculate	Dorsally spurred, ventrally bilobed or biauriculate

Materials and methods

This revision is based on the analysis of morphological characters from specimens in the following herbaria: AAU, BM, E, K, L, P, PE, S (herbarium acronyms follow Thiers 2018, continuously updated), including online specimen images (https://plants.jstor.org/collection; https://science.mnhn.fr/institution/mnhn/collection/p/item/search/form?lang=en_US; https://www.aubot.dk/search_form.php; http://pe.ibcas.ac.cn/en/; http://herbarium.nrm.se/search/specimens/). Examination of morphological characters including indumentum, flowers and fruits was performed with binocular stereomicroscopes. The types of almost all names were examined either as actual specimens or as images. Morphological descriptions and measurements were made from dried specimens and fresh material with terminology following Bakhuizen van den Brink (1943), Nayar (1969a), Maxwell (1984), Renner et al. (2001b) and Kartonegoro et al. (2018, 2019). Distribution maps were prepared using DIVA-GIS (http://www.diva-gis.org/). A list of selected examined specimens is included under each species by country and, secondarily, by province.

General Morphology, Habitat and Distribution

Pseudodissochaeta has been described as erect or spreading shrubs up to 5 m tall, but some specimens are small trees up to 6 m. Herbarium labels indicate that *P. spirei* (Guillaumin) Veldkamp & Maxwell is a woody climber, but in fact the species is actually a spreading shrub in habit, not scrambling. The branchlets may be terete or quadrangular and 4-grooved, or slightly flattened. *Pseudodissochaeta subsessilis* (Craib) M.P.Nayar has angular branchlets that are often striate and clearly winged. Some species have young parts that possess a furfuraceous indumentum of stellate hairs, but become glabrescent. Mature branches are usually terete (except *P. subsessilis*) and have a thinner indumentum or are entirely glabrous (Maxwell 1984). The nodes of the branchlets and sometimes those of the branches are swollen and have the same type of indumentum as the internodes. Interpetiolar growth is uncommon and often inconspicuous.

Like most Melastomataceae, the leaf arrangement is opposite with equally sized leaves. Leaf blades are ovate to lanceolate with acute or acuminate tips. The leaf margin is serrulate, or exceptionally slightly serrulate to entire in *P. spirei*. The base of the blades varies from rounded, cuneate to oblique cordate in *P. assamica* (C.B.Clarke) M.P.Nayar, *P. spirei*, and *P. subsessilis*. Those three species have clasping and subsessile blades, a feature not found elsewhere in the tribe. In general, the leaf blades in all species have 1–2 pairs of lateral nerves, a pair of intramarginal nerves, numerous secondary nerves and a reticulate pattern of higher order nerves. The main nerves are usually sunken adaxially and raised on the abaxial surface. The leaf surface is mostly glabrous at maturity but sparsely puberulous on the veins, usually denser on the midrib and lateral nerves.

Pseudodissochaeta has a terminal, rarely axillary, cymose, paniculate or thyrsoid inflorescence, that is usually subtended by reduced leaves at the lower nodes of the primary axis. This form is common in all Dissochaeteae except *Creochiton* Blume, which has an umbellate inflorescence in most species (Kartonegoro & Veldkamp 2013). *Pseudodissochaeta lanceata* M.P.Nayar differs from its congeners in having inflorescences that grow from leafless stems (cauliflory) or from the root stock. This inflorescences type is similar to some species of *Heteroblemma* (Blume) Cámara-Leret, Ridd.-Num. & Veldkamp or *Medinilla* (Regalado 1990, Chen & Renner 2007, Camara-Leret et al. 2013). The branching within the inflorescences is opposite with 3-flowered cymules terminating each ultimate ramification. The axillary inflorescences have, beside the primary axis, well developed secondary axes, and distinct pedicels. The axes of the inflorescences are generally terete or quadrangular, with indumentum and nodes similar to those of the branchlets. A pair of bracts is present at each node of the inflorescence with a pair of bracteoles at the base of each pedicel, however, in most instances they fall off before anthesis.

The flowers are 4-merous. The shape of the hypanthium is mostly campanulate, cyathiform or tubular, either glabrous or with a few scattered minute stellate hairs. The calyx lobes are truncate or united but still with four teeth-like or submarginally thickened tips (recalling the situation in *Medinilla*), or patches of bristles (*P. lanceata*) that represent reduced or modified calyx lobes. The four petals are usually thin, conspicuous, symmetric, and usually colourful, but of very little taxonomic importance. The most frequent shapes are ovate, obovate, and suborbicular with a rounded or acute tip and a truncate or clawed base. All species have glabrous petals with visible venation or they are sometimes thicker with invisible veins near the middle and with thinner margins. The petals are imbricate in bud.

Pseudodissochaeta generally has eight fertile stamens in two whorls (inner and outer) borne in a ring at the summit of the hypanthium. As in other genera in the Dissochaeteae (Kartonegoro & Veldkamp 2013, Kartonegoro et al. 2018, 2019), the inner whorl is opposite the petals (oppositipetalous) and the outer whorl is alternate with the petals (alternipetalous). All stamens have well developed filaments, which are remarkably uniform in most species. Filaments vary in length according to the stage of maturity and in most cases they are glabrous. All species have eight isomorphic, equal or subequal stamens, which differ from those in the other genera of the Dissochaeteae. The anthers are terete, slightly curved to sinuate, and narrowed to a single, oblique pore at the tip. The connectives develop small appendages, which may be triangular, spur-like or bulbous-lobed dorsally and ventrally bilobed or biauriculate. *Pseudodissochaeta subsessilis* and *P. spirei* differ slightly in having shorter and thicker anthers whereby the alternipetalous ones in the former and both whorls in the latter have a thickened connective ridge dorsally. The appendages of the anthers in *Pseudodissochaeta* recall those of *Medinilla* rather than those of *Dissochaeta*.

The ovaries in the genus range from about half to ¾ as long as the hypanthium. Entirely glabrous ovaries are typical for *Pseudodissochaeta*. The placentation in *Pseudodissochaeta* is axillary with one placenta in each of the four locules, being attached to the middle of the central column. This type of placentation is commonly shared in Dissochaeteae except for some *Creochiton* species with basal placentation (Kartonegoro & Veldkamp 2013). The stigma in all species is very inconspicuous, capitate or punctiform and not useful for species recognition. The style in bud is straight and at maturity it is frequently curved at the tip. *Pseudodissochaeta*, which has relatively small flowers, have extra-ovarial chambers extending almost or completely to the base of the ovary. *Pseudodissoehaeta spirei* has shorter chambers, which are about half as long as the ovary.

A baccate fruit is found in all species of *Pseudodissochaeta*. The fruit colour changes from green to a dark blue-blackish or purple at full ripeness and has intermediate colours ranging from pink or red to dark blue. In addition to various vegetative features, the size of the fruit, shape and width of the areolus, and the thickness of the pericarp are among the most reliable characters that can be used for identification. The seeds of *Pseudodissochaeta* are numerous, cuneate, with a prominent hilum and papillose testa (Maxwell 1984), which also resemble those of *Medinilla*. Unlike most *Pseudodissochaeta*, other genera of Dissochaeteae commonly have cuneate, flat-topped seeds (Maxwell 1984, Kartonegoro et al. 2018, 2019).

Pseudodissochaeta is mostly found in tropical evergreen forests, with little seasonal variation in temperature and rainfall. They are present in primary shaded forest, but sometimes also in rather degraded forest, open forest margins, riverbanks or road sides, ranging in elevation from 80 up to 2000 m. The genus is distributed from E Bhutan and NE India, eastward to S China (including Hainan), N Myanmar, Indochina (Cambodia, Laos, Vietnam), and N Thailand.

