

The Australian blood lime described and named: *Citrus × sykesii* Mabb. (Rutaceae-Aurantioideae- Aurantieae)

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Abstract

The Australian blood lime of commerce is formally described and named *Citrus × sykesii* Mabb., hybrida nova.

Introduction: The blood lime of commerce

Increasingly seen in supermarkets in Australia, as well as in farmers' markets, besides being more and more grown by specialist nurseries supplying home gardens, is a citrus fruit generally known as 'Australian blood lime', a cultivar originally named 'Australian Blood' (Sykes 2002). It was selected by Stephen Sykes of the CSIRO Plant Industry (Horticultural Unit) at Merbein (near Mildura), Victoria in 1990 (Sykes 2002), from hybrid seedlings resulting from open pollination crosses between a red finger lime cultivar (*Citrus australasica* F.Muell. (Sanguinea Group)) pollen-parent, and a monoembryonic seedling of Rangpur lime (*Citrus × otaiensis* (Risso) Risso 'Rangpu'; '*C. limonia*', '*C. taitensis*' auctt.). Rangpur lime is itself of hybrid origin, being a cross between the citron (*C. medica* L.) and an orange (*C. × aurantium* L., i.e. *C. reticulata* Blanco [mandarin] × *C. maxima* (Burm.) Merr. [pomelo]) – see Mabberley (2022), Mabberley & Xu (2022).

Seeds from the maternal parent tree, established next to a row of pigmented finger limes, were germinated in a greenhouse and those seedlings with finger-lime characteristics were selected and grown in the citrus orchard: following the closure of the Merbein site by CSIRO in 2011, these trees were lost and no herbarium voucher specimens were preserved (Stephen Sykes, pers. comm., 20 January 2024). Fortunately, photographs were taken of some of the batch of hybrid seedlings from which 'Australian Blood' was selected (Fig. 1).

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Fig. 1. *Citrus x sykesii* seedlings raised at CSIRO Merbein, Victoria by Stephen Sykes; 'Australian Blood' at far right. Photo: 4 June 1990, by Ted Lawton (CSIRO photographer, deceased). © CSIRO.

It was only the third interspecific hybrid involving *Citrus australasica* to be raised, the first being *C. x oliveri* Mabb., the sunrise lime (*C. australasica* × *C. x microcarpa* Bunge, the calamondin, a cross between the kumquat, *C. japonica* Thunb., and *C. reticulata*) first synthesised in USA (as faustrimedina) around 1911, followed by *C. x virgata* Mabb. (*C. australasica* × *C. australis* (Mudie) Planch. [dooja, Australian lime]) at the Royal Botanic Garden Sydney in the 1920s (Mabberley 1998).

The new crop needs a botanical name, which is here provided, complete with a full description based on living material grown at The Australian Botanic Garden, Mount Annan, Sydney, Australia.

