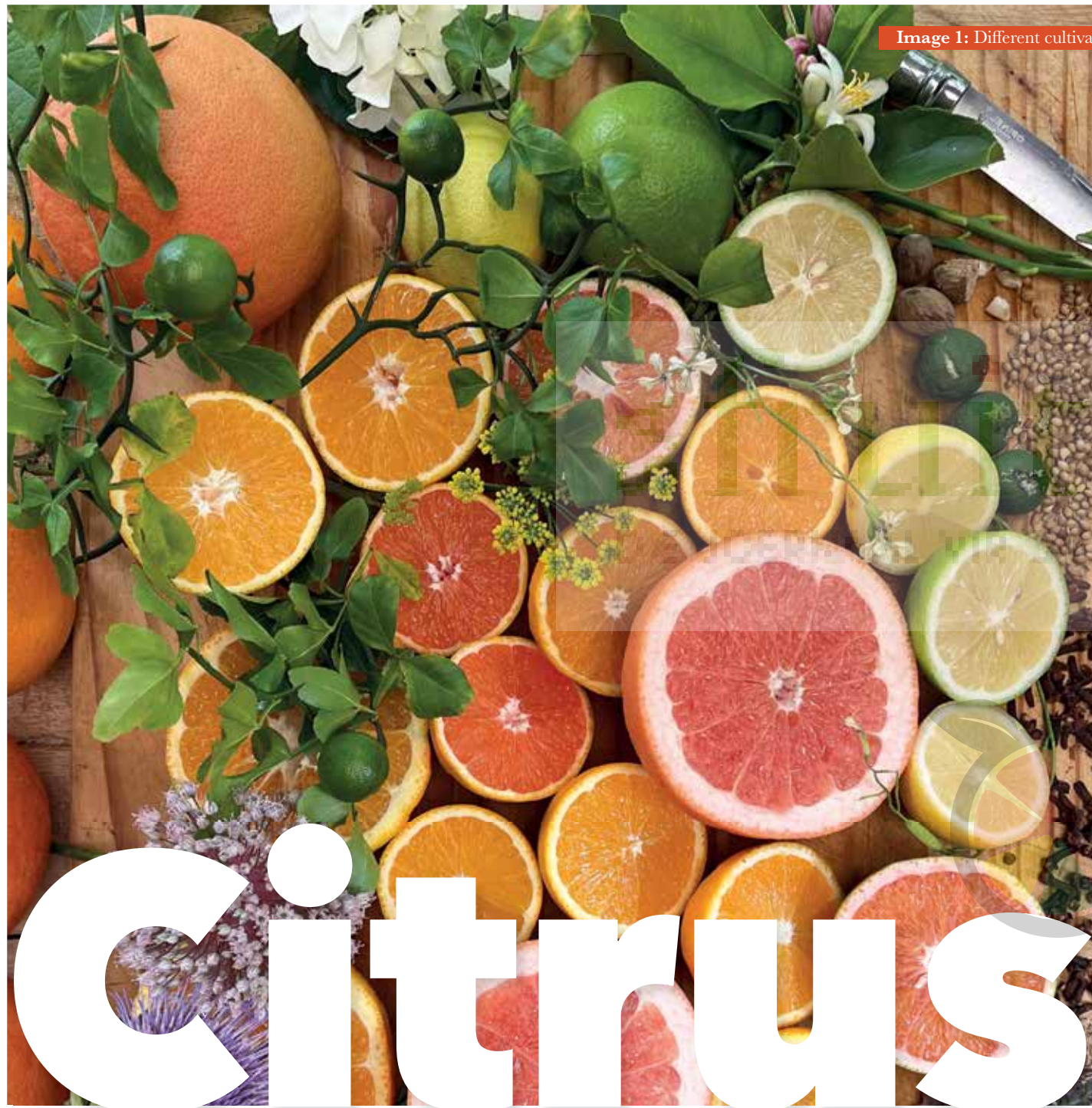


Image 1: Different cultivars

citrus

type, variety and cultivar – understanding the difference

**Jon Roberts**

Clarity is key when classifying citrus, using market- and grower-related terminology.

By Jon Roberts

In market-related, legal or commercial contexts, “variety” is sometimes used interchangeably with “cultivar”. However, they refer to distinct classifications within citrus – they’re not the same.

To minimise confusion, this article explores the example of Sweet Orange – a citrus type.

Citrus type

The current commercially important citrus types include Sweet Oranges, lemons, limes, grapefruits, mandarins and to a lesser extent, pummelo/Shaddock.

Key characteristics of citrus types

- They are usually based on genetic lineage and morphological traits.
- Each type encompasses many varieties and cultivars of those varieties.
- They are often what consumers recognise as distinct fruit groups.

Citrus variety

A variety is a naturally occurring subgroup within a citrus type. It has distinct characteristics that differentiate it from

other members of the same type. In botany, “variety” typically refers to a naturally selected population with stable traits that can be passed down through seed or clonal propagation.

