

FLORIDA CITRUS GERMPLASM INTRODUCTION PROGRAM

A Publication of the Florida Department of Agriculture and Consumer Services, Division of Plant Industry

New Citrus Selections Released from Quarantine

Tetraploid Clementine and 'Tango' mandarin have completed introduction procedures in Gainesville.

DPI 143, Tetraploid (4N) Clementine will be transferred to the University of Florida for use as a breeding seed-parent of interplod crosses for the development of seedless triploid mandarins without the need for embryo-rescues. UF will maintain a protected budwood-source plant at Lake Alfred. For information with regard to obtaining budwood, contact Dr. Fred Gmitter, UF-IFAS Citrus Research & Education Center, 700 Experiment Station Road, Lake Alfred, FL 33850.



DPI 168, 'Tango' mandarin, is a licensed mid-late season selection developed by the University of California Riverside, from irradiated buds of 'W Murcott'. 'Tango' is very low-seeded, flavorful and easy-to-peel. Trees are thornless and have reduced tendency to alternate bear. 'Tango' was transferred to the Bureau of Citrus Budwood Registration in Chiefland, for horticultural evaluations and budwood propagation. For information regarding 'Tango', please contact Mr. Michael

Kesinger, Chief, Bureau of Citrus Budwood Registration, 3027 Lake Alfred Road, Winter Haven, FL, 33881, or Mr. Ben Rosson, PO Box 69, Chiefland, FL, 32626.

Recent releases also included 20 University of Florida (UF) citrus selections. Germplasm-source field-trees in Fort Pierce, Lake Alfred and Lake Placid, previously exposed to citrus canker, greening and tristeza, were treated by shoot-tip grafting (STG), followed by testing, and released when no disease-causing pathogen was detected. Releases included: Foster grapefruit, Glen Red nucellar, Leug shaddock, Podagra rough lemon, Queen orange, Valencia orange, Vinegrowth seedling, Westcott pummelo and 12 lemon selections of superior oil-quality. All selections will be maintained by UF at the Citrus Repository greenhouse in Lake Alfred.

Introducing Transgenic Citrus and 4N Pummelos

Ten new citrus selections beginning introduction: 8 Texan, 2 Australian. Mr. Mike Irey, US Sugar Corporation, received approval to introduce eight citrus selections, genetically-modified in Texas, carrying the SoD2 spinach gene. The gene codes for production of plant defensins, or microbial growth-inhibitors. Dr. Erik Mirkov, Texas A&M University, Weslaco, supplied greenhouse-grown germplasm of Hamlin orange, Rio Red and six Ruby Red grapefruits. Quarantine release date for germplasm is estimated to be 2010, and subject to approval by USDA Biotechnology Regulatory Services. Meanwhile, evaluations for resistance to the causal-agents of citrus canker and greening are being conducted by Dr. William Dawson, UF.

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Importation of foreign citrus is prohibited in the state of Florida, unless approved by the Director of the Division of Plant Industry. New varieties must undergo processing by the Citrus Germplasm Introduction Program, including quarantine, treatment and therapy for the removal of graft-transmissible pathogens, followed by testing and indexing. New varieties are released from quarantine when no pathogen is detected.

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NEW VARIETES:

RELEASED:

- 143 TETRAPLOIDCLEMENTINE
- 168 TANGO MANDARIN

UF CITRUS SELECTIONS:

- FOSTER GRAPEFRUIT
- GLEN RED NUCELLAR
- LEUG SHADDOCK
- PODAGRA ROUGH
- LEMON
- QUEEN ORANGE
- VALENCIA ORANGE
- VINEGROWTH SEEDLING
- WESTCOTT PUMMELO
- 12 X LEMONS

Dr. Fred Gmitter, UF, received approval to introduce two Australian tetraploid (4N) pummelos. The pummelos will be used as breeding parents for production of seedless triploids, supplying both pollen and seed, and reducing the need for embryo-rescues. Malcolm Smith, Department of Primary Industries and Fisheries, Queensland (QDPI) supplied budwood originating from field trees at Bundaberg Research Station. Quarantine release is estimated for later this year.

CGIP is processing a total of 73 citrus selections: 22 "imports" and 51 Florida-grown.



Record-keeping on paper.

Improving Our Record-keeping: Computer-Database

Accurate record-keeping and documentation are important aspects of tracking new citrus introductions and their progress. In order to better organize our expanding program, data-management professionals are developing computer database applications to streamline record-keeping, and allow for easier and quicker data entry, access and retrieval.



The old microscope, CGIP.

Upgrading Our Equipment: New Microscope

In September 2008, citrus shoot-tip grafting expert, Dr. Luis Navarro, visited and consulted with both the Citrus Germplasm Introduction and Budwood Registration Programs. Dr. Navarro noted that both programs would benefit by acquiring microscopes with improved optics, mechanics, lighting, and working-space, as well as for use in demonstration and teaching the method for successful STG. STG is the only technique known to remove all pathogens, including citrus viroids, and is most reliable for elimination of the citrus greening pathogen *Liberibacter* spp. New microscopes are on order.



Citrus budsticks for heat-treating and sprouting to produce the shoots and meristems necessary for STG.

