Rough lemon

Origin

Rough lemon originated in the Himalayan foothills in India and has been used as a rootstock for citrus in Australia for more than one hundred years. It was most widely used in Australia in the first half of the 20th Century. A wide range of Rough lemon selections exist and the most commonly used selections in Australia are McKillop and Lockyer.

Tolerance to environmental and soil conditions

Trees on Rough lemon are highly drought tolerant. Production of an extensive root system enables trees on Rough lemon to forage effectively for soil nutrients. Rough lemon also has some tolerance to alkaline soils and moderate tolerance to salinity. Rough lemon is a suitable rootstock for sandy, well drained soils.

Pest and disease

Rough lemon is highly sensitive to *Phytophthora* and should only be used for plantings where citrus has not been planted previously. Trees on Rough lemon are also sensitive to citrus nematodes. Tolerant of citrus tristeza virus and exocortis. Rough lemon rootstocks are highly susceptible to lemon scab under high rainfall coastal conditions. Infected nursery trees on Rough lemon may be a source for transmission of lemon scab to existing orchards.

Field performance

Rough lemon is a highly vigorous rootstock and shows good yield performance in early years. Rough lemon produces large trees with a large well developed root system. Trees older than fifteen years often suffer from alternate bearing and declining yields. Trees on Rough lemon often decline rapidly after twenty years due to poor tree health. In the sandy soils of the Riverland area of South Australia there are healthy commercial trees on Rough lemon forty years old.

Nursery performance

Rough lemon is the quickest growing of all common rootstocks. It is also the easiest rootstock to propagate and has the longest propagation season. Due to their high vigour, nursery trees on Rough lemon have a high nutritional requirement.

Fruit quality

Trees on Rough lemon produce fruit with poor internal quality due to low soluble solids and acid content. Rough lemon produces the earliest maturity of all common rootstocks due to the low fruit acidity. Juice content is also low and fruit from trees on Rough lemon often have a thick, coarse textured rind.

Rough lemon rootstock fact sheet

Advantages
- ✓ **fast growing**
- ✓ **large fruit size**
- ✓ **early maturing**
- ✓ **drought tolerant**
- ✓ **high yields**
- ✓ **exocortis tolerant**
- ✓ **tristeza tolerant**

Disadvantages
- ✗ **Phytophthora sensitive**
- ✗ **poor fruit quality**
- ✗ **thick fruit rind**
- ✗ **sensitive to waterlogging**
- ✗ **large tree size**

Scion compatibility
Highly compatible with lemon varieties, Rough lemon also has good compatibility with oranges, grapefruit, tangelos and most mandarin varieties. Overgrowth has been observed in Imperials on Rough lemon which then decline. May be incompatible with Satsuma mandarins.

Extent of plantings
The majority of citrus trees planted on Rough lemon are located in the Riverland of South Australia and are mainly orange trees greater than thirty years old. Until the late 1990s, most Eureka lemons in Australia were grown on Rough lemon rootstock. Rough lemon has declined in popularity over the last thirty years with the introduction of Troyer, Carrizo and Benton citranges and Swingle citrumelo.

Overseas experience
Rough lemon was widely used in Florida to produce high yields for processing, but its use has declined in recent years due to sensitivity to citrus blight. Rough lemon is still a popular rootstock choice for lemon growing in Arizona. It was also widely used in South Africa, but has recently been overtaken by Swingle citrumelo and *Citrus volkameriana* in popularity.

State of knowledge

very limited		very high

Growers should ensure that trees are propagated from true to type, disease free seed and Premium budwood obtained from Auscitrus.

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