

## A History of *Cananga* (Annonaceae)

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### Abstract

The history of the name *cananga* in botanical nomenclature is outlined and clarified. *Cananga odorata* (Lam.) Hook.f. & Thomson, is lectotypified. *Cananga brandisiana* (Pierre) I.M. Turner is proposed for *Cananga latifolia* (Hook.f. & Thomson) Finet & Gagnep., *nom. superfl.* The infraspecific taxonomy of *Cananga odorata* (Lam.) Hook.f. & Thomson is reviewed and the cultivar group names for plants producing ylang-ylang and cananga oil are corrected.

### Introduction

*Cananga odorata* (Lam.) Hook.f. & Thomson (Annonaceae) is a tree native to the tropical Indo-Pacific. It has long been cultivated for its strongly perfumed flowers and is grown widely in the tropics, including in plantations for the production of essential oil. The species and its genus have a long and rather confusing nomenclatural history that has yet to be resolved completely. In this paper we outline that history and attempt to clarify some of the issues and to rectify some of the mistakes.

### Etymology and Pre-Linnean Taxonomy

Vernacular names for *Cananga odorata* in two Asian languages have been used internationally in both common and scientific nomenclature. The Malay name *kenanga* (or *cananga* in pre-standardised spelling) has been borrowed for the generic name. The Tagalog name *alang-ilang* or *ilang-ilang* (now the Filipino standard, B.C. Tan, *pers. comm.*) has been used widely in the Spanish spelling variant *ylang-ylang* as a common name for the plant or more particularly for the essential oil, which is widely used in perfume manufacture.

The earliest mention of the species now known as *Cananga odorata* in the western scientific literature is in the account of the trees of Luzon island in the Philippines by Georg (Jiří) Josef Kamel (or Camel or latinised to Camellus or Camelli). This was published as an appendix, *Herbarium aliarumque stirpium in insulâ Luzon e Philippinarum*, to John Ray's third volume of *Historia Plantarum* (Ray, 1704). Kamel, a Moravian Jesuit missionary and apothecary, referred to alanguilang (variant spelling of ilang-ilang) under Zhampacae species (p. 83). Kamel's manuscript was accompanied by pen-and-ink drawings of most of the species. The originals of these are divided between the Maurits Sabbe Library, Catholic University of Leuven, Belgium, and the Natural History Museum, London. There are two copies of the drawing for alanguilang in a bound volume in the Sir Hans Sloane collection at the Botany Library of the Natural History Museum. As Figure 1 shows, they very clearly depict *Cananga odorata*.

Georg Everhard Rumphius was the first to employ the name cananga in botanical writings. He had started the manuscript for what later became the *Herbarium amboinense* around 1663, for in August of that year he wrote a request to the Lords XVII, the Board of the Dutch East Indian Company (VOC), in which he announced that he had started on a work in which plants and animals of 'India' (Dutch East Indies) would be described and politely requested that the necessary literature be shipped by VOC vessels from Amsterdam to Amboina (Veldkamp, 2002, p. 12). Because of the political and commercial sensitivity of the subjects treated in the subsequent six-volume manuscript the VOC suppressed it until around 1735, and the publication of the first volume edited by Johannes Burman appeared in 1741.

In the second volume of his *Herbarium Amboinense*, Rumphius (1741) refers to cananga, clearly deriving the name from the Malay bonga cananga (bungah kenanga [kenanga flower] in current spelling). Cananga, cananga domestica or cananga vulgaris as it is referred to in the text and legend to the plate (tab. 65) respectively, is clearly *Cananga odorata*, though the four-part calyx in the drawing is erroneous. Rumphius also described cananga sylvestris (p. 197), a wild form, including under it three entities. None of Rumphius's three 'varieties' of cananga sylvestris has been directly linked to *Cananga odorata* (Merrill, 1917). Cananga sylvestris trifolia (p. 197; t. 66, f. 1) is possibly a species of *Goniothalamus* and is the sole basis for *Uvaria tripetala* Lam. (= *Unona tripetaloides* Dunal, *Unona tripetala* (Lam.) DC.). Cananga sylvestris angustifolia (p. 197; t. 66, f. 2) has yet to be identified with certainty but has been validated as *Uvaria ligularis* Lam. (= *Unona ligularis* (Lam.) Dunal). Finally, cananga sylvestris latifolia (p. 198) is the basis of *Unona latifolia* Dunal, the basionym of *Fissistigma latifolium* (Dunal) Merr.

