

# USDA 77-19, An Early Ripening Grapefruit Hybrid

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**Abstract.** A new grapefruit-like hybrid was developed by the USDA citrus breeding program. USDA 77-19 is a low seed count hybrid of 'Pearl' tangelo [*C. reticulata* Blanco x *C. paradisi* Macf.] x grapefruit (*C. paradisi* Macf.).

The fruit ripens in late September, is of medium size, with smooth yellow peel and firm, cream-yellow flesh. The flavor is mild and low acid with a non-bitter albedo. Trees of 77-19 are of medium vigor and a spreading canopy.

The breeding selection, USDA 77-19, is a grapefruit-like hybrid developed by the USDA citrus breeding program. The intent is to develop early ripening "grapefruit-like" fruit that are low acid and non-bitter for the early-season fresh fruit market.

The original hybrid USDA 75-8 was selected in 1973 from a population of 'Pearl' tangelo x grapefruit hybrids. Budwood of USDA 75-8 was irradiated in 1980 to generate seedless mutants. Two low seed content selections, USDA 77-19 and USDA 74-15, were made from the irradiated material. Trees were propagated onto Cleopatra mandarin (*C. reticulata* Blanco), Carrizo citrange [*C. sinensis* (L.) Osb. x *Poncirus trifoliata* (L.) Raf.], and sour orange rootstocks (*C. aurantium* L.). A set of 12 trees, four on each rootstock, was planted at the Whitmore Foundation Research Farm. Trees of USDA 77-19 and USDA 74-15 propagated Swingle [*C. paradisi* Macf. x *P. trifoliata* (L.) Raf.] rootstock were also planted at a grove owned by Mr. Orié Lee located in St. Cloud, Fla. USDA 74-15 was

eliminated from further consideration due to poor flavor and low yields.

## Fruit Description

Fruit of USDA 77-19 are medium in size with an average fruit diameter of 9.2 cm and a mean weight of 506 g. The rind is medium thick, smooth, and yellow in color. The albedo and section walls are non-bitter. The flesh is firm-textured with a cream-yellow color, containing 0 to 9 polyembryonic seeds. Trees of USDA 77-19 have a spreading canopy and are of medium vigor. Fruit of USDA 77-19 reach market maturity in late September when the rind is still green in color. The fruit is mild-flavored and low in acidity (Table 1). Small and medium-sized fruit reach optimum flavor, with large fruit tending to be insipid.

At the Leesburg location, the vigor and health of trees budded on Carrizo citrange and sour orange was superior to that of trees on Cleopatra mandarin. Yields for trees 8 and 10 years old on Swingle rootstock ranged from 116 to 270 kg per tree with a mean of approximately 200 kg at St. Cloud, Fla.

Table 1. Mean total soluble solids (TSS), titratable acid (TA), and solids/acid ratio (Ratio) of USDA 77-19 on three rootstocks (Fruit sampled 21 Oct. 1999).

| Rootstock   | TSS (%) | TA (%) | Ratio |
|-------------|---------|--------|-------|
| Carrizo     | 8.8     | 0.64   | 13.6  |
| Cleopatra   | 10.0    | 0.67   | 14.9  |
| sour orange | 9.5     | 0.67   | 14.1  |