Taxonomic Treatment

Pseudodissochaeta M.P.Nayar

Pseudodissochaeta M.P.Nayar, J. Bombay Nat. Hist. Soc. 65(3): 557. 1969; S.S.Renner, Nordic J. Bot. 13: 524. 1993; S.S.Renner et al., Fl. Thailand 7(3): 475. 2001. — Type: *Pseudodissochaeta assamica* (C.B.Clarke) M.P.Nayar

Erect or spreading shrubs or small trees up to 6 m in height; branchlets terete or angular, glabrous or softly hairy; nodes swollen with interpetiolar lines or crests, somewhat bristly. Leaves petiolate or subsessile; blades membranaceous or subcoriaceous, ovate to oblong-lanceolate, base equal or oblique, cuneate, rounded or cordate, margin serrulate or rarely entire, apex acute to acuminate; lateral nerves 2–6, intramarginal nerves 2; veins sunken adaxially, raised abaxially; surfaces glabrous but sparsely pilose on the abaxial nerves. Inflorescences terminal paniculate cymes, rarely axillary; thyrses up to 3 ramifications (rarely up to 4 or 5) with 3 to many flowers; bracts and bracteoles subulate, caducous. Flowers 4-merous. Hypanthium cyathiform, tubular or campanulate, calyx lobes truncate with shallowly 4 teeth-like lobes. Petals obovate to suborbicular, glabrous. Stamens 8, in two whorls, equal to subequal; anthers curved or sickle-shaped, apex rostrate; pedoconnective inconspicuous; connective basally with appendages, dorsally spurred or triangular, ventrally bilobed or biauriculate. Ovary 4-loculed, half to ¾ as long as the hypanthium, adnate to hypanthium with 8-septae forming extra-ovarial chambers; placentas axillary; extra-ovarial chambers extending to the middle or base of the ovary; style glabrous, filiform, apex slightly curved; stigma capitate or punctiform. Fruits berries, subglobose, ovoid or urceolate, glabrous or rarely with sparse capitate bristles, light to dark green becoming dark purple when ripe; seeds numerous, cuneate.

Distribution — Five species distributed mainly in Southeast Asia, ranging from east Bhutan, northeastern India, northern Myanmar, southern China, Hainan, northern Thailand and Indochina (Cambodia, Laos, Vietnam).

Key to species of *Pseudodissochaeta*

1 Leaves subsessile or shortly petiolate, up to 5 mm long, leaf length 42 times of petiole length or more; leaf base oblique, cordate (or auriculate); hypanthium campanulate or cyathiform-campanulate; fruits subglobose to globose 2
1 Leaves with well-developed petioles, 3–10 mm long, leaf length 24 times of petiole length or less; leaf base regular, obtuse, cuneate or rounded; hypanthium tubular or urceolate; fruits ovoid or urceolate 4
2 Branchlets quadrangular, winged; hypanthium with 8 faint ridges ..... **5. *P. subsessilis***
2 Branchlets terete, not winged; hypanthium without ridge 3
3 Nodes and petioles covered with bristles; leaf base shallowly cordate, leaf margin serrulate ..... **1. *P. assamica***
3 Nodes and petioles glabrous; leaf base deeply cordate, leaf margin subserrulate or entire ..... **4. *P. spirei***
4 Petioles 7–10 mm long; leaves 12–24 cm long, ovate-oblong to oblong; inflorescences inserted on leafless stems or on root stocks; calyx lobes and petals bristly at tip ..... **2. *P. lanceata***
4 Petioles 3–10 mm long; leaves 4.3–10 cm long, ovate, rarely ovate-oblong; inflorescences terminal and axillary; calyx lobes and petals not bristly at tip ..... **3. *P. septentrionalis***

1. *Pseudodissochaeta assamica* (C.B.Clarke) M.P.Nayar — Fig. 5-1, Map 5-1

Pseudodissochaeta assamica (C.B.Clarke) M.P.Nayar, J. Bombay Nat. Hist. Soc. 65(3): 559, fig. 1. 1969; Veldkamp & M.P.Nayar, Blumea 24: 432. 1979. — *Anplectrum assamicum* C.B.Clarke in Hook.f., Fl. Brit. Ind. 2: 546. 1879; J. Linn. Soc., London, Bot. 25: 23, t. 10. 1890 (emend. descr.); Cogn. in A.DC. & C.DC., Monogr. Phan. 7: 569. 1891; P.C.Kanjilal & Das, Fl. Assam 2: 303. 1938. — *Diplectria assamica* (C.B.Clarke) Kuntze, Revis. Gen. Pl. 1: 246. 1891. — *Backeria assamica* (C.B.Clarke) Raizada, Indian Forester 94: 435.

1968. — *Medinilla assamica* (C.B.Clarke) C.Chen, Acta Phytotax. Sin. 21: 419. 1983; C.Chen & S.S.Renner, Fl. China 13: 393. 2007. — Lectotype (designated here): India, Assam, Naga Hills, *Griffith 1445 [KD 2285]* (lecto K [K000867403!]; isolecto K [K000867404!], L [L0009218!], M [M-0137604!]).

Shrubs, 2.5–4 m tall; branchlets terete, slightly quadrangular distally, glabrous, sparsely covered with simple bristles near the nodes; nodes swollen, with distinct interpetiolar ridges, densely covered with simple, glabrous bristles 0.5–2 mm long; internodes 6–7 cm long. Leaves: subsessile or shortly petiolate, petiole terete, 3–5 mm long, furfuraceus or pubescent and densely covered with bristles 2–3 mm long; blades subcoriaceous, elliptic-oblong or oblong-lanceolate, 10–21 × 3.5–8 cm; base oblique, unequally shallowly cordate, margin serrulate, apex acuminate (tip up to 1.5 cm long); lateral nerves 2 or 4, intramarginal veins 2, very thin; secondary venation with at least 30 pairs of sub-opposite nerves, finer veins reticulate; mature blades glabrous and drying brown to olive green to light green; abaxially sparsely furfuraceous and bristly on the midrib and lateral nerves. Inflorescences terminal paniculate cymes, 10–37 cm long, multiflowered; main axis quadrangular, glabrous, sparsely bristly near the nodes; primary axis 9–27 cm long with 6–8 nodes; secondary axes 1–12 cm long with 1–4 nodes; tertiary axes up to 3 cm long with 2–3 nodes; quarternarly axes, when developed, up to 9 mm long with 1–2 nodes; bracts lanceolate, 2–2.5 × ca. 1 mm, glabrous, caducous; bracteoles subulate, 1–1.5 mm long; pedicels glabrous, 2–3 mm long in central flower, 1–2 mm long in lateral flowers. Hypanthium cyathiform or campanulate, glabrous or with scattered minute scales near the base, 3–5 × 2–3 mm; calyx lobes truncate with 4 teeth-like tips, acute, up to 0.5 mm long; petal buds conical, obtuse, 2.5–5 mm long; petals thin, ovate to oblong, 3–5.5 × 3.5–4 mm, acute at the tip, glabrous, pink. Stamens glabrous, equal, filaments flattened, 4–5 mm long; anthers slightly curved and rostrate, 4–5 mm long, pedoconnective when present ca. 0.25 mm long, connective appendaged at base, dorsally with a ca. 1 mm long, obtuse, thickened, triangular crest, ventrally extended, then bilobed or biauriculate, ca. 0.5 mm long. Ovary ¾ as long as hypanthium, apex glabrous; extra-ovarial chambers extending to the middle of ovary; style glabrous, straight, 9–11 mm long; stigma minute. Fruits subglobose to globose, 4.5–7 × 3–5 mm, apex mammiform, green turning black when ripe, calyx remnant somewhat flattened; seeds minutely papillose, ca. 0.75 mm long.

Distribution — E Bhutan, NE India, N Myanmar.

Ecology — Evergreen forest gulley at 255–1000 m elevation.

Vernacular name — *Dai dafla* (Assam); *Sagaing* (Kachin).

