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Plant material of loquat in Asian countries

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SUMMARY – This paper discusses which species are in the genus *Eriobotrya* and which plant material from loquat species are in Asian countries, especially in China, Japan and India.

Key words: Genus *Eriobotrya*, loquat cultivars, breeding materials, Asia, China, Japan.

RESUME – *"Matériel végétal de néflier dans les pays asiatiques". Cet article présente quelles espèces sont considérées dans le genre* Eriobotrya *et quel matériel végétal d'espèces de néfliers se trouve dans les pays asiatiques, spécialement en Chine, Japon et Inde.*

Mots-clés : *Genre* Eriobotrya, *cultivars de néflier, matériel d'amélioration, Asie, Chine, Japon.*

Introduction

There is a wide diversity of loquat plant materials in Asian countries. In this presentation, it will be discussed which species are considered into the genus *Eriobotrya.* A summary of the main loquat cultivars per country and other breeding materials presents from China, Japan and India is presented.

Species under the genus *Eriobotrya*

As is well known, loquat originated in Asia, especially South China and Bengal, so there are a lot of loquat species in the genus *Eriobotrya* there, but the number of loquat species is under dispute. Lin *et al*. (1999) estimated that there are 16 loquat species and 3 botanical varieties, however, some mistakes were found, Lin *et al*. (2000) presented that there are 15 species, 3 botanical varieties and 2 forma in this genus. They are shown in Table 1.

Table 1. Loquat species and varieties

No.	Scientific name	Common name	Indigenous region
1	*E. bengalensis* Hook.f.	Bengal Loquat	South Asia
2	f. *forma intermedia* Vidal	Intermediate Bengal Loquat	Bengal
3	f. *forma angustifolia* Vidal	Narrowleaf Bengal Loquat	Yunnan, China
4	*E. cavaleriei* Rehd	Bigflow Loquat	Sichuan, China
5	*E. deflexa* Nakai	Taiwan Loquat	Taiwan, China
6	*var. buisanensis* Nakai	Wuweishan Loquat	Taiwan, China
7	*var. koshunensis* Nakai	Kokshun Loquat	Taiwan, China
8	*E. elliptica* Lindl.	Tibet Loquat	Tibet, China
9	*E. fragrans* Champ	Fragrant Loquat	Guangdong, China
10	*E. henryi* Nakai	Henry Loquat	Yunnan, China
11	*E. hookeriana* Decne	Hookiana Loquat	Tibet, China
12	*E. japonica* Lindl.	Loquat	Sichuan, China
13	*E. malipoensis* Kuan	Malipo Loquat	Yunnan, China
14	*E. obovata* W.W. Smith	Obovate Loquat	Yunnan, China
15	*E. prinoides* Rehd & Wils	Oakleaf Loquat	Sichuan, China
16	*var. dadunensis* H.Z. Zhang	Daduhe Loquat	Sichuan, China
17	*E. salwinensis* Hand-Mazz	Salwin Loquat	Yunnan, China
18	*E. seguinii* Card	Seguin Loquat	Yunnan, China
19	*E. serrate* Vidal	Serrata Loqtat	Yunnan, China
20	*E. tengyuehensis* W.W. Smith	Tengyue Loquat	Yunnan, China

Among these materials, only *E. japonica* is cultivated for its fruits, but *E. deflexa* and *E. prinoides* had been used as rootstocks in China, and the fruits of *E. cavaleriei* had been used to make wine in China, too.

Cultivar and breeding material of loquat in Asia

In China

There are more than 379 cultivars in China, among them, more than 250 cultivars are conserved in Fuzhou.

