

# Benton citrange

## Origin

Benton citrange rootstock was bred in NSW, Australia, in an attempt to produce rootstocks compatible with Eureka lemon.

## Ownership

Open.

## General Description

Benton citrange is a hybrid of Ruby Blood orange and trifoliolate. Benton performed well in trials and has been used for commercial Eureka plantings in Australia since 1990 where it proved to be both *Citrus tristeza virus* (CTV) and *Phytophthora* tolerant. Since the mid-1990s, Benton has been tested in South Africa as a rootstock for Eureka lemon.

## Tree Characteristics

Trees on Benton are more compact than trees on rough lemon, Swingle and Carrizo, resulting in more manageable trees, closer spacing and superior production per hectare. When propagating Benton citrange in the nursery, the tree has a “bushy” growth habit with a shrub like appearance. To prepare the rootstock for the budding process, nurserymen need to plant seeds relatively close together and select the strongest, most upright seedlings.

## Soil Type

Benton is sensitive to saline and calcareous soils.

## Fruit Characteristics

For Valencia types, Benton produces very good quality fruit with high internal quality early in the season. Medium to larger fruit size remains one of the more favourable traits of this rootstock (peaking from count 56 to count 72).

## Production

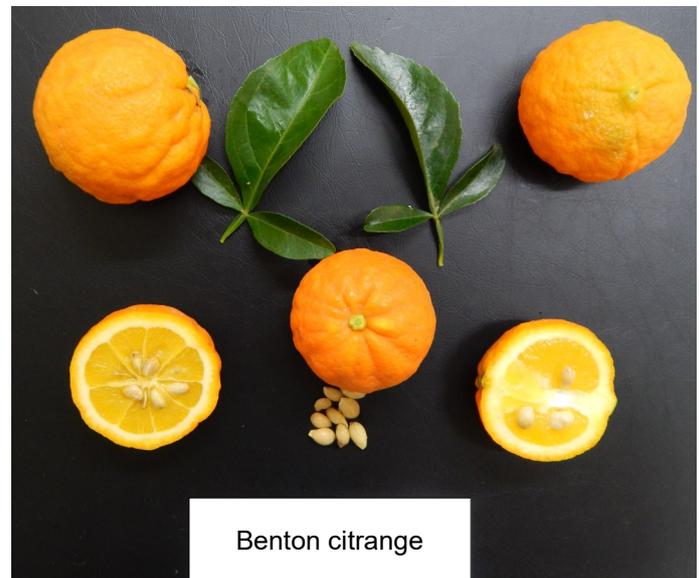
Evaluation trials are still relatively recent, but early yields have been good to excellent. Midnight Valencia trials were planted on Benton in the Letsitele area and produced an average crop of over 80 kg per tree.

## Cultivar Options

Benton citrange is a promising new rootstock which can be used on a semi-commercial scale in combination with grapefruit, Valencias, Navels and mandarins. Trials and semi-commercial plantings also indicate compatibility with Eureka lemon.

## General

In South Africa (Letaba trial in Letsitele), under replant conditions, Benton performed the best in a range of 10 rootstocks including commercial and experimental rootstock selections. Benton also tested negative for *Phytophthora*, for both Delta Valencia and Midnight Valencia. Further trials are being established with Benton citrange as one of the rootstocks in order to expand the knowledge over a wider range of scion cultivars. Benton citrange shows promise and should be included on a small scale in new commercial plantings.



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## Summary

The main advantages of Benton citrange are: intermediate resistance to *Phytophthora* root rot, nematodes and CTV, good internal fruit quality, good external colour development compared to Swingle citrumelo and medium-large tree size.

## General Comments

- CTV, nematode and *Phytophthora* tolerant.
- Sensitive to high pH soils (saline and calcareous soils).
- Compact tree compared to Swingle citrumelo, Carrizo citrange (similar to C-35).
- Less vigorous growth compared to Swingle citrumelo.
- Good tolerance to drought and cold conditions.
- Compatible with Eureka lemon.
- Benton citrange was the best rootstock option in with Midnight Valencia in a rootstock trial at Letaba Estate (Letsitele) where:
  - High yields obtained, over 80 kg per tree.
  - Large fruit size, peaked from count 56 to 72.
  - Good internal quality with high juice (60%) and Brix (12.4) levels.
  - Maturity time and external colour development was similar to Carrizo citrange.
- Good crop production and fruit size in combination with Eureka lemon at Esselen Nursery in Malalane.



Eureka lemon on Benton citrange planted in 1999 with a tree size height of 3.2 m.