Notes — 1. The species is easily distinguished from the others by its dense bristles on nodes and petioles (Fig. 5-1). Some of the Chinese collections with glabrous nodes and petioles were identified as this species, but they are actually *P. spirei* based on the glabrous leaf nodes and petioles.

2. Clarke (1879) described this species in *Anplectrum* (now *Diplectria*), however species of *Diplectria* are scrambling woody climbing shrubs with dimorphic stamens whereby the outer whorl consists of staminodes.

3. Nayar (1969a) erroneously selected *Clarke 42323* as a lectotype for the species because Clarke's emended description was based on it but this is not the actual type material (Clarke 1879, 1890). The actual type material was *Griffith KD 2285* (Clarke 1879) as indicated later by Veldkamp & Nayar (1979). Clarke (1879) did not indicate in which herbarium the holotype was placed, therefore the duplicates are syntypes and the K specimen, bearing Clarke's label, is here designated as lectotype.

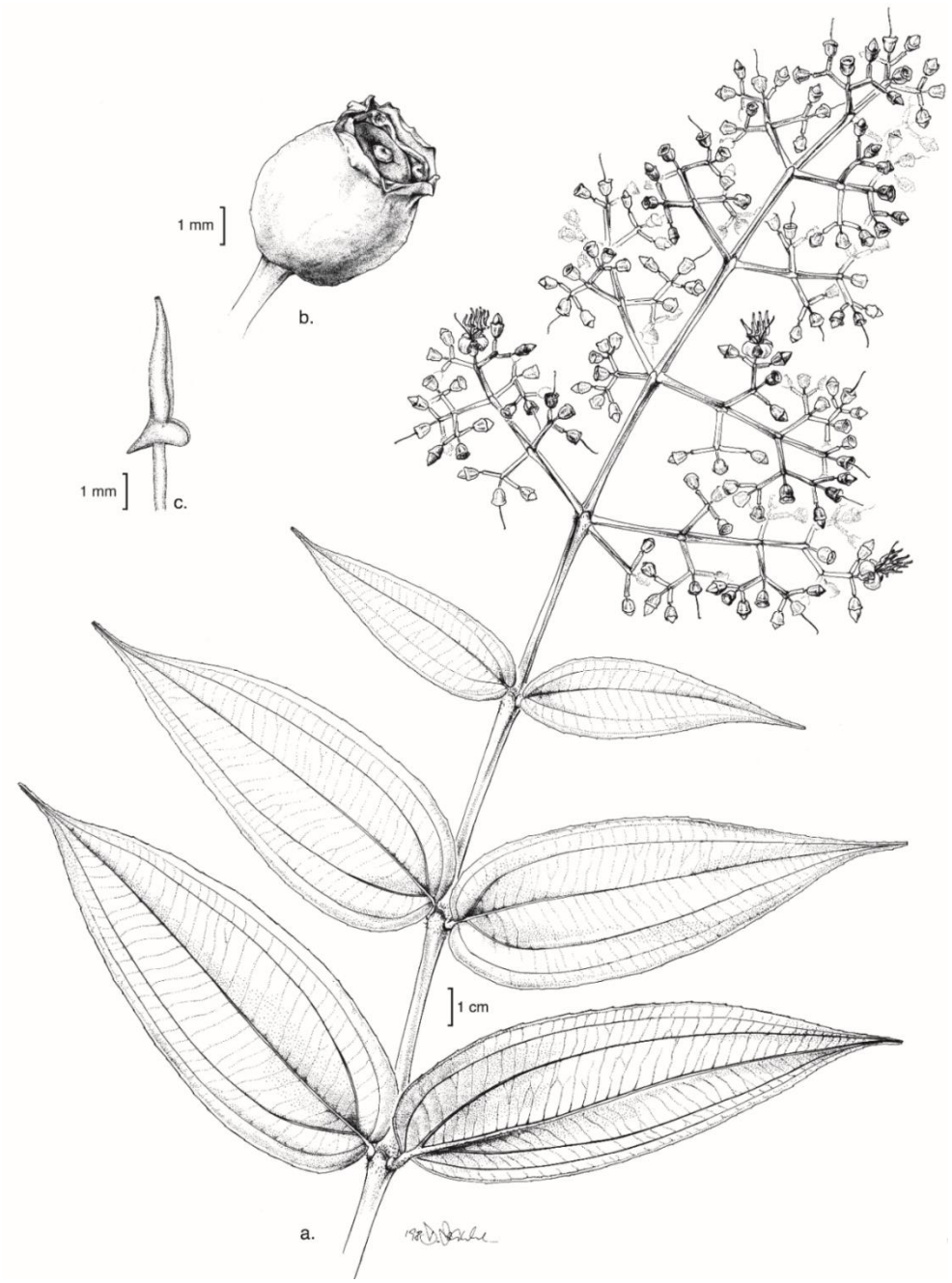
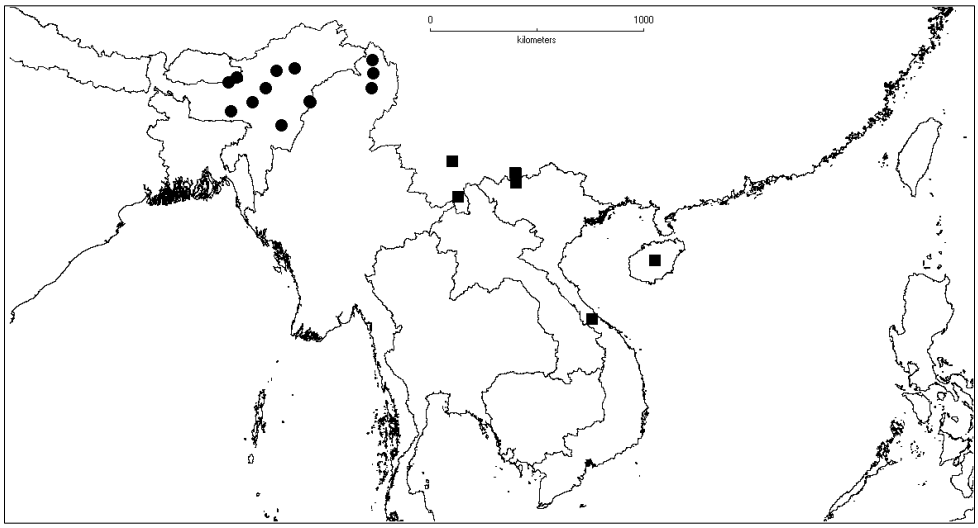


Fig. 5-1. *Pseudodissochaeta assamica*. **a.** Habit; **b.** fruit; **c.** stamen [Taken from Calusing 1999; Drawn by Doris Franke].

Specimens examined — **BHUTAN.** No specific location: *Griffith KD 2018* (K). **INDIA.** Assam: *Masters 173* (L); Menoka, *Chand 5254* (L); North Lakhimpur, 300 m, 25 Jan 1971, *Stainton 6726* (L); Subansiri, Pabin to Sayala, 19 Nov 1964, *Sastry 40751* (L). Meghalaya: Khasi Hills, *Anon. s.n.* (L). Nagaland: Naga Hills. *Griffith 1445 [KD 2285]* (K, L, M); *ibid.*,

Masters 1330 (P). Manipur: Mokoo, 750 m, 30 Nov 1885, *Clarke 42323* (BM, K). Arunachal Pradesh: Daffla Hills, *Badul Khan 71* (P). No specific location: *Jenkins s.n* (P). **MYANMAR.** Kachin: Nam Tamai Valley, 1000 m, 27 Aug 1948, *Kaulback 95* (BM); Mali Hka River, 17 Aug 1937, *Kingdon-Ward 12818* (BM); Suprabum, Hpuginhku River, 1000 m, 31 Dec 1961, *Keenan, Tan Aung & Tha Hla 3110* (K).



Map 5-1. Distribution map of *P. assamica* (●) & *P. lanceata* (■).