These 379 cultivars can be divided into various groups based on different characteristics. According to color of peel and pulp, they are divided into two groups: pale-color fruit group and dark-color fruit group, the former contain 104 cultivars, which combines fine and tender texture, high sugar content, and good flavor, but their fruit is smaller; the later 275 cultivars, whose quality usually is poorer than the former's. According to ecological adaptation, they are further divided into two groups, one being north subtropical group (NSG), another being south subtropical group (SSG). NSG cultivars, in which most pale-color fruit cultivars are included, are characterized by strong cold-resistance; most of their fruits are late ripening and small-medium in size (20-40 g) but with high quality; SSG cultivars, whose fruit are dark-color, are characterized by poor cold-resistance but high yielding and early harvest, the fruits are large (50-70 g) but flavorless. The flowers and fruits are injured by cold when SSG cultivars are introduced to the north subtropical zones. SSG contains few pale-color cultivars. Therefore, we suggested that all loquat cultivars could be divided into three groups: pale-color group, NSG and SSG, namely whitish (pulp) group, medium yellow (pulp) group and large yellow (pulp) group. Three groups' data are shown in Table 2.

Table 2. Loquat cultivars in China

Group	No. of cv.	Representative cv.	Main area
Whitish group	104	Zhaozhong; Qingzhong; Baiyu Ruantiao-Baisha; Baili	Jiangsu; Zhejiang
Medium yellow	200	Dahongpao; Guangrong Jiajiao; Luoyangqing	Anhui; Zhejiang
Large yellow group	75	Jiefangzhong; Zaozhong No. 6	Fujian

The fruit ripening season of cultivars in China are variable, early season extends from March to April, middle season correspondes to May, and late season correspondes to June. However, the latest season in SSG in Fujian such as Jiefangzhong is earlier than the earliest in NSG in Zhejiang. Therefore, the grouping based on ripening season in China is not practical.

Most of Chinese cultivars are old, a few of old cultivars such as Zhaozhong and Ruantiao-Baisha are still used as major cultivars, most old cultivars have been replaced by newly released cultivars. Newly released cultivars are mostly derived from seedlings, only a few are obtained by hybridization, such as Zaozhong No. 6, Zhongjing, Xiangzhong No. 11, 82-6-26. The major cultivars that are being widely cultivated, either new or old, are not more than 100.

Some breeding materials are valuable, though they have not produced commercial fruits yet. A triploidy was derived from $2x \times 4x$, $4x$ was attained from colchicines treatment. And another triploidy from endosperm culture. A regenerated plantlet was derived from protoplast culture. A sterile plant that sets small fruits with no or few seed was found.

In Japan

Although loquat materials in early time were introduced from China into Japan, Japanese experts have released more new cultivars by hybridization than Chineses. Only by the hybridization

combination of Mogi × Tanaka, at least 3 new cultivars have been released. Now there are dozens of cultivars in Japan. They are divided into 3 groups according to their ripening seasons (Table 3).

Table 3. Loquat cultivars in Japan

Ripen season	Cultivar
Early season	Hondawase; Nagasakiwase (Mogi × Hondawase); Moriowase; Murotowase (Kusunoki × Oobusa); Amakusawase; Onowase; Fujujuin
Middle season	Mogi; Satomi; Kusunoki; Kuratawase; Nojimawase; Fusahikari (Mizuho × Tanaka); Oobusa (Tanaka × Kusunoki); Wasedai; Fukuharawase; Yukawa (Tanaka × Mogi); Tsukumo (Mogi ×Tanaka); Togoshi (Mogi ×Tanaka); Suzukase
Later season	Tanaka; Yogyoku; Ikeda; Toi; Canton; Mizuho (Kusunoki × Tanaka); Nojuwase; Ootatsu (Mogi × Tanaka); Chikawa

In India

There are a lot of cultivars in India, too. Most of Indian loquat cultivars are yellow fleshed, but Pale Yellow and Ahmar which are white fleshed. Although a tetraploidy was reported, all cultivars are diploidy. Except Ahmar, whose ripen season is not available, the cultivars in India are also divided into 3 groups according to their ripening seasons (Table 4).

Table 4. Loquat cultivars in India

Ripen season	Cultivar
Early season	Thames Pride; Surkha Batia; Improved Golden Yellow; Pale Yellow
Middle season	Herds Mammoth; Safeda Batia; Fire Ball; Large Round; Improved Pale Yellow; Large Agra; Large Round; Matchless
Later season	Ahdar

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