François Valentijn, the son-in-law of Rumphius, used parts of the

*Herbarium Amboinense* manuscript in producing his *Oud en Nieuw Oost-Indiën*. This work was influential for nearly two centuries as a general guide to the Far East and was long used in the training of the employees of the Dutch East Indies Civil Service. *Cananga* appears for the first time in print in volume 3 (Valentijn, 1726, p. 213) where it is described (Appendix 1 contains an English translation of the text) and figured (tab. 42, see Figure 2). There can be little doubt that Valentijn described *Cananga odorata*.

### The genus *Cananga*

Aublet (1775, p. 607, t. 244) was the first botanist to use Rumphius's name at generic rank. He mistakenly considered his new species from South America, *Cananga ouregou* now *Guatteria ouregou* (Aubl.) Dunal, to belong to the same genus as Rumphius's entities. As none of the Rumphian elements was validated when Aublet published *Cananga*, the genus must be typified by *Cananga ouregou* [ICBN (McNeill *et al.*, 2006) Art. 10.3, Ex. 3]. Unfortunately *Cananga* Aubl. pre-dated *Guatteria* Ruiz & Pav. (1794) and so had priority over it as the correct name for the very large neotropical genus. Rafinesque (1815, p. 175) employed *Cananga* as a generic name but without any description or indication of its derivation.

In his taxonomic treatment of *Unona*, Dunal (1817) recognised two ranks of infrageneric taxa without formal indication. One of the lower subdivisions containing nine species, including *Unona odorata* (Lam.) Dunal, he called *Cananga*. Later in the same year de Candolle (1817) followed Dunal's classification, using *Cananga* in exactly the same way as Dunal, though he named both the taxon (*Unonaria*) and rank (section) of the level above *Cananga*. It has generally been considered that *Cananga* here would be at subsectional rank (viz. McNeill *et al.*, 2006; Jessup, 2007) but de Candolle did not indicate a definite rank anywhere in the work. Blume (1830) appears to have been the first to use *Cananga* for a definite infrageneric rank when he referred to *Uvaria* section *Canangae*. As he stated (p.12) that his sections were based on Dunal, this can be regarded as an orthographic variant to be corrected to *Cananga*.

Hooker and Thomson (1855) included a single species, *Cananga odorata* (Lam.) Hook.f. & Thomson, when they described the genus *Cananga* Rumph. ex Hook.f. & Thomson. Despite the absence of a direct reference to Dunal, Hooker and Thomson must be considered to have transferred Dunal's name to generic rank [ICBN Art. 33.3, viz. Ex. 9]. However, the new genus was a later homonym of *Cananga* Aubl. Baillon (1868) clearly recognised this and proposed *Canangium* as a replacement name [*Cananga* Rumph., *nec* Aubl.], but he used it for a section of *Unona* (p. 213), not at generic rank as later authors have assumed. It was King (1892) who first used *Canangium*

for the name of a genus recognising *Canangium odoratum* (Lam.) Baill. ex King and describing a second species, *Canangium scortechinii*, which has subsequently been reduced to the synonymy (Corner, 1939) of *Cananga odorata*.



**Figure 1.** Drawing of alanguilan from G.J. Kamel's manuscript of *Herbarium aliarumque stirpium in insulâ Luzon e Philippinarum* © Natural History Museum, London.

The Nineteenth and early Twentieth Centuries saw confusion among botanists regarding the application of the generic name *Cananga*. It was used both in the sense of *Guatteria* Ruiz & Pav. and *Cananga*, though latterly in the period *Canangium* was generally used for Asian taxa. As early as the International Botanical Congress in Brussels in 1910 (Briquet, 1912), *Guatteria* was proposed and accepted for conservation against *Cananga* Aubl. Later *Cananga* Hook.f. & Thomson was formally conserved against *Cananga* Aubl. (Lanjouw *et al.*, 1952). Conservation of a name leads to automatic rejection of homotypic names of the same rank [ICBN Art. 14.4] so *Canangium* Baill. ex King is rejected as well.