2. *Pseudodissochaeta lanceata* M.P.Nayar — Fig. 5-2, Map 5-1

Pseudodissochaeta lanceata M.P.Nayar, J. Bombay Nat. Hist. Soc. 65(3): 563, f. 3. 1969; P.H.Hô, Ill. Fl. Vietnam 2(1): 114, t. 3938. 1992 ("lanceolata"). — *Medinilla lanceata* (M.P.Nayar) C.Chen, Acta Phytotax. Sin. 21: 421. 1983; C.Chen & S.S.Renner, Fl. China 13: 394. 2007. — Type: China, Hainan, Hong Ta, July 1893, *Chinese Coll.* 406 (holo K [K000867414!]; iso K [K000867415!]).

Medinilla radiciflora C.Y.Wu, Fl. Yunnan. 2: 133, t. 32, f. 1-5. 1979. non Quisumb. & Merr. (1928). — Type: China, Yunnan, Pingbian, Mawei, Yakou Village 533 m, 16 Aug 1953, *PY Mao 2926* (holo PE, image!; iso IBSC).

Erect shrubs, 2–5 m tall; branchlets terete, striate and with scattered, glabrous or with glandular bristles 0.5–0.75 mm long; nodes swollen with interpetiolar lines with minute bristles; internodes 4.5–5.5 cm long. Leaves: petiole terete, 7–10 mm long, glabrous; blades subcoriaceous, ovate-oblong or oblong, 12–24 × 3.5–6.5 cm, base regular, cuneate to obtuse, margin serrulate, apex acuminate-rostrate, tip up to 2.5 cm long; lateral nerves 2, intramarginal nerves 2, thinner; secondary venation obscure; drying olive-greenish on both surfaces, glabrous. Inflorescences inserted on leafless stems or on root stocks, multiflowered, 15–40 cm long; main axis quadrangular, striate, minutely puberulous; primary axis up to 38 cm long with 5–7 nodes, secondary axes up to 12 cm with 2–4 nodes, tertiary axes up to 2.5 cm long with one node, quarternary axes when developed, up to 6 mm long, 5th axes when developed, 1–2 mm long; bracts subulate, 2–4 mm long; bracteoles subulate, up to 0.5 mm long; pedicels terete, glabrous, 3–4 mm long in central flower, 2.5–3 mm long in lateral flowers. Hypanthium tubular, 5–6 × ca. 2.5 mm, minutely papillose-puberulous and becoming glabrous; calyx lobes truncate with 4 teeth-like lobes with several glandular

bristles 0.5–0.75 mm long; petal buds conical, 2–3 mm long; petals thin, broadly elliptic, 6–8 × 4–5 mm, acute and with few glandular bristles at the tip, clawed at the base, bright white to pink. Stamens equal, glabrous, filaments flattened, 4–4.5 mm long, anthers slightly curved, narrowed at the tip, 5.5–6 mm long, connective dorsally with a triangular appendage of ca. 1 mm long, ventrally extending into a bilobed or biauriculate appendage, of ca. 0.5 mm long. Ovary half as long as hypanthium, glabrous, tip with slightly 4-lobed cup enclosing the base of the style; style straight, 10–12 mm long, glabrous; stigma minute, punctiform; extraovarial-chambers extending (nearly) to the base of the ovary. Fruits urceolate, ca. 8 × 7 mm, puberulous, minutely tuberculate; seeds ca. 0.5 mm long.

Distribution — Southern China (Hainan, Yunnan), Vietnam.

Ecology — Sparse to dense forests, shaded damp places, valleys, hillsides at 400–1000 m elevation (Chen & Renner 2007).

Vernacular Name — 酸脚杆 *suan jiao gan* (China).

Notes — This species is readily distinguished from the others by the combination of well-developed petioles and ovate-oblong to oblong leaves 12–24 cm long (Fig. 5-2). The tubular hypanthium is distinct for this species and *P. septentrionalis*, but they differ in leaf size and the inflorescences inserted on leafless stems or on root stocks in the former and both terminal and axillary in the latter. *Pseudodissochaeta lanceata* resembles *P. subsessilis* in the appearance of the leaf blades, but differs from the latter in the well-developed petioles and a regular leaf base (subsessile with an oblique leaf base).

Specimens examined — **CHINA.** Hainan: Hong Ta, Jul 1893, *Chinese Collector 406* (K). Yunnan: Pingbian Miao, District 1, 22 Aug 1953, *Mao 2983* (PE); Pingbian Miao, Mawei, 16 Aug 1953, *Mao 2926* (PE); *ibid.*, 21 Aug 1954, *Feng 5098* (PE); *ibid.*, Baiyan, Youmaji Paper mill, 900 m, 19 Oct 1954, *Feng 4563* (PE); Mengla, Xiaola Highway KM63, 580 m, 15 Mar 1983, *236-46 team 4431* (PE). **VIETNAM.** Quang Tri: 400 m, 1 Aug 1935, *Poilane 24896* (P); Tonkin: Phong Tho, Lao Cay, 14 Dec 1937, *Poilane PM40* (P).

3. *Pseudodissochaeta septentrionalis* (W.W.Sm.) M.P.Nayar — Fig. 5-3, Map 5-2

Pseudodissochaeta septentrionalis (W.W.Sm.) M.P.Nayar, J. Bombay Nat. Hist. Soc. 65(3): 565, fig. 4. 1969; Veldkamp & M.P.Nayar, Blumea 24: 435. 1979; S.S.Renner et al., Fl. Thailand 7(3): 475. 2001. — *Oritrephes septentrionalis* W.W.Sm., J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 7: 69. 1911. — *Medinilla septentrionalis* (W.W.Sm.) H.L.Li, J. Arn. Arbor. 25: 38. 1944; C.Chen & S.S. Renner, Fl. China 13: 393. 2007. — Lectotype (designated by Nayar in J. Bombay Nat. Hist. Soc. 65(3): 565 .1969): Myanmar, S. Shan, Kung Lung, 3000 ft elev., July 1909, *R.W. MacGregor 751* (lecto E [E00288102!])

Medinilla caerulescens Guillaumin, Bull. Soc. Bot. France 68: 5. 1921; in Lecomte, Fl. Gén. Indo-China 2: 921. 1921; Craib, Fl. Siam. Enum. 1(4): 699. 1931. — Lectotype (designated by Veldkamp & Nayar in Blumea 24: 435. 1979): Laos, Attapeu, Mar. 1877, *F.J. Harmand 1243* (lecto P [P02274898!]; isolecto P [P02274899!, P02274900!]).

Medinilla caerulescens Guillaum. var. *nuda* Craib, Fl. Siam. Enum. 1(4): 699. 1931. — Lectotype (designated here): Thailand, Phetchaburi, Dan Sai, Phu Lom Lo, 1200 m elev., 9 Apr. 1922, *A.F.G. Kerr 5787* (holo K [K000867400!]; isotype BK, BM [BM000546419!]).

Anplectrum yunnanense Kraenzl., Vierteljahrsschr. Naturf. Ges. Zürich 76: 153. 1931; Veldkamp & M.P.Nayar, Blumea 24: 435. 1979. — Lectotype (designated here): China, Yunnan, Szemoo, 4000 ft elev., *A. Henry 11705D* (lecto K [K000867409!]; isolecto E [E00285927!]).

