

Benton citrange

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NSW DPI Citrus Team



Advantages

- ✓ *Phytophthora* tolerant
- ✓ tristeza tolerant
- ✓ good fruit quality
- ✓ compatible with Eureka lemon
- ✓ good cropping efficiency
- ✓ good fruit quality
- ✓ suitable for replant sites

Disadvantages

- ✗ can be difficult to bud
- ✗ not suitable for calcareous soils
- ✗ sensitive to salinity

Origin

In 1945, Dr FT Bowman of NSW Agriculture initiated a citrus rootstock breeding program to obtain rootstocks compatible with Eureka lemon that were also resistant to *Phytophthora* and tolerant of citrus tristeza virus. From this program, Benton citrange, a hybrid of Ruby Blood sweet orange and *Poncirus trifoliata*,

was selected and has performed well in several replicated trials on the NSW Central Coast (Freeman et al. 1986; Sarooshi and Broadbent 1992; Gallasch and Hardy 2004) and at Yanco (Long et al. 1977).

Seed was first released to the industry in 1984. Many commercial lemon plantings have been established since 1990 using this rootstock, but poor seed production in the source trees limited its widespread use. The seed production issues have now been improved.

Tolerance to environmental and soil conditions

Benton citrange is not very tolerant of high salinity or calcareous soils but it performs well on both virgin and replant soils. It is moderately cold and drought tolerant.

Pest and disease

Benton citrange is *Phytophthora* and tristeza tolerant. Overseas reports are that it is tolerant of citrus nematode.

Field performance

With Eureka lemon it produces intermediate size trees with good cropping efficiency. Being relatively compact, they are more manageable than trees on the more vigorous Rough lemon. It seems to have a later maturity time than Rough lemon.

When used as a rootstock for Eureka, Fino and Verna lemons, Benton was a top performer in field experiments near Renmark (SA), Nangiloc (Vic) and Gosford (NSW). These were planted between 1994 and 1998 and included both replant and virgin soils.

Fruit quality characteristics are also good for Eureka lemon on Benton with good juice content and skin thickness.

Promising early results have been obtained in Queensland with certain mandarin varieties, giving high yields and good fruit quality. Longer term Australian results with oranges have been less encouraging.

Nursery performance

It is not a vigorous nursery stock. It is a frustrating nursery plant because seedlings are bushy and difficult to bud. In Florida, some nurserymen cut them back severely to induce a single vigorous shoot from the base that then becomes the stem, which is budded. Once this occurs, the tree grows normally in the nursery. Seed can also be sown at high density in flats and seedlings transferred to individual pots once they reach about 30 cm tall.

Overseas experience

Benton citrange has been trialled with several scions in areas including South Africa, California and Florida. Promising results have been obtained in some areas.

References

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- Sarooshi RA and Broadbent P. 1992. Evaluation of rootstocks for Eureka and Lisbon lemons in replant ground in New South Wales. *Australian Journal of Experimental Agriculture*, 32: 205–209.

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