There is still confusion and inaccuracy among the major nomenclatural references (Farr *et al.*, 1979; Greuter *et al.*, 1993; van Setten and Maas, 1999; McNeill *et al.*, 2006) on the citation of *Cananga* and its synonyms, its typification and the status of *Canangium*. The latter is often referred to as an orthographic variant of *Cananga* implying that combinations in *Canangium* can be corrected to *Cananga*, but as we have shown above it was clearly introduced as a substitute name and was not a spelling mistake. Below we give the full citation of the generic name.

***Cananga*** (Dunal) Hook.f. & Thomson, Fl. Ind. (1855) 129, *nom. cons.*, *non Cananga* Aubl., *nom. rejic.*

**Basionym:** *Unona* [unranked] *Cananga* Dunal, Monogr. Anonac. (Aug-Nov 1817) 96. – **Typus:** *Canangium odoratum* (Lam.) Baill. ex King (lectotype, designated by Hutchinson, 1923) [*Uvaria odorata* Lam., *Unona odorata* (Lam.) Dunal, *Cananga odorata* (Lam.) Hook.f. & Thomson].

Homotypic synonyms:

-*Uvaria* section *Cananga* (Dunal) Blume, Fl. Javae Anonaceae (1830) 13 as ‘*Canangae*’.

-*Unona* subsection *Cananga* (Dunal) G. Don, Gen. Hist. 1 (1831) 94.

-*Unona* section *Canangium* Baill., Hist. Pl. (Baillon) 1 (1868) 213, *nom. superfl.*

-*Unona* section *Cananga* (Dunal) Pierre, Fl. Forest. Cochinch. (1881) t. 19.

-*Canangium* Baill. ex King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 61 (1892) 39, *nom. rejic.*

Heterotypic synonym:

-*Fitzgeraldia* F. Muell., Fragm. (Mueller) 6 (1867) 1. -Type: *Fitzgeraldia mitrastigma* F. Muell., Fragm. (Mueller) 6 (1867) 1.



**Figure 2.** Drawing of a branch of the Cananga-boom from François Valentijn's *Oud en Nieuw Oost-Indiën*.

### **The species of *Cananga* (Dunal) Hook.f. & Thomson**

The first published post-Linnean mention of *Cananga odorata* is in the account of the Endeavour voyage by John Hawkesworth (1773). Hawkesworth used the travel journals of Captain James Cook and the naturalist Sir Joseph Banks to write the popular account of the expedition. A section on the natural products available in Batavia (Jakarta) in Java, 'Some account of Batavia', is only very slightly changed from the passage in Banks's journal (see Hooker, 1896; Banks, 1980; or <http://nla.gov.au/nla.cs->



ss-jrnl-banks\_remarks-353 *et seq.*) and includes the following entry:

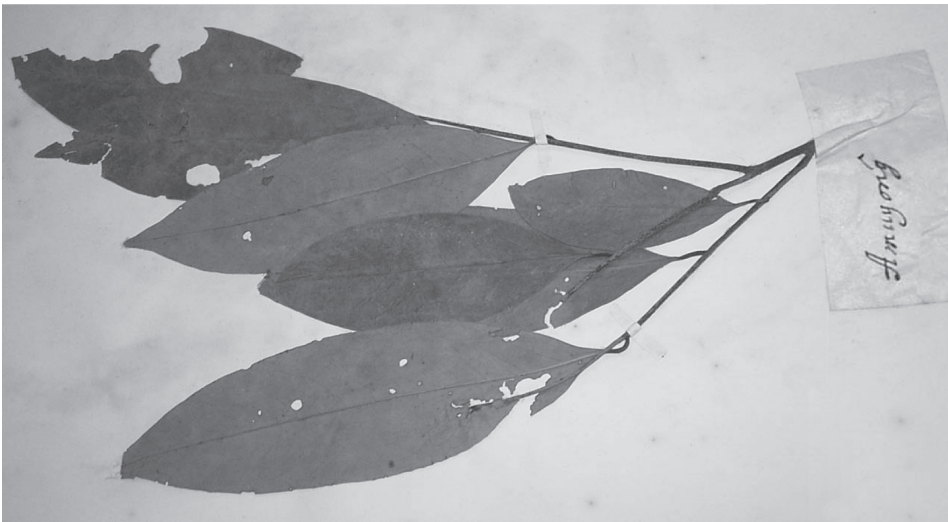
‘The *Cananga*, or *Uvaria Cananga*, is a green flower, not at all resembling the blossom of any tree or plant in Europe: it has indeed more the appearance of a bunch of leaves than a flower, its scent is agreeable, but altogether peculiar to itself.’