Examples of Sweet Orange varieties

- Valencia orange (a variety of Sweet Orange, *Citrus × sinensis*). Valencia originated in the mid-19th century in California, from a selection by William Wolfskill – a Californian agronomist. Though it is descended from Sweet Orange that has been propagated both from seed and clonally over centuries.
- Navel orange (also a variety of Sweet Orange, *Citrus × sinensis*) was discovered from a branch mutation in the early to mid-19th century. Here things get interesting, and one realises how we can get bogged down with the complexities of taxonomy:
 - In the botanical sense it could be argued that Navel is a cultivar – not a variety – since all Navel trees descend from a single mutation and are genetically identical clones of the original Bahia/Washington branch mutation.
 - But due to the commercial importance it has assumed in the market, Navel is a Sweet Orange that is different from the Valencia. For the purposes of reducing complexity in this article, it is categorised as a variety of Sweet Orange.

Valencia versus Navel

Valencia and Navel descended from the same Sweet Orange citrus type. However, their history highlights distinct differences.

According to research by the US Department of Agriculture (USDA), the origin of the Navel was a seedless orange branch mutation found on Selecta or Umbigo Sweet Orange (Portuguese origin), which was found in a monastery in Bahia, Brazil. Reportedly, it was propagated sometime between 1810 and 1820. In 1870, 12 budded trees from Bahia were sent

to William O. Saunders, superintendent of grounds for the USDA in Washington. These were planted in a greenhouse and immediately propagated for distribution. Several years later, trees were sent to a few people in California and Florida. Among those who received trees were L. C. Tibbets of Riverside, Alexander Craw of San Diego, and Edwin Kimball of Hayward (Butterfield, 1963, p. 34). There is a surviving Tibbets tree in Riverside California (**Image 2**), kept alive by multiple Swingle inarch rootstocks.

Key characteristics separating Valencia and Washington Navel

Compared to Valencia, the Navel had a small navel internally in the base of the fruit, it was seedless, it ripened earlier and had a smoother, easier peeling rind. Rind colour was a deeper orange; it had a generally higher sugar with a pleasant flavour. These characteristics made it suitable as a “fresh eating” fruit. Valencia on the other hand ripened later in the season, always having some seed with tougher rind but with high juice percentage making it a more dual-purpose juicing and “fresh eating” fruit.

Citrus cultivar

A cultivar is a plant that has been selectively bred or discovered by breeders or growers through natural branch mutation, for specific desirable traits. It’s typically propagated clonally (through grafting or cuttings) to maintain these traits.

Many cultivars have been selected from the original Washington Navel, to extend the season from early to late maturing. The Washington Navel now finds itself in the middle of the season in terms of maturing time.

Also, in 1976 a mutation branch was discovered on a Washington Navel orange tree in Venezuela at the Hacienda CaraCara Farm, introducing Red Lycopene Navel oranges.

Understanding these distinctions equips stakeholders across the citrus value chain for better communication, innovation and cultivation.

The Citrus Growers' Association Cultivar Company (CGACC) currently has several early to late Red Lycopene Navels, mostly mutations of the South African Palmer Navel cultivar.

The CGACC's managed Navel cultivars, derived from the original Washington Navel orange, include Sunrise Early, Addo Early, Mustang Early, Red Lina Navel, DeWet Closed Navel, KS Early Navel, Muller Late Red Navel, and Suitangi Late Navel.

The new Valencia discoveries have, likewise, extended the Valencia season from early to late maturing cultivars. And in 1952, the first seedless Valencia, Delta Seedless was discovered, which has improved eating quality. Since then, new earlier and late maturing cultivars have been discovered that have also extended the seedless Valencia from early to late season.

The CGACC now manages these Seedless Valencias, from early to late maturity: Ngonini Early Delta, Gusocora Early, ABSL, Wonder Why SL, Gusocora SL, Beli SL, and McLean SL. Likewise, the CGACC manages these season-wide cultivars, from early season to late, that were discovered from normal seeded Valencia (**Image 3**): Kas Early, Turkey, Bennie, Malinda.

As with Navel, Ruby Valencia – a Red Lycopene Valencia – was discovered on an



Image 2: The last surviving Tibbets Washington navel tree, renamed the Washington Navel



Image 3: Valencia cultivars

Olinda tree managed by Sunworld, in SA around 2017. Then, a Rosy Red tree was discovered in California. The CGACC now manages it in SA for the owner.

These red lycopene cultivars are distinct from blood oranges, which have an Anthocyanin red pigment that only accumulates if there are sufficient cold units. Lycopene red pigmentation accumulates regardless of cold unit climatic requirements.

Why these classifications matter

It's important for growers to know these distinctions, for more efficient orchard planning and marketing. Certain cultivars might be better suited for specific

climates, market demands or harvest seasons. For scientists and breeders, distinguishing between types, varieties, and cultivars is essential for accurate genetic tracking and breeding strategies. And for consumers, this knowledge enhances understanding of the fruit's origin, flavour, and seasonal availability.

Citrus types define the broad family of fruits we recognize. Varieties occur within those types and represent naturally distinct forms, while cultivars (**Image 1**) are carefully selected and propagated by breeders and growers to ensure consistent quality and traits. By understanding these distinctions, stakeholders across the citrus value chain can communicate more precisely, innovate more effectively, and cultivate citrus with greater success. 



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