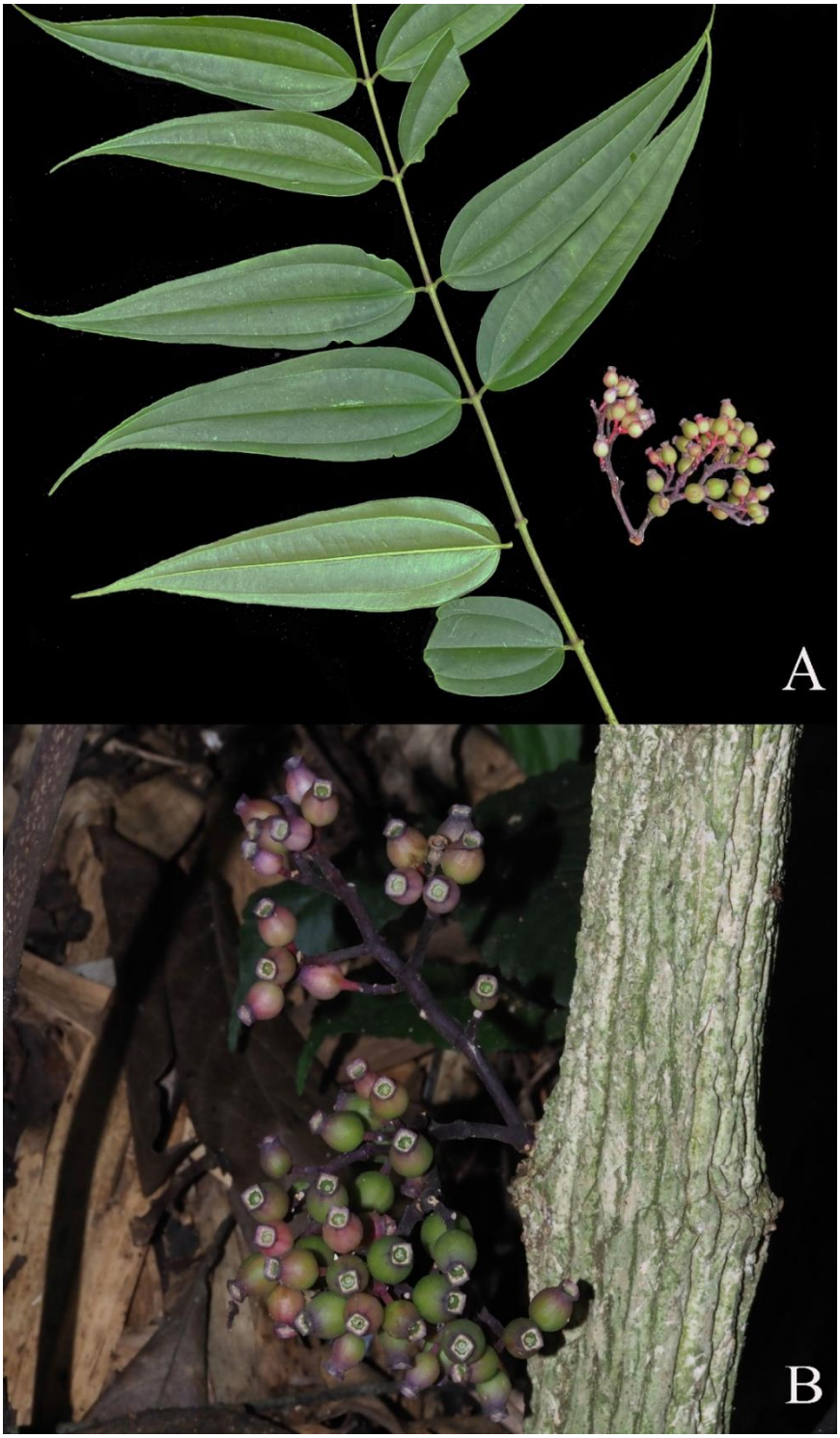


Fig. 5-2. *Pseudodissochaeta lanceata*. **A.** Branchlet; **B.** Infructescence. Photograph by Y.-S. Chen.

Erect shrubs, 1–5 m tall or small trees, up to 6 m tall; branchlets terete, smooth and glabrous; nodes swollen with minute bristles giving a puberulous-fimbriate appearance, interpetiolar lines distinct; internodes 2–4(–5) cm long. Leaves: petiole terete, 3–10 mm long, glabrous except puberulous near the tip; blades papery, ovate, rarely ovateoblong, 4.3–6(–10) × 1.5-3.6 cm, base oblique, obtuse, cuneate or rounded, margin serrulate, apex acuminate-rostrate, tip 10–15 mm long; lateral nerves 2, intramarginal nerves 2, thinner; secondary venation thin and inconspicuous; glabrous on both surfaces, drying dull greenish to brownish. Inflorescences terminal and axillary cymes of 1-, 3-, 5- or 7- flowers, 2–5 cm long; main axis slightly angular, compressed, slender, smooth and glabrous; primary axis 1.2–4 cm long with 2–3 nodes, secondary axes (when developed) 9–11 mm long with one node; bracts subulate, 1–1.5 mm long, glabrous, caducous; bracteoles minute, subulate, up to 0.5 mm long; pedicels glabrous, 1–2 mm long in central flower, 0.5–1 mm long in lateral flowers. Hypanthium tubular and becoming slightly urceolate after flowering, 3–6 × 2–3 mm, glabrous or sometimes with scattered, glandular bristles of ca. 1 mm long; calyx lobes truncate, apex appear with 4 undulations or 4 yellowish teeth-like lobes of ca. 0.5 mm long, glabrous; petal buds conical, 3–5 mm long, without bristles; petals elliptic or oblong, 5–6 × 3.5–4 mm, acute at the tip, broadly clawed at the base, glabrous, purplish or pink or white, reflexed at maturity. Stamens glabrous, equal, filaments 5–6.5 mm long, creamy white, anthers curved, slender, C-shaped, purplish pink, rostrate at the tip, 8–13 mm long, pedoconnective when present ca. 0.5 mm long, connective dorsally yellow spurred with a rounded lobe of 0.5–0.6 mm long, ventrally extending into yellow biauriculate appendages of 0.4–0.5 mm long. Ovary 2/3 as long as hypanthium, tip cup-like with an undulate margin enclosing the base of the style; style slender, 9–11 mm long glabrous, pale pink or white; stigma minute, punctate; extra-ovarial chambers extending to the base of the ovary. Fruits ovoid to urceolate, 7–8 × 4–6 mm, glabrous; seeds minutely papillose, ca. 0.6 mm long.

Distribution — Southern China, Laos, Cambodia (Cho et al. 2016), NE Myanmar, N Thailand, Vietnam.

Ecology — Dense primary or degraded evergreen forests, forest margins, near a ravine, moist clayey soil, damp shady areas at 200–1800 m elevation (Chen & Renner 2007; Cho et al. 2016).

Vernacular name — 北酸角杆 *bei suan jiao gan* (China).

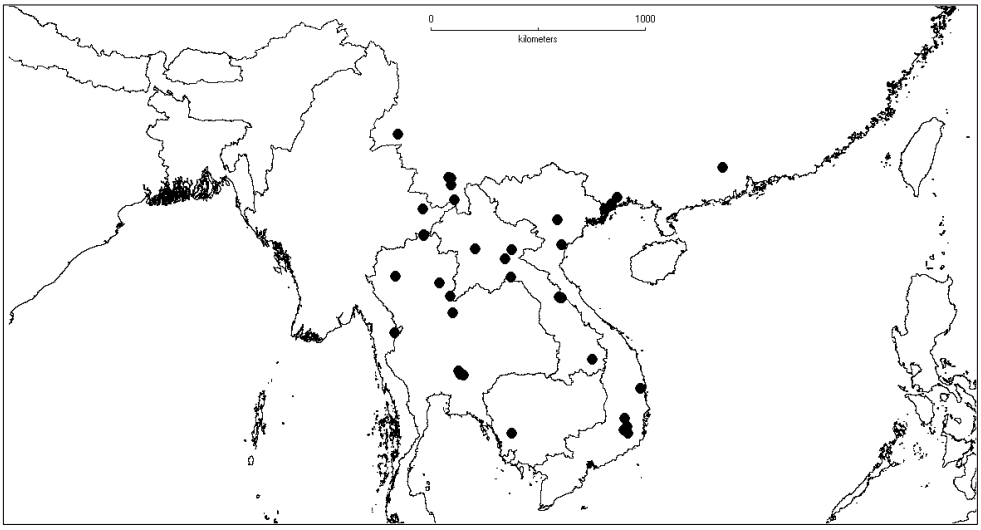
Note — *Pseudodissochaeta septentrionalis* is easily recognized by its small ovate leaf blade (less than 10 cm long) and terminal-axillary inflorescences with scattered bristles on its campanulate hypanthia (Fig. 5-3). It resembles *P. assamica* in its slender curved stamens. The species is variable in habit and petal colour; the height of the plants diminishes with increasing elevation.

