

四种竹子的花器官形态描述

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摘要: 近几年来南京林业大学竹种园中4种竹子出现开花现象。首次描述了鹅毛竹(*Shibataea chinensis*)和异叶苦竹(*Arundinaria simonii* f. *heterophylla*)的花部形态特征, 补充描述了月月竹(*Chimonobambusa sichuanensis*)和福建茶秆竹(*Arundinaria amabilis* var. *convexa*)的花部形态特征。

关键词: 竹亚科; 开花竹种; 花部形态

中图分类号: Q944.58

文献标识码: A

文章编号: 1005-3395(2010)03-0251-06

Description of Inflorescences for Four Species of Bambusoideae

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Abstract: Four bamboo species have been flowering in recent years in the garden of Bamboo Research Institute of Nanjing Forestry University. The floral morphology of 4 bamboo species, *Shibataea chinensis*, *Arundinaria simonii* f. *heterophylla*, *Chimonobambusa sichuanensis*, *Arundinaria amabilis* var. *convexa*, are described and supplemented. Among them the flowering characteristics of *Shibataea chinensis* and *Arundinaria simonii* f. *heterophylla* are provided for the first time.

Key words: Bambusoideae; Flowering bamboo species; Floral morphology

China is one of the countries with most abundant bamboo resources. While most bamboos usually have a long, irregular flowering interval which can be as long as 120 years, so flowering is rare in most bamboo species^[1-3]. Now the flowering of bamboo has been a subject to much popular interest and speculation. Only a small part of the bamboo species have been reported with floral morphology in China before^[4-7].

The duration of the incidence of flowering and fruiting varies from one species to another. Some bamboo species generally died off within one or two years after flowering while others do not die. Here, *Shibataea chinensis* flowers annually in recent years and never bore any seeds, while the other three bamboo species (*Arundinaria simonii* f. *heterophylla*,

Chimonobambusa sichuanensis, *Arundinaria amabilis* var. *convexa*) fruit a little after flowering.

1 *Shibataea chinensis* Nakai Fig. 1 and Plate I: 1~9
Inflorescences iterant. Pseudospikelets sessile, fasciculated at each node of flowering branches and branchlets. Spikelets, green, 2~3 cm long, containing 3~4 florets. Rachilla disarticulated, 1 mm long. The floret subtended by several bracts at base, the outermost bract 5~7 mm long, triangular. Glume I 7 mm long, 1.5 mm wide. Glume II 9 mm long, 3 mm wide. Lemma 8~16 mm long, lanceolate, membranous, acute at apex, 13~15-nerved. Palea 7~15 mm long, lanceolate, glabrous, 2-keeled, 2-nerved between and 2-nerved on each side of keels. Lodicule 3, 4~6 mm long, 1.5 mm wide, long-lanceolate, short ciliolate. Stamen 3, yellow, 8~11 mm long, filaments

Received: 2009-10-15 Accepted: 2010-01-12

Foundation item: The State Science and Technology Key Projects during the Period of the Eleventh Five-Year Plan (2006BAD19B0204)

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filiform, 1.8 ~ 2 cm long. Ovary ovoid, 1 mm long, style single, extremely short, only 0.5 mm, stigmas 3

or 2, fuchsia, plumose, 8 ~ 10 mm long. Caryopsis unknown.

