

## **The ethnobotany of *Musella lasiocarpa* (Musaceae), an endemic plant of southwest China**

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Source: Economic Botany, 57(2):279-281. 2003.

Published By: The New York Botanical Garden

DOI: 10.1663/0013-0001(2003)057[0279:TEOMLM]2.0.CO;2

URL: <http://www.bioone.org/doi/full/10.1663/0013-0001%282003%29057%5B0279%3ATEOMLM%5D2.0.CO%3B2>

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## NOTES ON ECONOMIC PLANTS

**The ethnobotany of *Musella lasiocarpa* (Musaceae), an endemic plant of southwest China.**—*Musella lasiocarpa* (Franch.) C. Y. Wu ex H. W. Li is endemic to conifer-oak mixed forests at 1500–2500 m in southwestern China (1, 2, 3, 4, 5, 6). This species was recognized by modern botanists in 1889 (7) and elevated to generic rank in 1978 (1), but had been precisely illustrated and described much earlier in Wu Chi-Chun's (8) *Zhi-Wu Ming-shi Tu-Kao* (1844) and also in Lan Mao's (9) *Dian Nan Ben-Cao* (herb medicine in Southern Yunnan) (1887–1888). *Musella* has been used by local people for many centuries in southwestern China although its customary use has been very poorly reported in ethnobotanical literature. Wild populations are as yet unknown as a result of the highly fragmented habitats and intensely cultivated regions where it is now known to occur. Here we describe the local use of *Musella lasiocarpa* in southwestern China and draw attention to its present state of conservation.

*Musella lasiocarpa* is a large, perennial herb with rhizomatous growth. The pseudostem is composed of closely packed, persistent leaf sheaths and grows to 120 cm tall and 20 cm diam. at base. The entire leaf blades are pinnately veined. The erect, terminal inflorescence is born directly at the apex of the pseudostem and is composed of congested, spathe-like, yellow or bright yellow orange persistent bracts (see <http://www.ftg.org/horticulture/musellalasiocarpa> and Fig. 1A and B). The flowers are arranged in "lines" or "hands" above each bract of the inflorescence with female flowers at the base and male flowers in the middle and at the top of the inflorescence. The berry-like fruits are trigonous, ovoid, and densely hirsute. The dark brown to black seeds are numerous, oblate, 6–8 mm diam., and glabrous.

Flowering occurs year-round but is concentrated between February and August (5). The development of fruit and seed usually requires about six months after pollination. Unlike other members of the tropical banana family (Musaceae), this plant is restricted to relatively dry and cool environments where it propagates naturally by rhizomes and seeds (6).

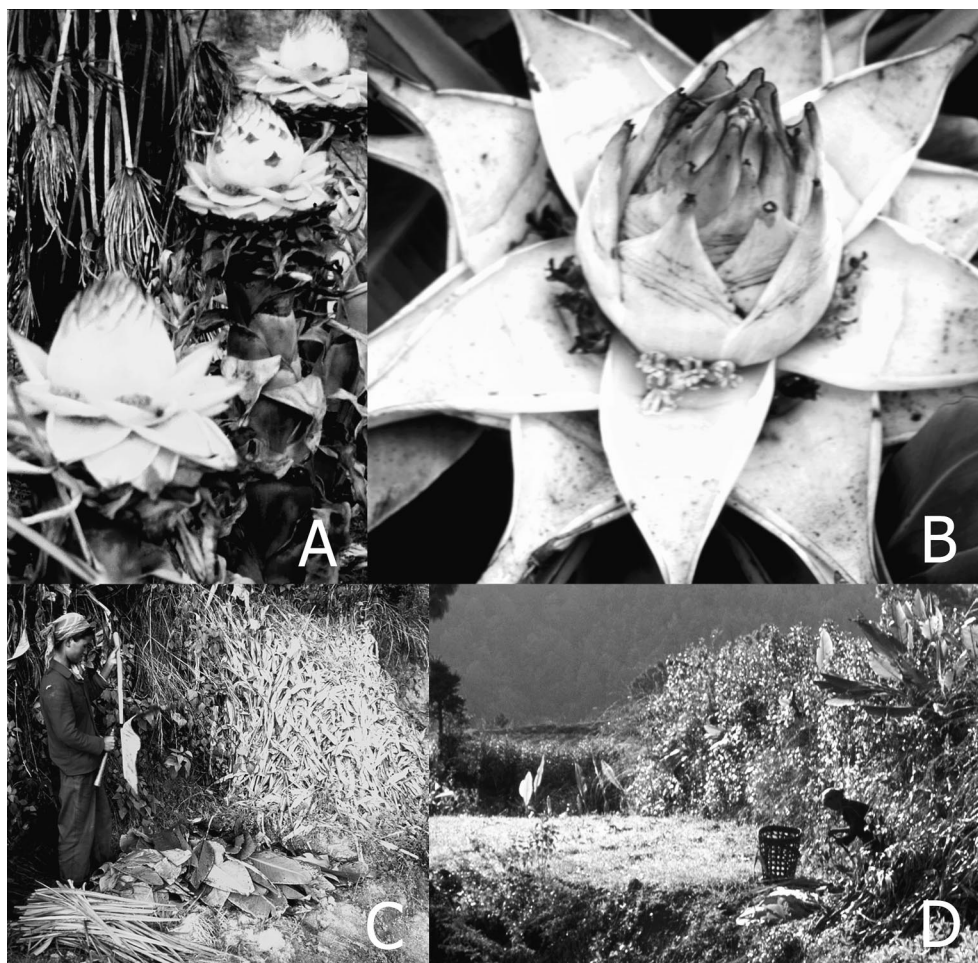
*Musella* is known locally by the Yi ethnic group as "A-de," "Ngadau," or "Ngaptisao" and by the Han and other ethnic groups as "Ai-bajiao" (short banana), "Di-bajiao" (ground banana), or "Shan-bajiao" (rock banana). Usually, different names are applied in the same village due to the presence of different ethnic groups. In the literature, *Musella* has been recorded as "Ngay-tsiao" ("rock banana," 7), "Di-Yun-Jin-Lian" ("Golden lotus rising from the ground," 1, 2, 3, 4), and "Jin-Lian-Bao-Xiang" ("Golden Holly Lotus," 8).