Specimens examined — **CHINA.** Guangdong: Dinghu, Dinghu-Shan, 120 m, 29 Jul 1963, *Ting & Shih 797* (L); *ibid.*, 6 Nov. 1963, *Ting & Shih 1109* (L); *ibid.*, 3 Sep 1985, *Liao 15246* (L); Fang Cheng District, Taan Faan, Kung Ping Shan and vicinity, 1-9 Sep 1936, *Tsang 26788* (P). Yunnan: Lung-ling Hsien, 5 Apr 1934, *Tsai 55666* (P); Simao, *Henry 110705C* (E, L), *Henry 11705D* (E, K), Da Whei Shan 1400 m, 20 Oct 2001, *Zhou 215* (PE); Xishuangbanna, Puwen - Kun Luo Highway KM619, 21 Apr 1957, *China-Soviet Team 8053* (PE); *ibid.*, Jinhong, Meng Song, 1400 m, 30 Mar 2003, *Zhou 838* (PE). No specific location: *Forrest 27163* (E, P), *Forrest 26642* (E, P). **LAOS.** Attapeu: *Harmand 1243* (P). Khammouane: Kaeng Doer, Houay Wang Jang, 590 m, 22 Oct 2005, *Newman et al. LAO434* (E, L, P); *ibid.*,25 Oct 2005, *Newman et al. LAO517* (E, L, P); *ibid.*, Nakai Nam Theun 856 m, 23 May 2006, *Newman et al. LAO1244* (E, L). Kung Kruang: *Spire 536* (P). Paksan: Bassac, 1200 m, 19 Sep 1928, *Poilane 15622* (P). Xieng: Khou Hang, 28 Sep 1926, *Delacour s.n.* (P); Kham District, Tha Village, 25 Oct. 2006, *Souliya LAOS-851* (L). No specific

location: *Harmand 118* (P); *Spire 336* (P). **MYANMAR.** Shan: Kung Lung, 1200 m, Jul 1909, *MacGregor 751* (E). **THAILAND.** Chiang Mai: Chom Thong, Doi Inthanon National Park, North of KM 38 Huai Hoi area, 1700 m, 31 Jan 1993, *Maxwell 93-126* (L). Chiang Rai: Doi Tung, Wat Noi Temple, 1150 m, 2 Dec 2004, *Maxwell 04-761* (L); *ibid.*, Along the Wat Noi – Wat Huai Nam Khun Trail, 1130 m, 21 Sep 2010, *Van de Bult 1071* (L). Nakhon Nayok: Khao Yai National Park, 950–1050 m, 9 Oct 1979, *Shimizu et al. T-19708* (L). Nakhon Ratchasima: Khao Yai National Park, Phao Laem, 1100-1200 m, 19 Oct 1969, *Van Beusekom & Charoenpol 1761* (L, P); *ibid.*, 700 m, Jan 1964, *Phengkhlai 432 (BKF38004)* (K, L, P); *ibid.* 30 Oct 1970, *Charoenpol, Larsen & Warncke 4286* (L); *Ibid.*, 2 Sep 1967, *Hardial 593* (L); *ibid.*, Khao Rom, 650 m, 3 Dec 1983, *Fukuoka & Ito T-34628* (L). Na Noi:

Fig. 5-3. *Pseudodissochaeta septentrionalis*. **A.** Habit; **B.** Branchlet with inflorescences; **C.** Flower; and **D.** Fruits. Photographs by: Y. Liu (A–C), nifty.com (D)

Doi Khun Ssathan, 10 km SW of Ban San Tha, 1000–1300 m, 19 Nov 1993, *Larsen et al. 44616* (AAU, L). Phetchaburi: Dan Sai, Phu Lom Lo, 1200 m, 9 Apr. 1922, *Kerr 5787* (BM, K). Phitsanulok: PHu Mieng Mountain, 1300 m, 28 Jul 1966, *Larsen, Smitinand & Warncke 953* (AAU, P). Prachinburi: Khao Yai National Park, 800 m, 12 Aug 1966, *Larsen, Smitinand & Warncke 310* (AAU, L). Saraburi: Khao Yai, 800 m, 5 Dec 1965, *Vidal 4613* (P); *Ibid.*, 1000 m, 5 Dec 1965, *Vidal 4577* (L, P). Tak: Mae Sot- Umphang Road KM. 117–118, 1100 m, 24 Apr 2004, *Pooma et al. 4652* (L). No specific location: *Put 3569* (L), *Put 3761* (L). **VIETNAM.** Dac Kiet: Thanh Hoa, 13 Sep 1920, *Poilane 1835* (P). Haut Donnaï: Dalat, 1500 m, 12 Sep 1940, *Poilane 30361* (P); *ibid.*, *Hayata 221* (P); *ibid.*, *Hayata 164* (P); *ibid.*, *Chevalier 40331* (P). Kray Am & Gia Deun, 1500 m, 1 May 1941, *Poilane 32656* (P); Dangkia & Dang Le, 1000 m, 29 Jan 1934, *Poilane 23500* (P); *ibid.*, *Poilane 18610* (P). Lam Dong: Lac Duong, Da Chay, 1700 m, 17 Mar 1997, *Averyanov, Binh & Lôc VH2748* (P); *ibid.*, 27 Mar 1997, *Averyanov, Binh & Lôc VH3261* (P); *ibid.*,1600-1650 m, 4 Apr 1997, *Averyanov, Binh & Lôc VH3679* (P); *ibid.*, 4 May 1997, *Averyanov et al. VH4551* (P). Binh Dinh: Qui Nhon, Mang Giang, 1600 m, 22 Aug 1930, *Poilane 18075* (P). Lang Bi Ninh, 700 m, 27 Jul 1925, *Poilane 12229* (P). Tonkin: Dam-ha, Lomg Ngong Village, Sai Wong Mo Shan, *Tsang 30024* (L, P); *ibid.*, *Tsang 30462* (L, P); Ha-coi, Chuk Pai, Taai Wong Mo Shan, *Tsang 27021* (P); *ibid.*, *Tsang 29118* (L, P); *ibid.*, *Tsang 29162* (L, P); *ibid.*, *Tsang 29430* (L); Mon Cay, Pac-si and vicinity, *Tsang 26929* (P); Liang Lian, Jul 1908, *d'Alleizette s.n.* (L).



Map 5-2. Distribution of *Pseudodissochaeta septentrionalis* (●).

4. *Pseudodissochaeta spirei* (Guillaumin) Veldkamp & J.F.Maxwell — Fig. 5-4, Map 5-3

Pseudodissochaeta spirei (Guillaumin) Veldkamp & J.F.Maxwell, Gard. Bull. Singapore 33: 324. 1980. — *Medinilla spirei* Guillaumin, Bull. Soc. Bot. France 68: 4. 1921; in Lecomte, Fl. Gén. Indo-China 2: 921. 1921: H.L.Li, J. Arn. Arbor. 25: 38. 1944; C.Y.Wu & C.Chen, Fl. Yunn. 2: 130, t.31, f. 6–8. — Lectotype (designated by Maxwell & Veldkamp in Gard. Bull. Singapore 33: 324. 1980): Vietnam, Nghé An, Co Ba, 7 Aug 1914, *J, Chevalier [coll. F. Fleury] 32408* (lectotype P [P00700366!]; isolecto P [P00700367!, P00700368!]).