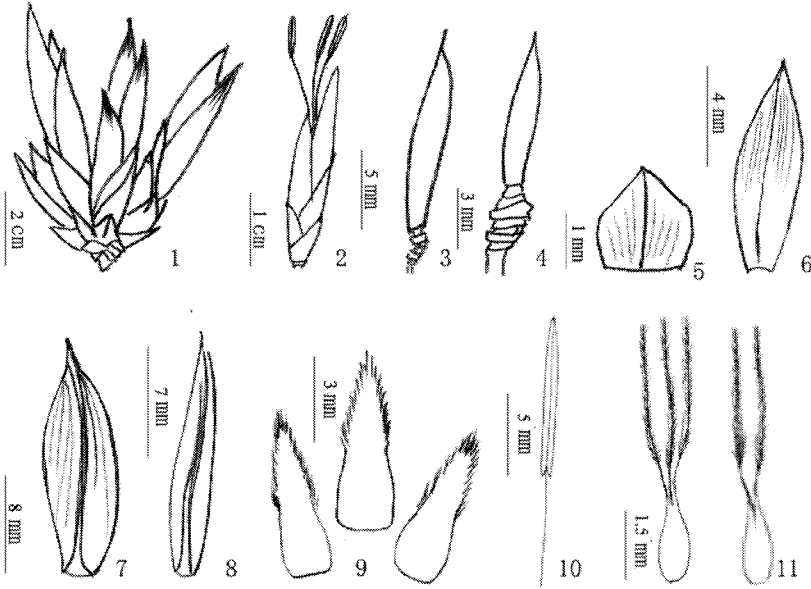


Fig. 1 *Shibataea chinensis*

1. Inflorescences iterantant; 2. Spikelet; 3. Floret; 4. Part of rachis; 5. Glume I; 6. Glume II; 7. Lemma; 8. Palea; 9. Lodicule; 10. Stamen; 11. Gynoecium. (Drawn by SHOU Yu-ting)

2 *Arundinaria simonii* f. *heterophylla* Makino et Shirasawa Fig. 2 and Plate I: 10 ~ 18

Inflorescence semelauctant. Spikelets inserted at nodes of flowering branches, 5 ~ 7 cm long, linear, green, flat, glabrous. Pedicel 2 ~ 4 cm long. Spikelets containing 6 ~ 10 florets, with 2 empty glumes at its base, rachilla disarticulated, 4 ~ 8 mm long, flat, puberulose. Lemma 14 ~ 20 mm long, green, lanceolate, glabrous, acute and apiculate at apex, 3-nerved, 2-nerved between and 2-nerved on each side of keels. Palea 12 ~ 15 mm long, white, 2 bifurcate at apex, lanceolate, 2-nerved, 5-nerved between and 2-nerved on each side of keels. Lodicule 3, unequal, long ciliate at apex, posterior 1 angustate, anterior 2 larger, 3.8 ~ 5 mm long, 1.2 ~ 2 mm wide. Stamen 3, yellow, 7 ~ 10 mm long, filaments filiform, 10 ~ 16 mm long. Ovary long elliptic, 2 ~ 3 mm long, style single, 1 ~ 2 mm long, stigmas 3, white, plumose, 3 ~ 4 mm long.

3 *Chimonobambusa sichuanensis* Yi Fig. 3 and Plate II: 1 ~ 9

Inflorescence iterantant, with 3 ~ 8 pseudo-spikelets. The flowering branches with or without leaves, 6 ~ 15 cm long, 8 ~ 14 florets, the lowest and

uppermost floret aborted; rachilla disarticulated, 1 ~ 1.8 cm long, flat. Glumes 2, lanceolate, glume I longer than glume II, glume I 1.7 cm long, glume II 1.3 cm long. Lemma 9 ~ 13 mm long, lanceolate, papyraceous, purple, glabrous, acute at apex, 7 ~ 11-nerved; palea 8 ~ 11 mm long, green, glabrous, 4-nerved between and 3-nerved on each side of keels, slightly bifurcate at apex; lodicules 3, the 2 anterior 3.5 ~ 5 mm long, 1.2 ~ 2 mm wide, larger than the posterior, ciliate at apex; stamens 3, filaments 8 ~ 14 mm long, anthers 5 ~ 8 mm long, basifixed anther. Ovary ovoid, 2 ~ 3 mm long, style 1, extremely short, 1 ~ 1.4 mm long, stigmas 2, 3 ~ 4 mm long, plumose. Caryopsis oblong, ventral sulcus obvious, pericarp thick.

4 *Arundinaria amabilis* var. *convexa* Z. P. Wang et G. H. Ye Fig. 4 and Plate II: 10 ~ 18

Inflorescence semelauctant, racemose, 4 ~ 6 spikelets. Spiklets 4 ~ 6 cm long, long lanceolate, flat, ciliate, covered with white farinose, containing 6 ~ 11 florets. Glumes 2, unequal, glume I lanceolate, 6 ~ 7 mm long, 2 ~ 2.5 mm wide, glume II lanceolate, 9 ~ 11 mm long, 4 ~ 5 mm wide. Rachilla internodes,

