



# Ethnobotanical Leaflets

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## Bamboo

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Gramineae, the grass family, has provided civilization throughout history with a bounty of food and many other uses. The top three economically important plants of the world are grasses: wheat, corn, and rice. Human kind probably would not have survived if not for the grasses.

The sub-family Bambusoideae, is certainly no exception. These are the bamboos. Consisting of 75 genera and over 1000 species, these unique plants have played a diverse and important role in the development of society, as we know it today.

### Morphology

The bamboo plant is constructed of a system of segmented axes. This is depicted by the regular internodal lengths and prominent nodes (McClure 10). They resemble telescoping antennas, but at a constant diameter.

The culm is the above ground stem, this is what is used for most all of the many applications. The culm is woody and either hollow or solid, however most species exhibit some degree of hollowness. The length and thickness of the culm varies greatly between species. Some species can get as tall as 130 feet and be more than a foot in diameter--these have been reported to grow at nearly two inches each hour (Hanke 291). Indeed this would be impressive to see, definitely not like the grasses most of us are familiar with.

Branches, also segmented, arise from the culm. Upon the branches are to be found leaves, with petioles. The fact that the leaves have petioles helps to set the bamboos apart from the other grasses. The leaves and young shoots are the parts eaten by Pandas. The Panda subsists on no other plant or food source. Bamboos alone keep them going strong. More on that later.

New culms, or shoots, are produced from an extensive rhizome system. Simply, rhizomes are modified stems, usually growing underground (Fig. 1). The rhizomes cause the "clump habit" of growth exhibited by the bamboos. "Clump habit" refers to the culms growing in close proximity to each other, such as a

"tuft of grass", so to speak. There are basically two types of rhizomes'. pachymorph and leptomorph. Most species exhibit both, to a greater or lesser degree. Pachymorph rhizomes are very compact. They are associated with autumnal growth and produce a dense clump of culms. Leptomorph rhizomes, associated with spring growth, spread a little more. than pachymorph, in some cases a lot more. In other words they are responsible for the lateral growth of a given stand, or clump, of a bamboo species.

Knowledge of rhizomes is also necessary for species identification. The keys in McClure's book, to North American species, use rhizome types as the first step toward identifying bamboo species.

## **Reproduction**

In addition to asexual reproduction through rhizomes, bamboos also flower and produce seed, sexually. Most bamboos produce a panicle inflorescence with a varying number of spikelets. Each spikelet contains one or several florets. Unlike other members of the grass family, bamboo florets contain six stamens.

Aside from structure, the bamboos are most unique because of when they flower. Some species flower every year, some every 15 or 30 years, and some species only flower every 120 years! When bamboos flower, all of the plants of a particular stand flower simultaneously, from the small new shoots to the tall 15, 30 or 120 year old culms. The whole stand then dies, leaving behind a bed of seeds a foot deep. It is believed that the bamboo developed this method of reproduction to protect itself from its primary natural predator, the panda. Since pandas eat only bamboo, the panda population will naturally be thinned out when a species of bamboo flowers, even though the pandas will switch to another species--now civilization has started to encroach on the panda's habitat pushing the panda into smaller and smaller areas. The pandas are facing famine, and possibly extinction, unheard of before. The pandas now do not have as many species of bamboo to choose from when one dies off (Shipman 22). But help may be on the way.

Most of the economically important species flower every 30 years. But, this is a long time and the reason little research can be done toward improving the plant. However, breeders may soon be able to bring the "king of the grasses" to a level of importance unknown before. A group of Indian scientists recently were able to cause tissue culture of bamboo to bloom in less than a year. The cultures were grown in a medium of cytokinin and coconut milk, for some reason flowering is quickened (Blooming, 79-80). If these experiments hold up under further testing, we may begin to enter a new age of bamboo agriculture.

It was recently discovered that some extracts from bamboo bark inhibit bacterial growth, especially a species of Staphylococcus. This could have a profound impact on the food industry as a natural preservative (Keeping ... 191).

Bamboo could also provide livestock with feed. "Bamboo hay contains four times the protein of other fodder grasses "(Blooming luck 79).

Also, with bamboo, wells can be drilled. Some third world countries have been able to get water from wells drilled with bamboo. Some wells have been drilled to 1,600 feet deep. It requires no electricity and no drilling rig One place has put 494 acres of land under irrigation with bamboo pipes and bamboo drilled wells (Drilling wells.. 83).

The uses for bamboo are unlimited. From fishing rods to food preservatives to scaffolding on skyscrapers, bamboo is truly "king of the grasses".

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