

## Camellia Culture

# Some Notes on the Yellow Camellias

Clifford R. Parks

The yellow-flowered camellias are naturally distributed in subtropical regions of south central China, specifically in southwestern Guangxi, southeastern Yunnan and southwestern Guizhou. The total range of these species extends into the Vietnam tropics where new species are still being discovered. More than forty yellow species have been described, but many of them are from recent finds in Vietnam. Just this winter Dr. George Orel and his group found an orange-flowered species in Vietnam. For China, Chang (1998) lists 18 yellow species while Ming (2000) lists 13. There are disagreements among botanical authorities concerning the distinctness of some of the species in section *Chrysantha*. In 2005 we (Gao, Parks and Du) summarized the information on these species. They are characterized by flowers in some shade of yellow, free (not fused) styles and floral bracts and sepals that persist until the fruit matures. The notes here will only concern species I have observed in cultivation.

*Camellia nitidissima* var. *nitidissima*: The best known of the yellow-flowered species is *Camellia nitidissima* Chi. It was first known as *C. chrysantha* Tuyama, but Ye and Chang (1991, see Gao, *et al.*, 2005) found an earlier valid name, *C. nitidissima*. Ming considered *C. nitidissima* to be essentially the same as *C. petelotii*; however, Dr. Orel (personal communication) has said that the DNA data does not support Ming's combination. Much more study of the relationships of all of the yellow-flowered camellias is necessary.

Among the yellow-flowered species I

have grown, *C. nitidissima* makes the best floral display. There is much variation in flower size and yellow intensity from plant to plant, but the show of yellow flowers can be excellent. When grown in an area with hot summers, bud set is heavy, in fact, it may be said to cluster-flower. Figure 1 shows *C. nitidissima* blooming in my greenhouse. The flower size on some individuals may be up to 3 inches. Cultivars of *C. nitidissima* should be selected that have the deepest yellow hue and the largest flowers.



Figure 1 – *C. nitidissima* blooming in the author's greenhouse.

This species is native primarily to areas that are frost free, but it may rarely experience freezing temperatures at the northern end of its range near Nanning, Guangxi. Hardened foliage can withstand a few degrees of frost without injury. However, the new flushes that often occur in the autumn are very sensitive to frost. *C. nitidissima* is only suitable for out-of-doors culture in zone 10 or in the very mildest areas in zone 9 such as Florida or coastal California. It is generally

considered that the yellow camellias are not as resistant to sun exposure as the red camellias (section *Camellia*). However, my collection receives partial sun exposure, and I have not observed sun damage to the foliage.

When *C. nitidissima* was first introduced into American gardens, there was hope that this species could be hybridized to produce yellow-flowered garden hybrids. It does hybridize readily with *C. reticulata*, but the flowers of these hybrids are not yellow to any significant degree or fertile enough to be used in further breeding. It is difficult to cross *C. nitidissima* with *C. japonica*, but a few sterile, pale yellow-flowered hybrids are available from this cross. These hybrids are garden hardy in the warmer end of zone 9. My few attempts to cross *C. nitidissima* with species in other sections have only yielded hollow seeds. *C. nitidissima* is readily hybridized with other yellow-flowered species such as *C. chrysanthoides* or *C. flava*. Many other breeding combinations, including backcrosses, need to be explored using *C. nitidissima*.

*C. nitidissima* var. *macrocarpa* is generally similar to typical *C. nitidissima*, but it has smaller organs, and the flower is paler yellow in color. It is a slow growing, spreading plant that tends to flower in the autumn. The pale yellow color and the autumn bloom are traits that are found in some individuals of typical *C. nitidissima*. I know of no observations on cold hardiness or breeding work involving this variety.

*Camellia chrysanthoides*: In 1994 I attended a camellia meeting in Nanning, Guangxi, and after the meeting visited sites in the adjacent countryside where yellow-flowered camellias were growing wild. We visited two different habitats on different days. The countryside in one area we visited resembled Appalachian hills and low mountains. Local foresters



**Figure 2** – *Camellia chrysanthoides* has cream-colored flower buds that open into flat, deep yellow flowers.

there told us that *C. nitidissima* was originally discovered in a mountain ravine at that locality. Indeed, *C. nitidissima* was common, and it was abundant on one shaded, nearly vertical bluff.