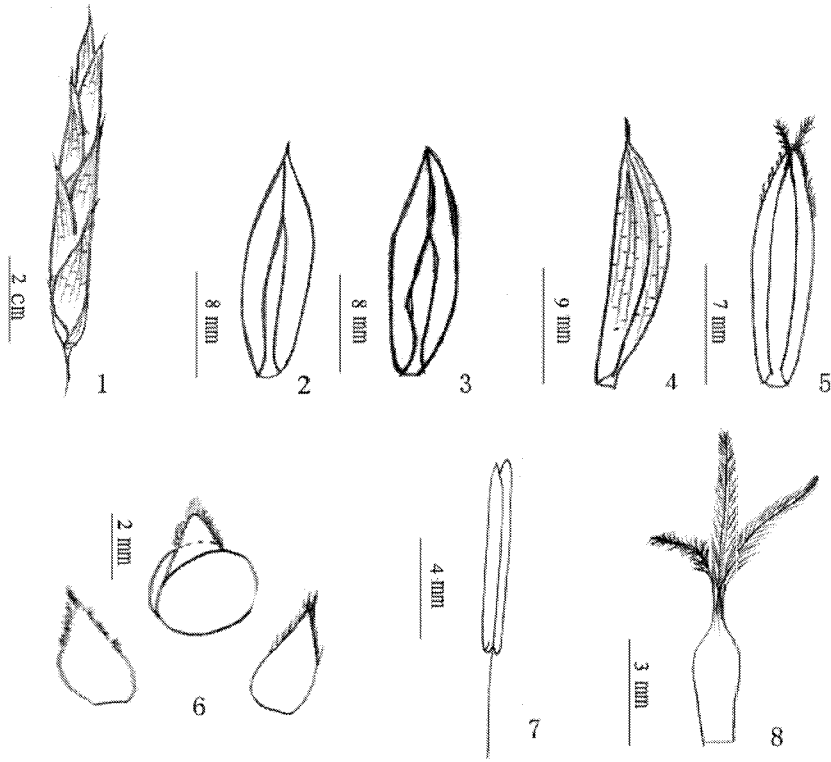


Fig. 2 *Arundinaria simonii* f. *heterophylla*

1. Spikelet; 2. Glume I; 3. Glume II; 4. Lemma; 5. Palea;
6. Lodicule; 7. Stamen; 8. Gynoecium. (Drawn by SHOU Yu-ting)

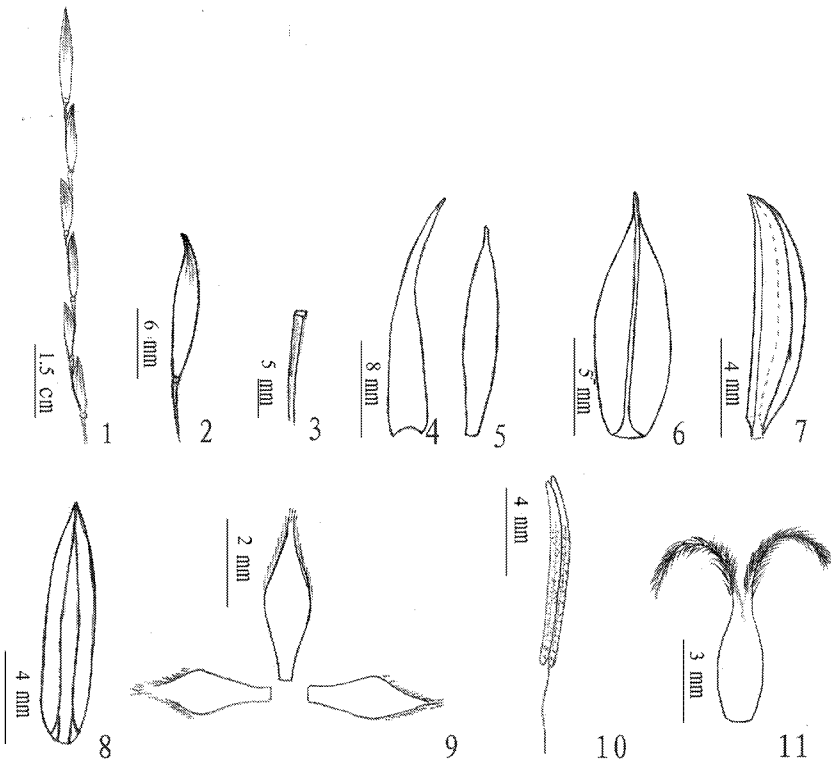


Fig. 3 *Chimonobambusa sichuanensis*

1. Spikelet; 2. Floret; 3. Part of rachis; 4. Glume I; 5. Glume II; 6. Lemma;
7~8. Palea; 9. Lodicule; 10. Stamen; 11. Gynoecium. (Drawn by SHOU Yu-ting)