There are no specimens of *Uvaria cananga* in the Banks herbarium (BM). However, *Uvaria cananga* appears in the unpublished manuscript of plants of Java (*Plantae Javanenses*) by Daniel Solander in the Botany Library of the Natural History Museum, London. The entry reads ‘*Uvaria cananga* Fig Pict. *Cananga* Rumph. Amb. 2 p. 195 t. 65. Valent. ind. n<sup>o</sup>. 42.’ ‘Fig Pict.’ refers to an outline drawing (pencil with watercolour) of *Uvaria cananga* by Sydney Parkinson (J3 of Diment *et al.*, 1987). The reference to Rumphius’s description and illustration of *Cananga* and Valentijn’s plate (Figure 2) and the presence of the Parkinson drawing which is labelled *Uvaria cananga* in pencil leaves little doubt that Banks and Solander intended a new species to include the Rumphian element *cananga* and using the name as the specific epithet in the Linnean genus *Uvaria*. Because of the rule on tautonymy [ICBN Art. 23.4], this epithet cannot be employed in *Cananga* and the entirely overlooked *Uvaria cananga* poses no threat to the widely used *Cananga odorata*.

The first extensive description of Rumphius’s *cananga* was by Lamarck (1785, p. 595) in his account of *Uvaria odorata*. He referred to three elements, in order: *Cananga*. Rumph. Amb. 2 p. 195. tab 65; *Alanguilan de la Chine*, Sonnerat, and *Arbor saguisan*. Raj. Suppl. Luz. 83. The first is Rumphius’s description of *cananga*. The second is a herbarium specimen collected by Sonnerat. The third refers to Kamel’s Luzon trees, but Lamarck made a mistake in citing *arbor saguisan*, or *arbor sagnisan* as Kamel actually spelled it. This is *Goniothalamus amuyon* (Blanco) Merr. not *Cananga odorata*, which Kamel described on the same page under *Zhampacae* species. The identification of *arbor sagnisan* as *Goniothalamus amuyon* and not *Cananga odorata* is supported by Kamel’s use of *amuyong* or *amoyong* as the vernacular name of *arbor sagnisan*, clearly the same name as Blanco (1837, p. 463) employed for the specific epithet of *Uvaria amuyon*; the details of Kamel’s description, e.g. scentless flowers; and the presence of a Kamel specimen labelled *amuyong* in the Sloane Herbarium (Figure 3) which is *Goniothalamus amuyon*. Thanks to Lamarck and a paper by Flückiger (1881), ‘*arbor saguisan*’ is often cited, we now know wrongly, as the earliest name for *Cananga odorata*. Below *Uvaria odorata* Lam., the basionym of *Cananga odorata*, is lectotypified by the Sonnerat specimen. The origin of this specimen remains uncertain. It has generally been assumed to be from China, but then why did Sonnerat employ a Filipino name for the plant?

A second species of *Cananga*, ranging from Burma, through

Indochina, to the seasonal parts of northern Malay Peninsula, was first described by Hooker and Thomson (1872, p. 60) as *Unona latifolia*. Pierre (1881, t. 19) noted that this was a later homonym of *Unona latifolia* Dunal, the basionym of *Fissistigma latifolium* (Dunal) Merr. Pierre provided a substitute name *Unona brandisiana* Pierre, honouring Sir Dietrich Brandis, the collector of the type. Surprisingly it seems to have escaped attention that Pierre's name has not been transferred to *Cananga* as it has priority over the widely used *Cananga latifolia* [Hook.f. & Thomson] Finet & Gagnep.



**Figure 3.** Specimen of amuyong (volume HS 233, p. 81) from the Sloane Herbarium (BM-SL).

**1. *Cananga odorata*** (Lam.) Hook.f. & Thomson, Fl. Ind. (1855) 130.

*Uvaria odorata* Lam., Encycl. (Lamarck) 1 (1785) 595. *Unona odorata* (Lam.) Dunal, Monogr. Anonac. (1817) 45, 93, 97, 108, 143 as '*Uvaria odorata*'; *Uvaria javanica* Thunb. [Widmark], Fl. Jav. 2 (1825) 14, 19, *nom. superfl.*; *Canangium odoratum* (Lam.) Baill. ex King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 61 (1892) 41. – **Type:** ?China, *Sonnerat s.n.*, annot. Alanguilan de la Chine (lectotype, designated here, P-LAM, barcode no. P00286083).