Shrubs, 1–4 m tall, somewhat spreading; branchlets terete, smooth, glabrous; nodes with distinct interpetiolar lines; internode 6–9(–11) cm long. Leaves: subsessile or shortly petiolate, petiole terete, up to 1 mm long, glabrous; blades subcoriaceous, ovate-oblong or elliptic-oblong, 10–21 × 3–11 cm, base oblique, deeply cordate, margin subserrullate or entire, apex acuminate, tip up to 1.5 mm long; lateral nerves 2, intramarginal nerves 2, thinner; secondary veins 15–20, finer veins inconspicuous; glabrous on both surfaces. Inflorescences terminal, multiflowered, 8–23 cm long; main axis terete to quadrangular, glabrous except for the nodes, the latter with patches of puberulous hairs; primary axis 6–20 cm long with 2–5 nodes; secondary axes 3–8 cm long with 1–3 nodes; tertiary axes up to 3 cm long with 1–2 nodes; quarternarly axes, when developed, up to 1 cm long with 1–2 nodes; bracts subulate, 0.5–1 cm long, caducous; bracteoles subulate, 0.2–0.4 mm long; pedicels quadrangular, glabrous, 1–2 mm long. Hypanthium cyathiform-campanulate, smooth, glabrous, 4–4.5 × ca. 4 mm, light green to pale brown; calyx lobes truncate with 4 minute submarginal teeth-like lobes; petal buds conical, glabrous, 2–3 mm long; petals suborbicular, 3–4 × 3–3.5 mm, obtuse at the tip, broadly clawed at the base, glabrous, pink, reflexed. Stamens subequal, glabrous, filaments 2–3 mm long, white; anthers slightly curved, rostrate at the tip, 2–3 mm long, pale yellow or whitish, connective extending dorsally with a spur or triangular appendage of 1.5–2 mm long, and ventrally with two minute lobes less than 0.5 mm long. Ovary half as long as hypanthium, 4-ridged at the top, glabrous; style glabrous, 6–7 mm long; stigma minute, capitate; extra-ovarial chambers half as long as the ovary. Fruits subglobose, 5–7 × 5–6 mm, smooth, glabrous; seeds ca. 0.5 mm long.

Distribution — Southern China, Laos, Vietnam.

Ecology — Evergreen sparse to dense forest, forest edges, valleys, hillsides, streamsides, damp places, trail sides at 200–1300 m elevation (Chen & Renner 2007).

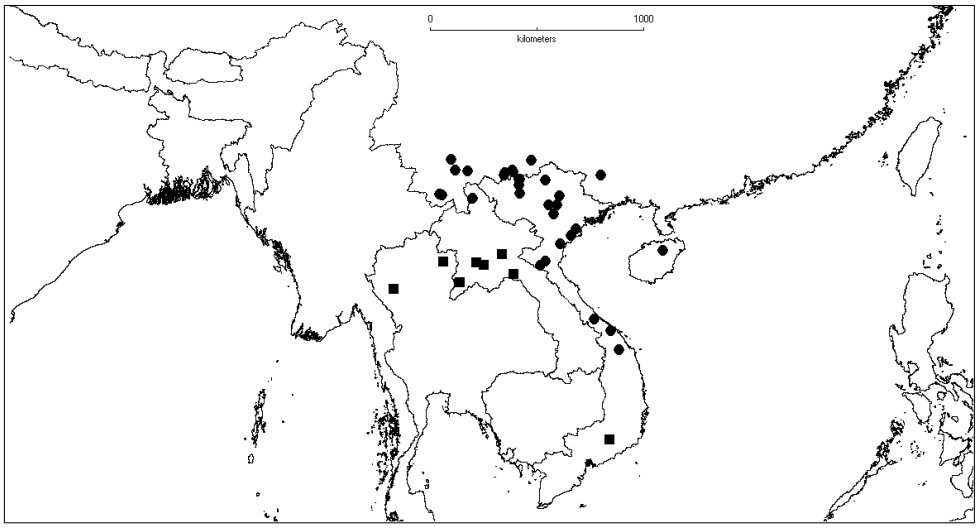
Vernacular name — 顶花酸角杆 *ding hua suan jiao gan* (China).

Note — *Pseudodissochaeta spirei* (Fig. 6) is the only species in the genus that has almost entire or subserrulate leaf margins. Because of the subsessile leaf blade with oblique clasping base it closely resembles *P. assamica* and *P. subsessilis*. However, *P. spirei* does not have bristly nodes like *P. assamica*. It also differs from the latter two in the ovate-oblong leaf blades (vs. oblong-lanceolate). Some authors have described this species as a climber. Nevertheless, most collections of this species have recorded it as an erect or spreading shrub. Therefore, the former interpretation can be regarded as incorrect. Woody climbing or scrambling shrubs are only known in the other genera of *Dissochaeta* allies, i.e. *Dalenia*, *Diplectria*, *Dissochaeta*, *Macrolenes* (Kartonegoro et al. 2018, 2019).

Specimens examined — **CHINA.** Guangxi: *Ching 7536 (FM23435)* (PE); *Chow s.n.* (PE). Hainan: Kan-en District, Sam Mo Watt, Chim Fung Ling, 16 Apr 1934, *Lau 3793* (P). Yunnan: *Chow 130* (PE); *Gao 43* (PE); Ping-pien Hsien, 1300 m, 14 Jul 1934, *Tsai 60888* (PE); Nansha River, 20 Aug 1953, *Xiao 31* (PE); Locust Castle, 23 Apr 1953, *Fan 50* (PE); Nanxi District, *Han 28* (PE); Jinping, 28 Apr 1953, *Jiang 45* (PE); *ibid.*, 26 May 1953, *Wu & Hu 29* (PE); Man Ba, May 1953, *Dong 160* (PE); Dam, 8 May 1953, *Cai 956* (PE); Manlai, 9 Apr 1953, *Cai 200* (PE); *ibid.*, 15 Dec 1953, *Mao 3318* (PE); Si-chour-hsien, Ting-mann, 1000 m, 13 Oct 1947, *Feng 12399* (PE); *ibid.*, 23 Dec 1939, *Wang 85910* (PE); Saga Village, Jun 1953, *Anon 130* (PE); Pingbian Miao, Yaoshan, Dudian, Bai Quanchong, 850 m, 28 Oct 1954, *Feng 5220* (PE); *ibid.*, Liangzhi, Gewu, 760 m, 21 Apr 1954, *Wan 3940* (PE); Areca Village, 220 m, 24 Mar 1958, *Feng 21698* (PE); Hekou Yao, Wayao Roadside, 180 m, 26 Jun 1953, *Liu 92* (PE). LAOS. Cach Trap: *Spire 1541* (P). **VIETNAM.** Chai Nguyen: Cho-Cho, *Eberhardt 3990* (P). Dong Tri: Quang Tri, 700 m, 16 Jun 1924, *Poilane 10955* (L, P). Dac Kiet: Thanh Hoa, 9 Sep 1920, *Poilane 1803* (P). Huei: Nui Bach Ma, 18 Apr 1939, *Poilane 29815* (P); *ibid.*, 300–400 m, 26 Apr 1959, *Poilane 30021* (L, P); *ibid.*, 24 Apr

1943m, *Vidal 840A* (P). Lao Cai: Van Ban Nature Reserve, 20 Apr 2013, *Swenson et al. 1279* (S); *Ibid.*, *Swenson et al. 1280* (S). Nghe An: Nghia Hung, 17 May 1914, *Fleury 32564* (P); Co Ba, 7 Aug 1914, *Fleury 32408* (P); Con Cuông, Pu Mat National Park, Khe Kem waterfall, 28 Apr 2013, *Swenson et al. 1481* (S); *Ibid.*, *Swenson et al. 1496* (S). Nguyen Guang: Bach Ngoc, *Eberhardt 4817* (P). Tramy: Quang Nam, 500 m, 22 Feb 1941, *Poilane 31477* (P); *ibid.*, *Poilane 31479* (P); *ibid.*, 20 Feb 1941, *Poilane 31381* (P). Tam Dao, 1000 m, 7 Oct 1963, *Pocs & Dang Khoi 723* (P). Tonkin: Phu Tho, Chan Mong, 18-19 Apr 1914, *Fleury 32178* (P); *ibid.*, 19-20 Apr 1914, *Fleury 32190* (P); *ibid.*, 20-21 Apr 1914, *Fleury 32223* (P); Pho Lu, Lao Cai, 6 Feb 1936, *Poilane 25169* (P); Chobo, 400 m, 14 Apr 1926, *Colani 3006* (P); *ibid.*, 17 Nov 1887, *Balansa 3507* (P); *ibid.*, May 1909, *d'Alleizette s.n.* (L); Dong Dong, Feb 1886, *Balansa 1139* (P); Tschantaio, Mount Ba-ni, 24 Jul 1886, *Balansa 2873* (P).