3~4 mm long, 1 mm wide, flat. Lemma lanceolate, 11~14 mm long, 4~6 mm wide, gradually acute at apex, densely shorter ciliate at outer surface, longer ciliate at margin, 12~13-nerved. Palea shorter and narrower, 10~12 mm long, white ciliate at margin, 5-nerved, 3-nerved between and 2-nerved on each side of keels. Lodicules 3, 4~5 mm long, 1~2 mm

wide, unequal, cucullate to lanceolate, membranous, ciliate at margin. Stamens 3 (occasionally 4~6), filaments 9 mm long, anther yellow, 8 mm long. Ovary ellipsoid, 0.9~1.2 mm long, style 0.6~0.9 mm long, stigmas 3, plumose, 1.9~2.7 mm long. Caryopsis 5~8 mm.

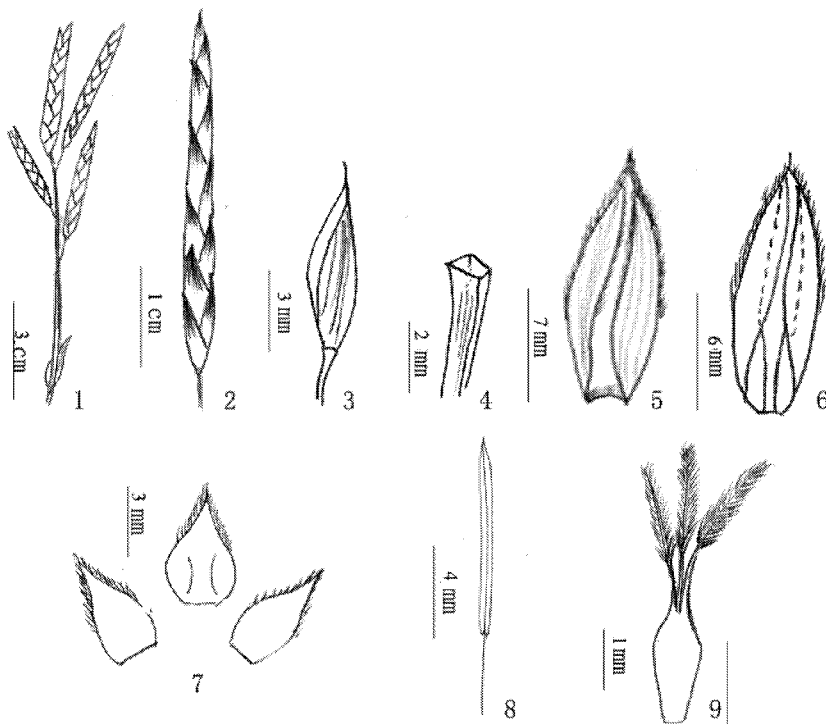


Fig. 4 *Arundinaria amabilis* var. *convexa*

1. Flowering branch; 2. Spikelet; 3. Floret; 4. Part of rachis; 5. Lemma; 6. Palea; 7. Lodicule; 8. Stamen; 9. Gynoecium. (Drawn by SHOU Yu-ting)