– *Canangium scortechinii* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 61 (1892) 42. – **Type:** Perak, *Scortechini 1925* (lectotype, designated here, K, iso, BM, ?CAL, SING).

– *Fitzgeraldia mitrastigma* F. Muell., Fragm. (Mueller) 6 (1867) 1. – *Canangium mitrastigma* (F. Muell.) Domin, Biblioth. Bot. 89 (1925) 670. – **Type:** Australia, Queensland, Rockingham Bay, *J. Dallachy*. [MEL has several specimens from the type location, including Dallachy specimens labelled *Cananga odorata* and poor specimens from the von Mueller herbarium annotated



‘*Fitzgeraldia mitrasacmoides*’ and ‘*Fitzgeraldia calyptrostigma*’ with no indication of the collector].

-*Unona* ? *leptopetala* Dunal, Monogr. Anonac. (1817) 98, 114, 143. Type: Timor, *Leschenault* (?G, ?P) Depicted in Delessert (Icon. Sel. 1 (1821) 23, t. 88).

-*Unona odorata auct. non* (Lam.) Dunal: Blume, Bijdr. (1825) 14. *Unona cananga* Spreng., Syst. Veg. 4(2) (1827) 215. -Type: Java, *Kuhl & van Hasselt in Herb. Blume s.n.* (lectotype, designated here, L, sheet no. 898.60-258).

-*Unona odoratissima* Blanco, Fl. Filip. (1837) 467. -Type: Philippines, Luzon, Province of Rizal, Antipolo, *M. Ramos 466* [Merrill: Species Blancoanae 466] (neotype, designated here, US, barcode no. 688555, isotypes, A, B, BM, BO, CAL, F, GH, K, L, MO, NSW, NY, P, U, UC, W).

-*Unona ossea* Blanco, Fl. Filip. (1837) 467. *Uvaria ossea* (Blanco) Blanco, Fl. Filip. ed. 2 (1845) 322. -Type: Philippines, no material extant.

-*Uvaria axillaris* Roxb., [Hort. Bengal. (1814) 94, *nom. nud.*] Fl. Ind. ed. 1832 (Roxburgh) 2 (1832) 667. -Type: Mauritius, Grand Rivere, M. Rosselle’s Garden, *Hardwicke 6* (lectotype, designated here, BM, barcode no. BM 000895029).

-*Uvaria cananga* Banks in Hawkesworth, Voyages in the Southern Hemisphere 2 (1773) 742. -Type: Outline drawing *Uvaria cananga* (del. S. Parkinson) J3 (Diment *et al.*, 1987, reproduced on microfiche 1 of Java Drawings) (lectotype, designated here, BM). *Anon., cultivated tree in BO no XI.B (iii) 20* (L, epitype, designated here, sheet no. 932.47--467; iso, BO). [Dr. Irawati, Director of the Kebun Raya Bogor, informed us that in April 2008 the tree was still living].

-*Uvaria cananga auct. non* Pers.: Pers., Syn. Pl. 2 (1806) 94, excl. Aubl. ref.

-*Uvaria farcta* Wall., Numer. List (1831) no. 6460, *nom. nud.* Voucher: Burma, Kogun near the river Salween, *N. Wallich 1283B* [Herb. Wall. no. 6460] (K-W), 21 March 1827.

-*Uvaria hortensis* Noroña, Verh. Batav. Genootsch. Kunsten 5 (1790) 28, *nom. nud.*

-*Uvaria?* *subcordata* Miq., Ann. Mus. Bot. Lugd.-Bat. 2 (1865) 9.

-*Canangium odoratum* var. *velutinum* [Blume] Koord. & Valeton, Meded. Lands Plantentuin 61 (1903) 282 (Bijdr. Boomsoort. Java 9 (1903) 282) as ‘*velutina*’. -Type: Java, [near Kuripan, not found in L]. *Reinwardt s.n.* (neotype, designated here, L, sheet no. 898.63-533). [Leaves and branch only. Labelled as ‘*Uvaria velutina*’ by Blume, and annotated by Miquel as *Uvaria* ? *subcordata* Miq., and ‘*Uvaria velutina* Bl. non Dun.’, ‘*Jav? Moluccae?*’]. Pekalongan, Soebah, *Koorders 22570* (epitype, designated here, L; iso BO), 11 May 1896.

