

## Stem Pitting on Florida Rough Lemon Rootstock

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IN THE LAST ten years, numerous citrus orchards were planted on Cleopatra mandarin (*Citrus reshni* Tanaka), Rangpur lime (*C. aurantifolia* Swing.), trifoliolate orange [*Poncirus trifoliata* (L.) Raf.], and Rough lemon (*C. jambhiri* Lush.) rootstocks in Corrientes Province, Argentina. Sweet orange (*C. sinensis* Osb.), grapefruit (*C. paradisi* Macf.), tangerine (*C. reticulata* Blanco), and lemon [*C. limon* (L.) Burm. f.] were the varieties used as tops. Rootstock and bud sources were not selected because the behavior of these combinations is not yet well known in this area.

We report here the discovery of an abnormality (Figs. 1 and 2) on Rough lemon rootstocks (1) budded with several varieties of sweet orange obtained from the citrus collection of the Bella Vista Experiment Station.

### *Materials and Methods*

A collection was made of 118 varieties of citrus (44 sweet orange, 32 tangerine, 28 lemon, and 14 grapefruit) at the Bella Vista Station, in

1954. Half of these varieties were imported selections, and the remainder were old-line selections previously grown at the Station. Each of the varieties was worked on 2 plants of each of the following rootstocks: Cleopatra, Rough lemon, Rangpur lime, and common sweet orange. Each year from 1961 to 1965, a strip of bark was removed from each of the orange trees at the bud-union. The bark and the exposed wood were examined for stem pitting.



FIGURE 1. Stem pitting on the Rough lemon rootstock of a Pera sweet orange tree.

### Results

To facilitate the presentation of results, the varieties examined are placed in three groups as follows: *early ripening*—Buckeye navel, Robertson navel, Thomson navel, Bahia, Navelencia, Parson Brown, and Hamlin; *mid-season*—Joppa, Pineapple, Ruby Blood, Sicilia Blood, Azores selected, San Michael, Queen, and Jaffa; and *late ripening*—Valencia late, Lue Gim Gong, Condado, Mora of Catania, and Bahia (local mutation, without navel).

Stem pitting was observed on all trees of early and mid-season groups, but only on the Rough lemon rootstocks and not on any other rootstocks. Mild stem pitting together with retarded growth, chlorotic leaf veins, dieback, and small fruits were observed on a few trees on Rough lemon rootstocks in the late-ripening group.

Foliage of early-ripening trees was sparse and dieback of the small twigs was common. Trees in the mid-season group made normal growth and produced normal fruit in normal quantities. Trees in the late group exhibited considerable dieback of twigs, and leaf symptoms of mineral deficiencies were common. However, they produced normal amounts of fruit of good quality and size.

The Pera (Mediterranean sweet) trees on Rough lemon were in a

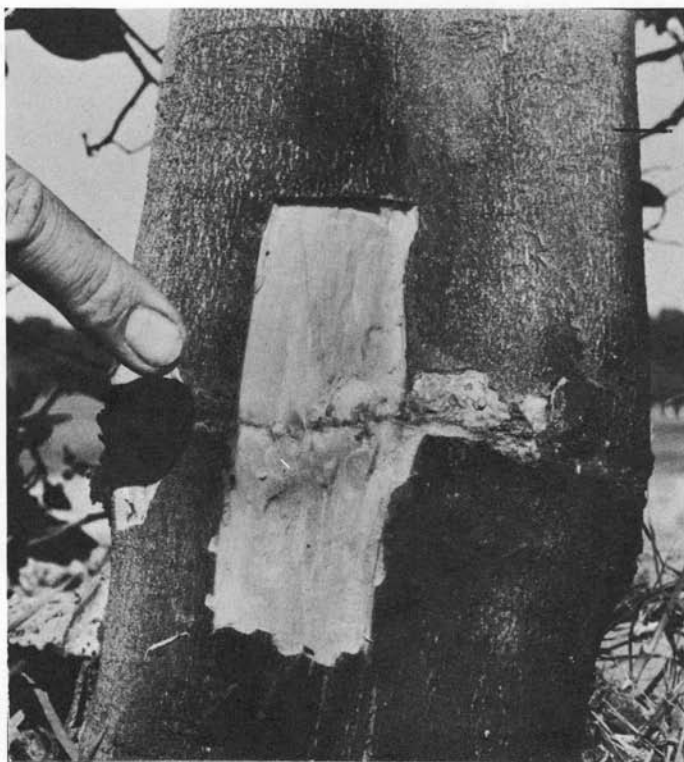


FIGURE 2. Necrotic ring at the bud-union of a Pera tree on Rough lemon rootstock. Stem pitting is shown above and below the ring.

class by themselves in that they exhibited stem pitting on the Rough lemon rootstock, on the trunk, and on the branches. All of these trees showed creasing at the bud-union, dieback of twigs, and deformed fruit.

It should be noted that the Florida Rough lemon tree, the seed source of the above rootstocks, showed stem pitting on the trunk, and unbudded seedlings of this tree also showed stem pitting.

*Summary*

Of the sweet orange varieties budded on Rough lemon rootstock, 57 per cent exhibited stem pitting on the stock. This condition was most striking in the early varieties. Rough lemon rootstocks budded with mid-season and late sweet orange varieties were relatively free of stem pitting.

All three groups of trees showed comparable amounts of mineral deficiency symptoms, but trees in the early and late groups also showed considerable dieback of twigs.

Pera trees on Rough lemon stock exhibited stem pitting on the stock, trunk, and twigs, bud-union crease on all trees, branch dieback, and deformed fruit.

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