The other locality had steep limestone hills and domes with mostly exposed rock. Here on the large collective Shan Wei Farm, agaves were being cultivated in the valleys between the limestone hills and outcrops. Camellias were growing at the base of limestone cliffs and in the acid soils of talus slopes in dense, brushy vegetation. Camellias, not *C. nitidissima*, were occasional, and most specimens had been cut back for firewood. The large copped shrubs had the potential of becoming trees if they had not been regularly harvested for firewood. The flower buds were cream-colored, but opened into flat flowers that were deep yellow (see figure 2). According to our guide, we were seeing two different species, *Camellia longgangensis* and *C. longzhouensis*. Dr. Nori Yoshikawa and I studied this population and could find no differences between the specimens from the two species. Chinese taxonomists had changed the names in any case, *C. longgangensis* to *C. flavida* and *C. longzhouensis* to *C. chrysanthoides*. I have tentatively concluded that the species we collected is *C. chrysanthoides*, but this

identification is only tentative.

Scions from the Shan Wei Farm were grafted, and the take was very good. This species has proven to be very vigorous and easy to grow. The flowers are about as large as *C. nitidissima*, and the floral display can be excellent. Because of its rapid growth rate and vigor, this species will become a small tree in areas where it is hardy. In my opinion it has excellent potential as a small, garden tree.

It sets seeds very freely, and they mature much earlier in the autumn than other yellow-flowered species. The earlier seed maturity may be an adaptation to a temperate, rather than a tropical, climate. Seedlings that have volunteered outside in the last two years have survived up to two winters with only leaf injury. This species should be hardy in the mildest parts of the camellia belt, particularly in California. I have not observed *C. chrysanthoides* growing in full sun.

Based on a small number of attempts, the crossibility pattern of *C. chrysanthoides* is very similar to that of *C. nitidissima*. However, after recently becoming aware of its greater hardiness, I have used it much more this season than in past years. The species, because of its vigor and hardiness, is a potentially important parent for garden hybrids.

*Camellia euphlebia*: Formerly, this was

considered a variety of *C. nitidissima* with which it has many similarities. However, it has much larger leaves and much smaller flowers than *C. nitidissima*. The growth is vigorous but much more horizontal than with most other *Camellia* species. The growth habit combined with glossy foliage and deep yellow flowers give it garden potential. However, one doubts that a species native to the Guangxi – Vietnam border area will have any frost hardiness. A few attempts to hybridize it with other species indicate that it has roughly the same compatibility relationships as *C. nitidissima*.

*Camellia flava* and *Camellia cuphونغensis*: I include these two species together because they appear identical in all major morphological characteristics. Their flowers are shown in figures 3 and 4. My plant of *C. cuphونغensis* has a few more petals and a slightly deeper yellow color than *C. flava*, but these are not characteristics that differentiate species. Both species are native to Vietnam and are easily identified by very short, almost nonexistent, leaf petioles. Both are vigorous growers, and develop into well-shaped large shrubs with glossy foliage. They flower freely, even at an early age, and thus a mature tree would probably make a significant floral display. Neither can withstand any frost and are said to be



Figures 3 & 4 – *Camellia flava* (left) and *Camellia cuphونغensis* (right) appear identical in all major morphological characteristics.



Figure 5 – *C. japonica* X *C. flava* hybrid.

unable to tolerate long exposure to direct sunlight.