-*Uvaria trifoliata* Gaertn., Fruct. Sem. Pl. 2 (1790) 156, t. 114 f. 2. -*Uvaria gaertneri* Dunal, Monogr. Anon. (1817) 40, 41, 87, 89, *nom. superfl.* -Type: E

collect. sem. hort. lugdb. (not located in B, L, TUB); Gaertner's illustration (t. 114 f. 2) (lectotype, designated here). Java, Udjong Kulon Nature Reserve, *Nenga Wirawan* 8 (epitype, designated here, L (barcode no. L0185668); iso, A, BO, K, LAE, P, SING), 15 April 1963.

-*Uvaria undulata* cited erroneously in Index Kewensis (Index Kew. 2(4) (1895) 1161) attributed to Lam., Encycl. 1 (1785) 595; a mistake possibly originating with de Candolle [Prodr. 1 (1824) 90].

## 2. *Cananga brandisiana* (Pierre) I. M. Turner, *comb. nov.*

**Basionym:** *Unona brandisiana* Pierre, Fl. Forest. Cochinch. (1881) t. 19 as '*brandisana*'. – **Type:** *Brandis s.n.* [K, holotype (not found), isotype, CAL], Burma, Tenasserim, Martaban, hill forests of the Saluen (Salween) River.

-*Canangium brandisianum* (Pierre) Saff., Bull. Torrey Bot. Club 39 (1912) 504 as '*brandesianum*'.

-*Unona latifolia* Hook.f. & Thomson, Fl. Brit. India 1 (1872) 60, *non U. latifolia* Dunal.; *Cananga latifolia* [Hook.f. & Thomson] Finet & Gagnep., Bull. Soc. Bot. Fr. Mém. 4 (1906) 84. *Canangium latifolium* [Hook.f. & Thomson] Pierre ex Ridl., Fl. Malay. Pen. 1 (1922) 44, *nom. superfl.*

### Infraspecific taxa of *Cananga odorata*

Despite its cultural and economic importance there has only been one, rather limited, attempt to provide a coherent taxonomic framework for infraspecific variation in *Cananga odorata* (van Steenis in Koolhaas, 1939). Here we can only review the possibilities and names available for various entities.

It is probable that *Cananga odorata* is typified by a cultivated tree as Sonnerat's label noted the use of the flowers for pommade. Though scarcely distinguishable morphologically, the wild tree, at least in parts of its range, may differ from the widely cultivated tree in characteristics such as flower scent (Corner, 1939). The only infraspecific name that might be employed for a wild form seems to be *Canangium odoratum* var. *velutinum* Koord. & Valeton, though Koorders and Valeton (1903) appeared to use this variety to distinguish specimens with more densely pubescent foliage than between wild against cultivated taxa. The weakness of this variety is reflected by Koorders omitting it from his *Excursionsflora von Java* (Koorders, 1912) and the very brief mention (not keyed) in *Flora of Java* (Backer and Bakhuizen van den Brink, 1964, p. 105).

Among cultivated *Cananga odorata* there are several entities which have been named. There is a widely grown garden shrub that is a dwarf form that seems never to set seed. This was first described from cultivated material in Thailand by Craib as *Canangium fruticosum* and subsequently

transferred to variety and forma ranks. Although probably never formally validated, the name “*Cananga fruticosa*” is found in horticultural catalogues and on the Internet.