The main use of *Musella* has been reported as a medicine (1, 2, 3), food, and fodder (10), but detailed accounts of its usage are still poorly known. Based on our extensive field investigations and local interviews, we provide here a description of the use of this plant in local communities in China.

**Medicinal Use.** The fresh flowers and bracts are mashed into a plaster and applied externally to the skin to stop bleeding and to counteract inflammation. An infusion of young inflorescences (including the flowers, bracts and the apex of the stem) is boiled and taken internally to treat enteritis, constipation, and female diseases. The sap is also taken internally to detoxify monkshood (*Aconitum* spp.) poisoning and to alleviate drunkenness.

**Food.** The inner pseudostem is edible and is made into different food types after removal of the leaf sheaths. In different regions, the stems are prepared in various ways. Usually, the inner pseudostem can be directly cooked after being soaked in water of lime for several hours. Pseudostems are also eaten after being pickled for several days in vinegar. In addition, pseudostems are cut into slices for drying and storage; afterwards these dried slices are boiled as a convenient food. The starchy pseudostem and rhizome are also used to make a wine in some regions, however, this preparation is not a general use and we have never sampled this product.

**Fodder.** The leaf, pseudostem, and rhizome are used as fodder for pigs in central and north-



**Fig. 1.** *Musella lasiocarpa*. **A.** The pseudostem (to 60 cm high and 20 cm diam. at base) with leaves removed and terminated by an inflorescence. **B.** Close-up of the inflorescence of *Musella* with large, bright yellow persistent bracts and pistillate flowers. **C.** A local woman collecting the leaf blades as fodder and removing the midrib for weaving after being dried. **D.** The cultivated habitat of *Musella* in Yunnan.

west Yunnan. The fresh leaf is commonly used as fodder after removing the midrib (Fig. 1C). However, more commonly the pseudostem, leaf, and rhizome are cut into slices and boiled for pig feed. In some mountainous areas the pseudostem of *Musella* (usually to 20 kg) is the main green pig feed during winter because other green forage is unavailable at this time.

**Weaving.** We have observed that dried leaves, in particular, the midrib, because of their strong tough fibers are used to make ropes, belts, and chairs. Local farmers prefer these products because of their softness and durability.

**Ecological Utilization.** *Musella* can withstand dry environments and is able to grow in somewhat arid mountainous conditions. Plants are often cultivated on the ridges of fields and terraces to alleviate soil erosion and prevent soil collapse.

**Horticultural Use.** *Musella* blooms the year-round and is valued as an ornamental garden plant because of its long-lasting, bright yellow inflorescences. The attractiveness of its inflorescences and foliage has recently drawn the attention of horticulturists who have introduced *Musella* to nurseries and botanical gardens in Vi-

etnam (Danh et al. 1998), Singapore (Singapore Botanical Gardens accession number 97-1875), Scotland (Royal Botanical Gardens at Edinburgh, accession number 94-3823), Florida (Fairchild Tropical Gardens, see [www.ftg.org](http://www.ftg.org)), and Myanmar (Kandawgyi National Botanical Gardens, Kress pers. obs.).

**Conservational Status.** Although *Musella* is essentially unknown in the wild today, it is extensively cultivated, or at least tolerated, in agricultural areas (Fig. 1D) because of its many uses. Plants reproduce both asexually through suckering growth and sexually through seed production. We have observed an exceptionally slow rate of seed germination (1–2 years), but do not know if this is due to inbreeding depression. Because of the temporal separation of anthesis of the male and female flowers in an inflorescence, we expect that the mating system is generally out-crossed. We are now surveying populations of *Musella* using isozyme analyses to determine the levels of genetic variation present throughout the distribution of this cultivated species. Although it is commonly grown in Yunnan, the absence of wild populations suggests that a strategy should be devised to conserve for the future diverse genotypes from various localities in China.

**Acknowledgments.** We thank local government officials for their help during our field work and Ida Lopez and Leonardo Versieux for their assistance in preparing the manuscript. This research was partly supported by National Natural Science Foundation of China, 30170102 and Smithsonian's Scholarly Studies Program.

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