

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D. C. 20250

NOTICE TO FRUIT GROWERS AND NURSERYMEN RELATIVE TO THE
NAMING AND RELEASE OF THE US-852 CITRUS ROOTSTOCK

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-852 citrus rootstock. This rootstock selection was the result of a cross of Changsha mandarin (*Citrus reticulata*) × English Large Flowered Trifoliolate Orange (*Poncirus trifoliata*) completed by Dr. Joe Furr at Indio, California in 1965. US-852 is well adapted for production of sweet oranges and other citrus crops in some parts of Central Florida, where it can be readily grafted with commercial scions and expected to produce healthy, high yielding trees. The major attributes of this new rootstock cultivar are its resistance to several important diseases and low production of root sprouts in the field, and its favorable effects on scion tree size, fruit quality, and productivity.

US-852 rootstock, when used in graft combination with 'Hamlin' sweet orange scion, produces a healthy tree that yields large quantities of high quality fruit in Central Florida. At 11 years, 'Hamlin' trees on US-852 were slightly shorter than trees grafted on 'Swingle' citrumelo, the major commercial rootstock in this area, in soils where both cultivars are well adapted. The shorter stature of trees on US-852 in comparison to Swingle and many other common rootstocks allows a more rapid and economical harvest of the fruit crop. Trees on US-852 rootstock have been resistant or field tolerant to several biotic and abiotic factors that frequently damage citrus trees. Trees on US-852 rootstock suffered no apparent damage from *Phytophthora nicotianae* during the 12 year field trial in Osceola County, while trees on other rootstocks were visibly damaged. US-852 rootstock was tested for resistance to *Phytophthora nicotianae* by stem inoculation of potted greenhouse plants and found significantly more resistant to damage than several common rootstocks, including Sour orange and Carrizo citrange. Trees of 'Hamlin' on US-852 rootstock were observed to grow and yield well in the presence of severe Florida isolates of citrus tristeza virus (CTV) in Osceola County. Results of testing plants inoculated with CTV by ELISA and molecular marker analysis suggest that US-852 carries the *Ctv* resistance gene from *Poncirus trifoliata*.

Long-term field trial data is available with 'Hamlin' scion from the St. Cloud area of Osceola County, Florida (Tables 1 & 2). Young trees with 'Hamlin' orange, 'Sunburst' tangerine, and 'Orlando' tangelo scions on US-852 rootstock may be inspected by appointment at the USDA Whitmore Foundation Farm in Lake County, Florida. Young trees with 'Valencia' orange and 'Flame' grapefruit scions may be inspected at the USDA Ft. Pierce Farm Center, St. Lucie County, Florida. There is preliminary evidence that US-852 may be unacceptable for use where there is high salinity or pH.

To prepare plants of US-852 for use, nucellar seedlings, cuttings, or micropropagated plants are produced and budded with a good viroid-free citrus scion cultivar. Although seed propagation is preferred for citrus rootstocks in general, it is inefficient for this cultivar due to relative unfruitfulness, a low number of seed per fruit, and a high proportion of off-type seedlings. Only about half of seedlings recovered are of nucellar (apomictic) origin and have uniform morphology typical of US-852. Cuttings of US-852 root easily, but a sizable proportion of these never develop well-anchored plants for nursery handling. Tissue culture propagated plants of US-852 appear healthy, true-to-type, and develop strong root systems in the nursery.

Source plant material for US-852 has been tested for CTV, exocortis, and cachexia by Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Winter Haven, Florida. These disease organisms were not found in the US-852 sources.

A patent application has been filed for this cultivar, and USDA intends to grant an exclusive license for commercial use to Twyford International (11850 Twitty Road, Sebring, FL 33870). A limited quantity of plant material for research purposes may be obtained from: Kim D. Bowman, USDA, ARS, 2120 Camden Road, Orlando, FL 32803. Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Edward B. Knippling

8/25/99

Administrator, Agricultural Research Service
U.S. Department of Agriculture

Date

Table 1. Tree yield, size, and survival of 'Hamlin' orange on US-852 and Swingle rootstocks at St. Cloud field trial.

	US-852	Swingle
Tree height, m (7 years in the field)	3.0	3.0
Tree volume, m ³ (7 years)	11.4	9.1
Tree height, m (11 years)	3.9	4.3
Yield (kg fruit/tree)		
year 1 (4 years in the field)	108.2	89.7
year 2	153.8	122.0
year 3	272.0	204.3
year 4	235.3	178.2
year 5	306.2	249.0
year 6	257.2	224.5
year 7	305.5	270.8
year 8	269.4	261.2
Tree losses from natural causes (%)	0	11

Table 2. Fruit quality of 'Hamlin' orange on US-852 and Swingle rootstocks at St. Cloud field trial.

Rootstock	US-852	Swingle
Fruit weight (g)	172.0	173.8
Fruit diameter (cm)	7.0	7.0
Peel color ^y	H	H
Rind thickness (mm)	3.4	3.4
Juice content (%)	50.2	49.2
Total soluble solids (%)	9.6	9.7
Total acids (%)	0.79	0.80
TSS : TA ^x	12.2	12.1
Juice color ^w	33.3	33.2

^y Peel color according to color tables in Harding et al. (1940).

^x TSS : TA = total soluble solids: total acids ratio.

^w Juice color as color number determined with chromameter (model CE 200; Minolta Camera Co., Osaka, Japan).