The United States Department of Agriculture, Agricultural Research Service, hereby releases for propagation the US SEEDLESS SURPRISE (formerly tested as Early Sweet, FF1-77-19, USDA 77-19, and 77-19). US SEEDLESS SURPRISE is a low seeded variant of a hybrid from ‘Pearl’ tangelo x ‘Red Mexican’ grapefruit. The cross was made in Indio, California by Joseph Furr in 1964. And the seedy progenitor (USDA 5-75-8) was selected by Jack Hearn in 1973 at the Whitmore Farm in Leesburg, Florida. Budwood of USDA 5-75-8 was irradiated in 1980, with propagated trees planted at the Whitmore Farm, from which the low-seeded variant now designated US SEEDLESS SURPRISE was selected. US SEEDLESS SURPRISE was propagated for planting at several sites, and has been tested for horticultural characteristics in both Florida and California. It was also the focus of a multi-year, multi-nation consumer acceptance study by the Florida Department of Agriculture and Consumer Services (FDACS). The fruit ripens in late September-October in Florida and October to mid-November in California. Fruit are very grapefruit-like in appearance, with few seeds, a smooth yellow peel of medium thickness and firm cream-yellow flesh, and more irregular segment size than standard grapefruit. The flavor is somewhat grapefruit-like but mild and low acid without any bitterness in the flesh, segment walls or the albedo of the fresh fruit. FDACS trials in 2003-4 assessed consumer preference between US SEEDLESS SURPRISE (tested as Early Sweet) and grapefruit in Florida, Michigan and Virginia. In this study 76 percent of respondents preferred US SEEDLESS SURPRISE and 65 percent indicated that they preferred US SEEDLESS SURPRISE over their favorite currently available citrus of any type. FDACS trials in 2004-5 compared consumer acceptance of pummelo and red grapefruit vs. US SEEDLESS SURPRISE in Canada, France and Japan: 20 to 50+ percent of respondents preferred US SEEDLESS SURPRISE, with greatest preference in younger participants (15-40 years of age), and reduced preference where respondents liked and expected a tart grapefruit flavor.

In Florida, trees are of medium vigor and have a spreading canopy, and performed better on Carrizo and Sour Orange than on Cleopatra rootstock. Trees on Swingle rootstock were somewhat stunted in one planting. There are some observations that US SEEDLESS SURPRISE was somewhat more cold-tender than conventional grapefruit. Eight to ten year old trees had yields ranging from 116-270 kg/tree at two locations, with fruit averaging 350 to around 500 grams and containing 0-9 polyembryonic seeds, but averaging fewer than 5 seeds per fruit. Fruit
of US SEEDLESS SURPRISE reach initial market maturity in late September when the rind is still green in color. Small and medium sized fruit reach optimum flavor, with large fruit tending to be insipid.

In California, US SEEDLESS SURPRISE was compared to Oroblanco at three sample dates (mid-October, mid-November and mid-December) and tested on Carrizo and C-35. US SEEDLESS SURPRISE had similar Brix to Oroblanco (7.8-8.8), slightly higher titratable acidity (0.9-1.0 percent), slightly smaller fruit size (308-367 g), and similar to lower seed number per fruit (mean of 1.3-1.9)

US SEEDLESS SURPRISE has displayed a number of post-harvest issues which seem to discourage the wholesale commercial marketing used with standard grapefruit. US SEEDLESS SURPRISE is more sensitive to ethylene exposure in the de-greening process than grapefruit cultivars, but similar in sensitivity to Oroblanco. US SEEDLESS SURPRISE has a tendency for stem-end rot and may require fungicide treatments to prevent postharvest decay. Ideal storage temperatures need to be determined based on reports of chilling injury. There are anecdotal reports that juice of US SEEDLESS SURPRISE develops after-bitterness, making it a poor choice for juice production. It does not appear to be more resistant to Huanglongbing than standard grapefruit. None-the-less, US SEEDLESS SURPRISE has many highly desirable characteristics which make it a potentially desirable addition to the cultivar mix for local markets, gift-fruit-shippers, home orchardists, and other niche uses. It is anticipated that thousands of trees of US SEEDLESS SURPRISE will be propagated, planted and grown for high quality, unique specialty citrus production.

Small quantities of US SEEDLESS SURPRISE budwood are available from the Florida Division of Plant Industry Bureau of Budwood Protection (information on obtaining budwood can be found at http://www.freshfromflorida.com/pi/budwood/bwprocedure.html), and the Citrus Clonal Protection Program operated through the University of California at Riverside (information on obtaining budwood can be found at http://www.ccpp.ucr.edu).

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Signature:

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Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

5/18/17