There are two main commercial products from *Cananga odorata*, ylang-ylang oil and cananga oil. Ylang-ylang production developed in the Philippines and has been commercialised most notably in Madagascar and islands of the Indian Ocean (Yusuf and Sinohin, 1999). *Cananga* oil is a traditional product from Java and as it is inferior to ylang-ylang in perfumery it seems not to have been grown much outside Java. In a paper by Koolhaas (1939) on the cultivation of *Cananga odorata* (referred to as *Canangium odoratum*) in Java, van Steenis presented an annotated key for the material giving names at the rank forma for various entities. Ylang-ylang trees were referred to forma *genuinum*, with some complication of subforms, and cananga-oil trees to forma *macrophyllum*. Unfortunately, as published after 1 January 1935, all but one of the new combinations are invalid in the absence of a Latin diagnosis [ICBN Art. 36.1]. Recently Yusuf and Sinohin (1999) have used van Steenis’s formae as the basis for names in horticultural terms, transferring them to cultivar groups with forma *genuinum* being referred to as Ylang-ylang Group and forma *macrophyllum* as *Cananga* Group. This seems a sensible approach as clearly these plants are cultigens, however nomenclaturally the change of name was unwarranted and the use of *Cananga* as a cultivar name, or part thereof, is prohibited under the genus *Cananga* [ICNCP (Brickell *et al.*, 2004) Art. 20.5 (viz. Art. 19.23)]. ICNCP does not preclude the use of cultivar names based on names published prior to 1 January 1959 invalid under ICBN [ICNCP Art. 19.7], so we can use van Steenis’s formae to provide replacement group names.

### A list of infraspecific taxa of *Cananga odorata*

*Cananga odorata* var. *fruticosa* (Craib) Sincl., Sarawak Mus. J. 5 (1951) 599. -*Canangium fruticosum* Craib, Bull. Misc. Inform. Kew 1922 (1922) 166. -*Canangium odoratum* var. *fruticosum* (Craib) Corner, Gard. Bull. Straits Settlements 10 (1939) 15. -*Canangium odoratum* forma *pumilum* Steenis in Koolhaas, Landbouw (Buitenzorg) 15 (1939) 590 as ‘*pumila*’. – **Type**: Thailand, Bangkok, *Kerr 4435* (lectotype, designated here, BM, barcode no. 000546881(BM), iso, ABD), 29 April 1920.

*Cananga odorata* var. *odorata*

#### *Cananga odorata* Genuina Group

-*Canangium odoratum* forma *genuinum* Steenis in Koolhaas, Landbouw (Buitenzorg) 15 (1939) 590 as ‘*genuina*’, *nom. inval. sub.* ICBN Art. 36.1.

-*Cananga odorata* Ylang-ylang Group, Yusuf & Sinohin in Oyen & X. D.

Nguyen, PROSEA 19 (1999) 71, 73

### ***Cananga odorata* Macrophylla Group**

-*Canangium odoratum* forma *macrophyllum* Steenis in Koolhaas, Landbouw (Buitenzorg) 15 (1939) 590 as '*macrophylla*', *nom. inval. sub.* ICBN Art. 36.1.

-*Cananga odorata* Cananga Group, Yusuf & Sinohin in Oyen & X. D. Nguyen, PROSEA 19 (1999) 71, 73

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## Appendix 1. Translation of the description of ‘Cananga-boom’ from Valentijn’s Oud en Nieuw Oost-Indiën.

### The flowering trees

#### The Cananga-tree

In this country there are also large trees which at certain times produce very beautiful fragrant flowers. One of these is the Cananga-tree, which is rather high, beautiful of trunk (which sometimes may be a fathom around), and greyish of bark.

The leaves are in rows on long twigs arranged against each other, about as long as wide, similar to a peach leaf, acute, and full of ribs. The blossom, or flowers, show themselves here and there between the leaves, in bunches, well similar to a somewhat yellow or orange ribbon, which hangs down, consisting of six long narrow weak leaflets<sup>1</sup>, about a little finger long, and as wide.

Her true colour at first is pale yellow, having on top as a small peppercorn, from which the fruit comes.

They are very strong in scent, which they spread along the whole road where this tree stands, especially towards the night; yet their colour is the most pleasant.

Most of the flowers fall without producing a fruit (a few excepted), and were collected, for nosegays for the young damsels, to carry them in their hair.

The native dries it, too, to smoke it under his tobacco, or to eat them with betel-nut, putting a leaflet<sup>2</sup> with the betel quid.

They also serve to decorate with them the vegetable-bows at the large festivals, and especially an oil has been extracted, which is very strong, fragrant, and useful against many ailments originating from frigidness. The natives also use this oil below their betel-nut, also they mix it together with their *bobori*<sup>3</sup>.

The wild does not differ much from the tame, of which we show a branch on No XLII.

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<sup>1</sup> certainly refers to ‘petals’. cf. Banks’s description of *Uvaria cananga*

<sup>2</sup> petal

<sup>3</sup> Sundanese name for coloured, fragrant ointment, applied to brides, grooms, and against diseases.