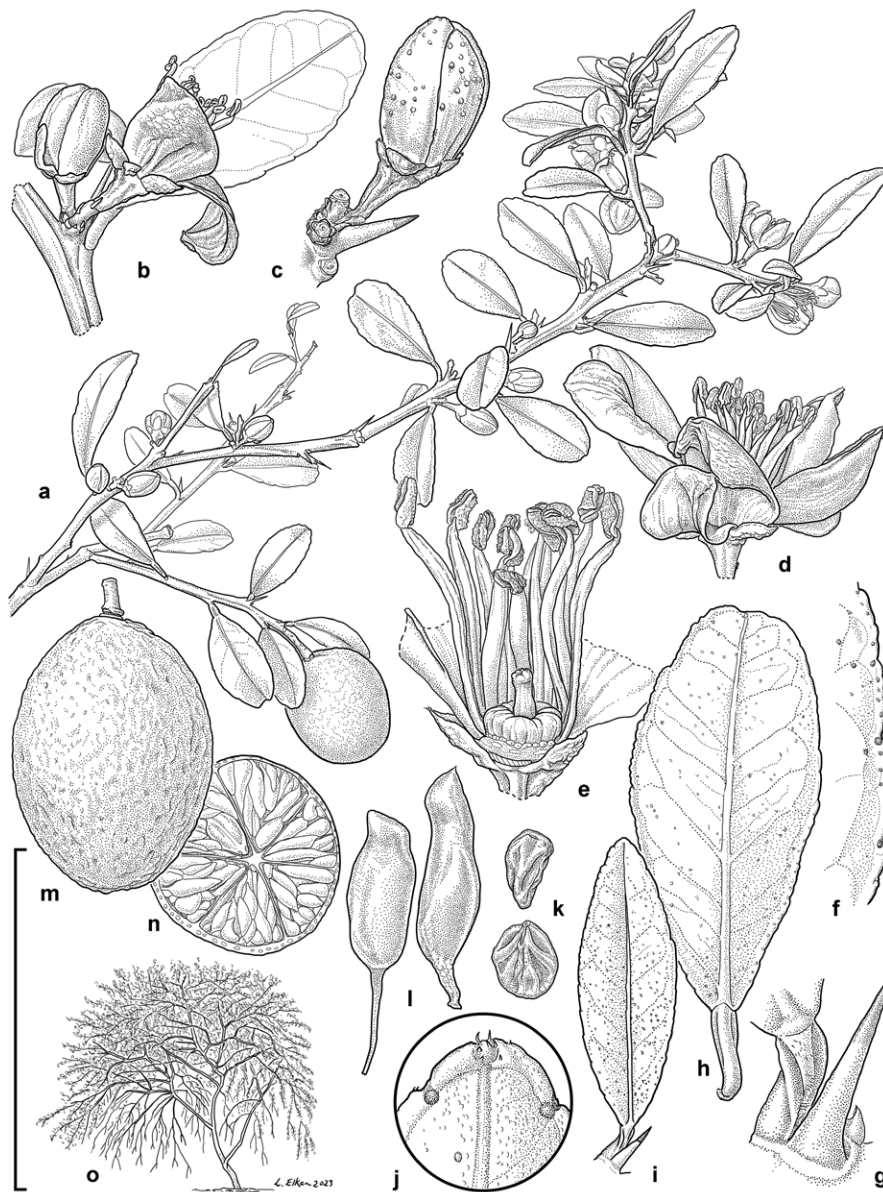


Fig. 2. *Citrus x sykesii* Mabb. a. fertile branchlet; b. inflorescence with bud and flower, lateral view; c. flower bud and spine detail; d. flower, lateral view; e. detail of flower showing pistil and stamens with some petals & stamens removed; f. detail of leaf margin; g. petiole and spine detail; h. leaf abaxial surface; i. leaf adaxial surface; j. leaf-tip detail; k. seeds - lateral and front; l. vesicles, showing variation in shape; m. fruit; n. fruit cross-section; o. habit showing marcescent spiny branches. Voucher: *J.M. Cohen & D.J. Mabberley* 2023/112 (NSW, holotype). Scale bars: a = 6 cm; b, h & i = 2 cm; c, d = 1.5 cm; e, f, k & l = 1 cm; g = 0.6 cm; j = 0.3 cm; m & n = 4 cm; o = 200 cm. Illustration by Lesley Elkan.

***Citrus × sykesii* Mabb., hybrida nova** (*C. australasica* F.Muell. × *C. × otaitensis* (Risso & Poit.) Risso [*C. medica* L. × *C. × aurantium* L. (*C. reticulata* Blanco × *C. maxima* (Burm.) Merr.)]). Fig. 1.

Type: Australia [cultivated], New South Wales, Australian Botanic Garden, Mount Annan, Bed 256 (planted 2011), 26 September 2023, J.M. Cohen & D.J. Mabberley 2023/112 (holo: NSW 1132536; iso to be sent to: ATH, BRI, CANB, MEL, K, MO, NY, P).

Somewhat dome-shaped, glabrous, armed, andromonoecious treelet, c. 1.5 m tall, 1.5 m diam. with marcescent spiny twigs on branches; living branchlets with dense foliage bearing flowers and some of previous season's fruits simultaneously. Trunk branched low down, c. 7 cm. diam.; bark smooth, mid-brown. Foliage planar in somewhat drooping sprays. Leaves 18–30 mm long, 6–10 mm wide, narrowly elliptic to obovate, glossy, leathery, dark green adaxially (reddish when young), paler abaxially; lamina weakly jointed, margin subentire to weakly crenulate or serrulate especially distally; apex acute to emarginate; lateral veins c. 5 or 6 on each side, looped at margin; petiole c. 6 mm long, very narrowly winged. Spines 4–15 mm long, straight, axillary. Flowers solitary, rarely in pairs, pink in bud, 3–5(6)-merous, strongly scented (reminiscent of *Convallaria majalis* L., Asparagaceae) opening both above and below foliage; pedicel to 4 mm long; bracteole 1, c. 1 mm long. Calyx lobes 3 or 4, 2 mm long, 1.8 mm wide, triangular, sometimes subtending a whorl of up to 3 reduced petals; petals 8 mm long, 5 mm wide, broadly ovate, white, usually with pale pink streaks on outer face; stamens 15–20, free or weakly adnate to petals, filaments 4–5 mm, long, white, anthers c. 1.5 mm long, bright yellow; disk c. 0.3 mm tall, cushion-like; ovary 6-locular, style 1.5–2 mm with clavate style-head c. 0.5 mm diam., yellow. Fruit spherical-ovoid, c. 3 cm long, subtended by weakly accrescent disk, rugulose, orange-red to purplish, 6-locular, resinous-smelling when cut; pericarp c. 1.5 mm thick, vesicles 3–4 mm long, oblong-apiculate, pink, acid-tasting; seeds 1 per locule, 4–5 mm across, irregularly subglobose to weakly rostrate, mono-embryonic, cotyledons green.

Etymology: It is a pleasure to celebrate the research of Stephen Sykes (b. 1954 in Merton Park (London), England) in naming one of his citrus hybrids after him.

Note: The cultivated specimen from which the type collection was made was sourced from the Mount Burrell Cultural Garden, in 2008 as *Citrus* 'Australian Blood'.

This description is based on authentic material ('Australian Blood'); some fruits offered for sale in the trade are scarcely red. Whether such cultivars of *C. × sykesii* are somatic mutants or other crosses between *C. australasica* and *C. × otaitensis* remains to be ascertained (Figs. 1, 3).



Fig. 3. Commercial *Citrus × sykesii* in a supermarket (Photo: Joel Cohen).

Stephen Sykes crossed 'Australian Blood' with 'Nules' (*C. × aurantium* (Tangerine Group)) and selections were made. Of these, a "red-fruited selection was propagated further and gained some interest from various parties" (Stephen Sykes pers. comm. 26 January 2024) and may enter commerce as another cultivar of *Citrus × sykesii*.

Acknowledgments

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