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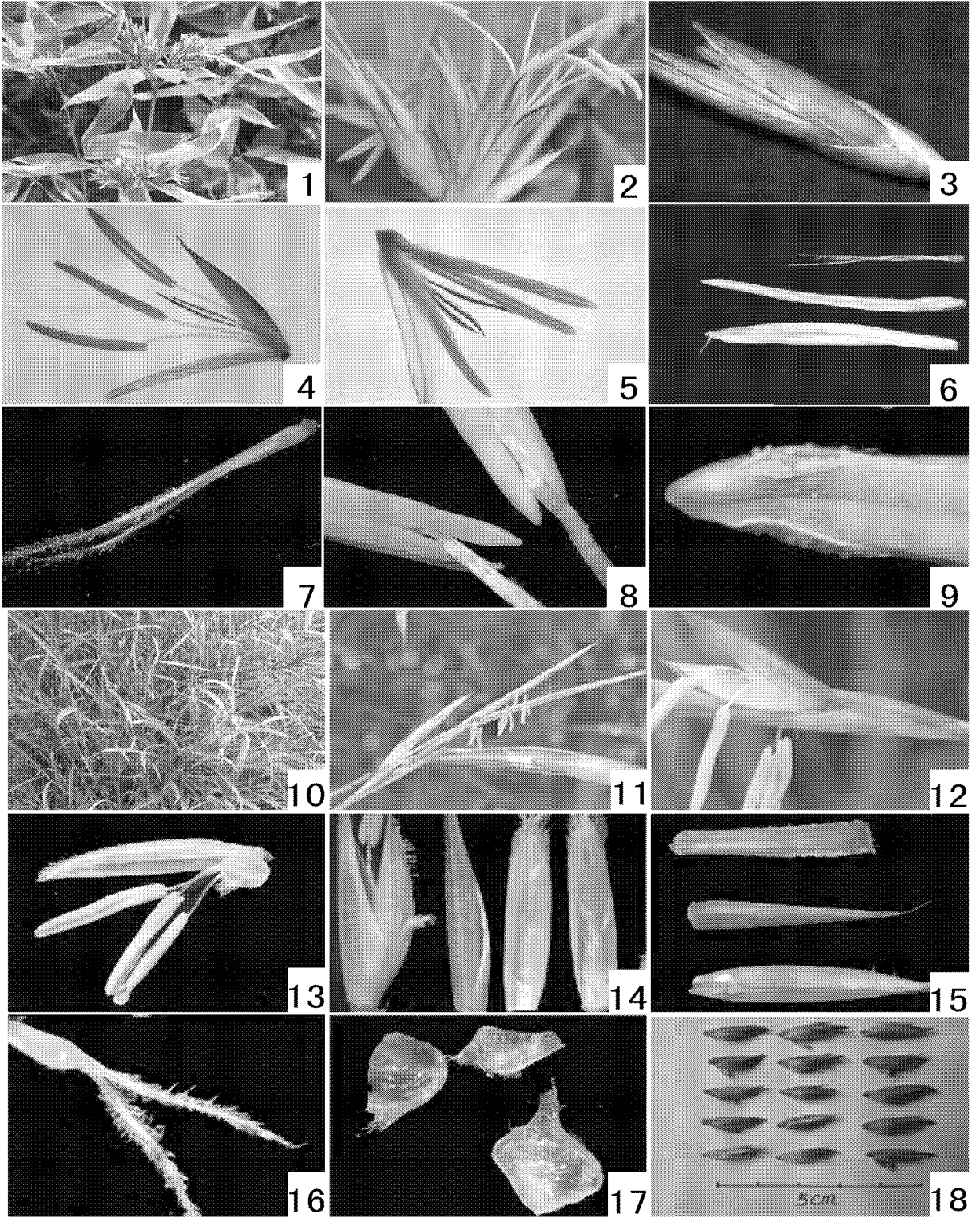
Explanation of plates

Plate I

1~9. *Shibatzea chinensis*. 1. Flowering branch; 2. Inflorescens; 3. Spikelet; 4. Floret, stigmas 2; 5. Floret, stigmas 3; 6. Glume and gynoecium; 7. Gynoecium; 8. Basal attachment anther; 9. Pollen spread out from pore; 10~18. *Arundinaria simonii* f. *heterophylla*; 10. Flowering plant; 11. Inflorescens; 12. Spikelet; 13. An opening floret, lodicule enlarged; 14. Floret, lemma, palea; 15. Rachilla, lemma and palea; 16. Gynoecium; 17. Lodicule; 18. Caryopsis.

Plate II

1~9. *Chimonobambusa sichuanensis*. 1. Flowering branch; 2~3. An opening floret; 4. Palea, lemma and rachilla; 5. Part of lemma; 6. Palea; 7. Ovary, stigma and style; 8. Lodicule; 9. Caryopsis; 10~18. *Arundinaria amabilis* var. *convexa*; 10~11. Flowering branch; 12. Floret; 13. An opening floret; 14. Lemma, palea; 15. Gynoecium; 16. Stamen; 17. Lodicule; 18. Caryopsis.



LIN Shu-yan, et al.: Plate I