New Beginnings: Budstick Sprouting

The elimination and inactivation of pathogens are accomplished by several methods including shoot-tip grafting and thermaltherapy. When both methods are combined, the success rate for pathogen removal and production of healthy germplasm is increased. CGIP has been using both methods to process new citrus introductions, although applying them separately which requires more time for completion.

In order to reduce total processing time without compromising the quality of new citrus varieties, CGIP will continue to perform a combination of therapies, but conduct them simultaneously. Heat-treated meristems excised from sprouting shoots and harvested from cultured budsticks will be STGed; both therapies are applied at the same time. Regardless of which treatment is used, all introductions must be tested and indexed prior to their release from quarantine.

Citrus Repository at Boston Farm



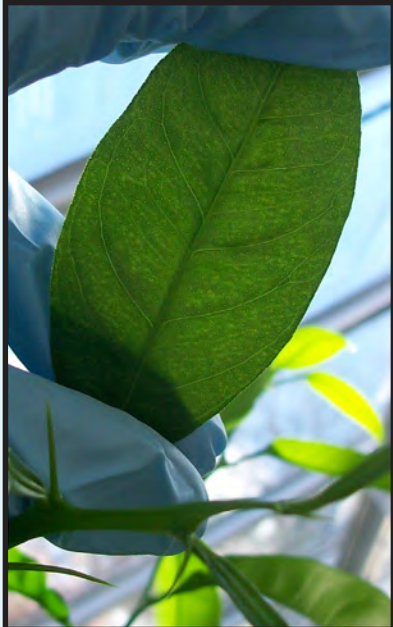
Alachua, February 2009.

A yellow-flag marks the corner of a 5-acre site provided by UF for construction of the Citrus Repository at Boston Farm.

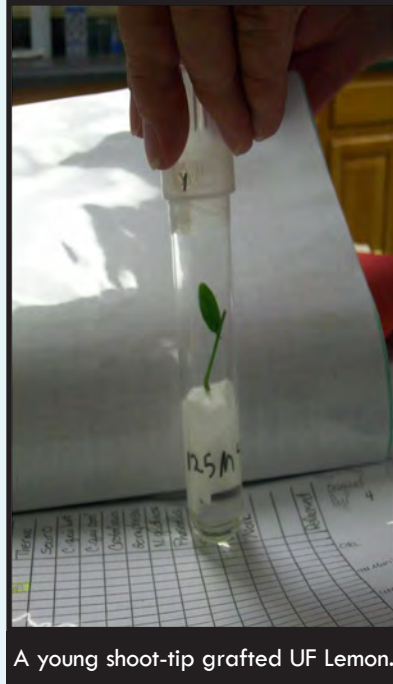
Plans for construction of new greenhouses and office facilities are in progress. A 5-acre tract of land located 20 miles north of Gainesville, is being provided by the University of Florida for construction of the Citrus Repository at Boston Farm. Upon completion of the new facilities, CGIP will relocate and begin operating from expanded office, laboratory and greenhouse spaces. In addition, the Bureau of Citrus Budwood Registration will have separate offices, laboratory space and greenhouses, to maintain back-up budwood source trees for the most popular and valuable citrus varieties grown in Florida.

Imported Citrus Selections: Estimated Release Dates

Number/Common Name	Source	Arrival	Release
138 Natal valencia	Brazil	Jul-01	pending
150 4N Hudson grapefruit	California	Sep-03	Sep-09
153 C5282 mandarin	Sicily	Nov-06	Sep-09
154 Mandalate tangor	Sicily	Nov-06	Sep-09
155 Eloise murcott	Australia	Aug-06	Oct-09
160 Ota mandarin	Sicily	Nov-06	Sep-09
161 4N murcott	Australia	Aug-06	Sep-09
162 4N Minneola tangelo	Australia	Aug-06	Feb-10
164 Moria murcott	Israel	Oct-05	Sep-09
165 Winola mandarin	Israel	Dec-06	Jul-09
166 Mandared mandarin	Sicily	Dec-06	May-10
167 Dalandan grapefruit	Argentina	Jun-07	Mar-10
169 4N Pummelo A	Australia	Aug-08	Mar-10
170 4N Pummelo B	Australia	Aug-08	Mar-10
171 Rio Red grapefruit TX5	Texas	Aug-08	Aug-10
172 Ruby Red grapefruit TX420	Texas	Aug-08	Aug-10
173 Hamlin sweet orange TX 311	Texas	Aug-08	Aug-10
174 Ruby Red grapefruit TX824	Texas	Aug-08	Aug-10
175 Ruby Red grapefruit TX867	Texas	Aug-08	Aug-10
176 Ruby Red grapefruit TX 877	Texas	Aug-08	Nov-10
177 Ruby Red grapefruit TX882	Texas	Aug-08	Nov-10
178 Ruby Red grapefruit TX890	Texas	Aug-08	Aug-10



Symptoms: Young leaf vein-banding and oak-leaf patterns caused by Concave Gum disease in Dweet tanger.



A young shoot-tip grafted UF Lemon.



Florida - Citrus Selections in Progress

Cadenera sweet orange

King orange seedling

Charonja

Leopard spot seedling

Citrus Maglini

Rough lemon 8166

Cuban white

SF 8-1-4 valencia

Dr. King valencia

Sunfruit

FG 411

40X lemon selections



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