

Swingle citrumelo

Origin

Hybrids of grapefruit and trifoliate orange are known as citrumelos (*Citrus paradisi* x *Poncirus trifoliata*). There are many named and unnamed citrumelos, but Swingle citrumelo has been the most widely planted. Swingle citrumelo is a hybrid of Duncan grapefruit and trifoliate orange produced in 1907 in Eustis, Florida. Swingle citrumelo attracted little attention until the 1940s when it began to be evaluated by the USDA in Florida, Texas and California under its code name CPB 4475.

Ownership

Open.

General Description

Swingle produces large, vigorous and productive trees with similar to slightly bigger fruit size than Carrizo, but delayed rind colour development and later fruit maturity due to higher acidity. Swingle overgrows most orange cultivars (benching), and it is just as prone to cause creasing in scion fruit as Carrizo or Troyer citranges. Although blight does affect trees on Swingle, the incidence is low. It has good tolerance to *Phytophthora*, citrus nematode and *Citrus tristeza virus* (CTV).

Tree Characteristics

The growth of trees on Swingle in their first five years, regardless of scion, is similar to that of trees on Carrizo. Grapefruit cultivars grow vigorously on Swingle and produce large trees. Sweet orange trees, particularly Valencias, are similar in size to trees on Carrizo, however, Swingle overgrows most orange cultivars (benching). The Swingle tree itself is very cold tolerant and trees on Swingle would rank as similar to trees on Cleopatra mandarin, but superior to those on Carrizo citrange or rough lemon in this respect.

Soil Type

Swingle citrumelo is a suitable rootstock for most soils except heavy clay and highly calcareous conditions. Soils with a clay content greater than 25 to 30% may restrict root growth. Trees on Swingle are more salt tolerant than other trifoliate hybrids, but are more sensitive to calcareous conditions and subject to lime-induced chlorosis. Despite these characteristics, trees on Swingle have performed well in the Sundays River Valley area. Also, the addition of iron-chelates to the soil can overcome the chlorosis. pH adjustment to between 5.8 and 6.2 through regular fertigation applications can overcome iron chlorosis on heavy, calcareous soils.

Fruit Characteristics

Observations made in the Gamtoos River Valley region of the Eastern Cape have shown that Midnight on Swingle tends to bear smaller fruit after 10 to 12 years. In addition, fruit rinds on young trees are also coarser than trees on rough lemon. Trials at Letaba Estates, however, have not shown these trends up to 12 years, and Midnights on Swingle were in good condition in a replant situation.

Production

Trees on Swingle citrumelo produce high yields of large-sized fruit with an internal quality equal to Carrizo citrange, but fruit size tends to be smaller where crop load is excessive.

Cultivar Options

Swingle has proven to be a superior grapefruit and Minneola tangelo rootstock, although problems with higher fruit acidity levels do occur in the cooler areas. This also happens with Troyer and Carrizo for similar scions. No obvious disadvantages have been encountered in combination with Valencia and Navel scions. Limited information is available on this rootstock in combination with mandarins, although young Ellendale tangors and Clementines on Swingle performed well. Swingle exhibits incompatibility with Eureka lemons, as well as with Tomango and Shamouti midseason cultivars and Murcott mandarin.

General

From experience gained in South Africa, Swingle became popular during the 1990s, but its popularity has decreased since then due to preferences shown to Carrizo citrange. Trees on Swingle are moderately drought tolerant and greenhouse tests with small potted plants in Florida have indicated good tolerance to flooding, but this has not been confirmed under field conditions. When screened for *Phytophthora parasitica* resistance in Florida, Swingle exhibited better resistance than Carrizo and was classified as resistant.



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Swingle also exhibited tolerance to the citrus nematode and CTV. In Florida and South Africa, certain old line budwood sources have resulted in severe stunting with a diagnostic crease at the bud union of trees on Swingle. An unknown virus, possibly citrange stunt, may be the cause. Swingle is sensitive to citrus exocortis viroid (CEVd). Swingle is sensitive to Armillaria, a fungal disease which occurs in isolated cases and affects the rootstock just beneath the soil surface. There has been a marked overgrowth of mandarin type scions by Swingle rootstock in Israel causing compression girdling and tree decline; this has resulted in a loss in popularity of Swingle for these cultivars. Observations in Florida and California have also noted this phenomenon, but to a lesser degree. Swingle was the most popular rootstock for mandarin types in Florida. Rootstock overgrowth appears to be linked to tree vigour and stem diameter so the slower growing, higher density plantings under tree size management are less likely to develop the marked overgrowth necessary to create compression girdling. As with Troyer and Carrizo citrange, higher budding height would reduce this problem.

Swingle citrumelo was widely exploited in South Africa in the 1990s, but is less favoured in more recent times.

Summary

The main advantages of Swingle citrumelo are: nematode resistance, Phytophthora root rot/gummosis resistance, drought tolerance, cold tolerance and CTV tolerance.

General Comments

- Acid levels are higher in fruit in cooler production areas.
- Delayed external colour development (2 to 3 weeks behind Carrizo).
- Good on replant soils, not clay content higher than 25 to 30%.
- More sensitive to calcareous conditions.
- Not compatible with Eureka lemon, Tomango, Shamouti, Murcott.
- Problem – overgrowth of scion at the bud union with early Navelina Navel selection (compression girdling).



Midnight on Swingle citrumelo planted in 2000 (4 m tree height) indicating the typical bulge at the bud union of the tree.



Navelina navel on Swingle citrumelo indicating the typical overgrowth effect of the slower growing scion in combination with the more vigorous rootstock.