They are the most important species yet discovered in the effort to breed yellow hybrids. *Camellia flava* hybridized readily with *C. japonica* to produce vigorous, well-shaped hybrids. Flower color on these hybrids varies from cream to pale yellow. An example of one of these hybrids is shown in figure 5. These hybrids, as with all hybrids between species of Section *Chrysantha* and camellias in other sections of the genus *Camellia* are functionally sterile. Dr. Bill Ackerman and I have embarked upon a project to double the chromosome number of some of these hybrids to induce fertility. I have been convinced for some time that different yellow-flowered species



Figure 6 – *Camellia impressinervis* is known for its large glossy leaves with deeply impressed veins and deep yellow flowers generally similar to those of *C. nitidissima*.

would have different levels of hybrid compatibility with the red camellias (Section *camellia*), and these results with *C. flava* underline the importance of using all available yellow-flowered species in the effort to breed yellow-flowered hybrids.

*Camellia impressinervis*: This species is known for its large glossy leaves with deeply impressed veins and deep yellow flowers generally similar to those of *C. nitidissima* (see figure 6). Both the mature foliage and the new deep bronze growth are very handsome on this species that can become a small tree in a very mild locality. It flowers freely and will make an excellent garden display with maturity. It probably can only withstand a degree or two of frost, but I do not know of any field observations in areas with winter cold.

In my attempts to use it in the “yellow” breeding program, I have found it to have the same limited cross compatibility patterns as *C. nitidissima*, but I continued to make a few more attempts at hybridization with it this season.

*Camellia impressinervis* is a strikingly beautiful plant, both in flower and in foliage, but its use is limited to the conservatory or a subtropical climate.

*Camellia liberofilamenta*: This species is fast growing and flowers as a small plant. The flowers are smaller than *C. nitidissima* and paler yellow in color. They generally resemble those of *C. tunganensis*. It has not been in cultivation long enough to observe its potential as an ornamental, but its vigor and free flowering traits give it potential as a garden shrub. It is native to Guizhou Province, China where it occurs slightly further north than other yellow-flowered species. This distribution gives one hope that it has some significant degree of cold resistance. It will be tested out-of-doors to determine if it indeed has potential as a garden plant in the American camellia belt. Since we have just begun to use it in

our breeding program, it is too soon to make any comments about its potential for camellia breeding.

*Camellia luteoflora*: We observed this pale yellow-flowered species in its native habitat in Guizhou Province, China. It has large leaves and very small flowers. Since it is native to a zone that is a little further north than other yellow-flowered species, it has also been speculated that it might be more resistant to winter cold than most related species. It has not been introduced into cultivation in the United States.

*Camellia pingguoensis*: One small plant of this one flowered for me for the first time this year. The plant is fine textured and flowers in middle winter before most of the other yellow-flowered species (see figure 7). Although the leaves and other organs are small, it can grow to be a small tree. It is very heavy flowering. My small grafted plant produced hundreds of flowers. Judging from its native locality near Nanning, Guangxi, it may withstand a few degrees of frost. I recommend it for regions that experience no more than the occasional light frost. No data is yet available on its potential as a breeding parent.



**Figure 7** – No data is yet available on the potential of *Camellia pingguoensis* as a breeding parent.

*Camellia tunghinensis*: Compared to *C. nitidissima*, it has smaller leaves and

flowers, and the yellow intensity is less. It is vigorous and develops into a shrub of good form that has attractive foliage. Although the flowers are small, it flowers freely, and will make a display in a garden that is mostly frost-free (see figure 8).



**Figure 8** – Although *Camellia tunghinensis* has small flowers, it flowers freely, and will make a display in a garden that is mostly frost-free .

Mr. Gene Phillips has reported to me that a plant of this species survived the recent winter in Savannah, Georgia without vegetative injury, but the flower buds aborted and dropped after freezing nights. We have used it in the breeding program during the last two years, but it is too soon to evaluate its breeding potential.

#### LITERATURE CITED

- Chang, H.T. 1998. Tribe Theaceae of Theaceae, Flora Reipublicae Popularis Sinicae. Tomus 49(3). Science Press, China. (Flora of China, in Chinese)
- Gao, J.Y., C.R. Parks and Y.Q. Du. 2005. Collected Species of the Genus *Camellia*, an Illustrated Outline. Science and Technology Press. Hangzhou, China.
- Ming, T. L. 2000. Monograph of the Genus *Camellia*. Yunnan Science and Technology Press. Kunming, China. (in Chinese)