Fig. 5-4. *Pseudodissochaeta spirei*. **A.** Habit; **B.** Inflorescence; **C.** Flowers; and **D.** Fruits. Photographs by Y. Liu (A), J. Lundberg (B, D), Lijiang Yezi (C).



Map 5-3. Distribution of *P. spirei* (●) & *P. subsessilis* (■).

5. *Pseudodissochaeta subsessilis* (Craib) M.P.Nayar — Fig. 5-5, Map 5-3

Pseudodissochaeta subsessilis (Craib) M.P.Nayar, J. Bombay Nat. Hist. Soc. 65(3): 561, fig. 2. 1969; S.S.Renner et al., Fl. Thailand 7(3): 476. 2001. — *Allomorphia subsessilis* Craib, Bull. Misc. Inform. Kew 1913: 69. 1913; Guillaumin in Lecomte, Fl. Gén. Indo-China 2: 902. 1921; Craib, Fl. Siam. Enum. 1(4): 686. 1931. — *Medinilla subsesilis* (Craib) M.P.Nayar ex P.H.Hô, Ill. Fl. Vietnam 2,1: 114, . 3937. 1992, non Merr. (1912). — Lectotype (designated by Nayar in J. Bombay Nat. Hist. Soc. 65(3): 561. 1969): Thailand, Chiang Mai, Maharat, Doi Wao, 300–900 m elev., 23 Feb. 1912, *A.F.G. Kerr 2427* (lectotype K [K000867401!]; isolectotypes BM [BM000944536!, BM000944537!], E [E00288101!], K [K000867402!]).

Anerincleistus sessilifolius Guillaumin, Bull. Soc. Bot. France 68: 4. 1921; in Lecomte, Fl. Gén. Indo-China 2: 905. 1921. — Lectotype (designated here): Laos, Exp. Me-Kong, Paklai, *C. Thorel s.n.* (lectotype P [P00700369!]).

Shrubs or small trees, 2–5 m tall; branchlets quadrangular, winged, greenish to brownish, nodes with distinct interpetiolar lines or small crests, stellate furfuraceous, glabrescent; internodes 4–6 cm long. Leaves: subsessile or shortly petiolate, petiole densely stellate-furfuraceous or stellate-pubescent, 1–2.5(–5) mm long; blades chartaceous, oblong-lanceolate or lanceolate, 10–18.5(–27) × 2.8–4.2(–6.8) cm, base oblique, unequally auriculate or cordate, margin minutely serrulate, apex acute or acuminate; lateral nerves 2 or 4, intramarginal veins 2; upper surface minutely brownish puberulous when young, glabrous with age, dark green, abaxial surface mainly light green, glabrous but nerves softly brownish pubescent with dense stellate hairs, cross-venules distinct. Inflorescence terminal, 13–28 cm long, main axis quadrangular, glabrous or sparsely brownish pubescent, dark purple; primary axis, 13–25 cm long with 7–10 nodes; secondary axes 4–6 cm long with 3–4 nodes; tertiary axes up to 10 mm long with 1–2 nodes; quarternarly axes (when developed) up to 2 mm long with 1 node; bracts subulate, ca. 1.5 mm long, inconspicuous, caducous; bracteoles subulate, 1–2 mm long; pedicel subangular, softly brownish pubescent with stellate hairs, 0.8–1 mm long on central flower, 0.5–0.8 mm long on lateral flowers. Hypanthium campanulate, 2–3.5

Fig. 5-5. *Pseudodissochaeta subsessilis* (*Kerr 2427*, Isolectotype E).

× 1–2 mm, glabrous, faintly 8-ridged, light green; calyx lobes truncate with four small teeth-like tips of ca. 0.5 mm long; petal buds conical, ca. 1 mm long; petals obovate to suborbicular, 2.5–3 × ca. 3 mm, apex rounded, base narrow, reflexed at maturity, white, pink, or violet. Stamens subequal, filament 1.5–2 mm long, whitish; anther curved, 2.5–3 mm long, creamy, connective dorsally ending in a thick short spurred yellow appendage 0.4–0.5 mm long, ventrally ending in two auricles ca. 0.3 mm long. Ovary ca. 2/3 as long as hypanthium, glabrous, ridged at the top; style 5–7 mm long, filiform, glabrous, creamy; stigma minute, capitate, light red or pink; extra-ovarial chambers extending to the middle of the ovary. Fruits subglobose, ca. 6 × 5 mm, glabrous. Seeds ca. 0.5 mm long.

Distribution — Laos, Thailand, Vietnam.

Ecology — Evergreen forest or degradated 231eciduous forest at 200–1030 m elevation.

Note — In many respects *P. spirei* (Fig. 5-4) resembles *P. subsessilis* (Fig. 5-5), however the former is easily distinguished by its terete branchlets (vs. angular branchlets) and wider blades with entire margin (vs. narrow blades with serrulate margin). *Pseudodissochaeta assamica* also resembles *P. subsessilis* but the latter does not have bristly nodes and petioles. In addition, *P. assamica* has larger flowers and stamens than *P. subsessilis*. Chen & Renner (2007) recognized these differences as intraspecific variations and regarded *P. spirei* and *P. subsessilis* as synonyms of *P. assamica*.

Specimens examined — **LAOS.** Borikhane: King Cham, 200 m, 28 Mar 1932, *Kerr 20779* (BM, K, L, P). Xieng Khuoang: Pahia & Na Di, 1000 m, Apr 1949, *Vidal 904B* (P). Pak Lai: *Thorel s.n.* (P). Vientiane: Kasi, Muang Kheung Village, Namon Village Road, near Nam Lik River, 325 m, 25 Aug 1999, *Maxwell 99-208* (L), Vang Vieng, Pu Yang Hill, above Pohn Sooung Village, 325 m, 20 May 2011, *Maxwell 11-28* (L, P); *ibid.*, *Maxwell 11-29* (L, P). **THAILAND.** Chiang Mai: Maharat, Doi Wao, 1000 m, 23 Feb 1912, *Kerr 2427* (BM, E, K); Doi Tiu, 300 m, *Kerr 5042* (BM, K, P). VIETNAM. Lam Dong: Blao, 800 m, 25 Apr 1933. *Poilane 22376* (P); *ibid.*, 4 Feb 1933, *Poilane 21834* (P). Ban Au Kun, 3 Oct 1957, *Tixier s.n.* (P).

Excluded species

Pseudodissochaeta raphioides C.Hansen, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 11(3): 280. 1990. = **Oxysporeae**.

Pseudodissochaeta rosea (Guillaumin) J.F.Maxwell, Gard. Bull. Singapore 35(2): 216. 1983. = ***Sporoxeia rosea*** (Guillaumin) C.Hansen, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 12(1): 41. 1990.

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