Citrus Centers of Excellence

Purpose:

• To provide a safe mechanism of introduction of citrus varieties into USA

• To maintain primary sources of disease tested & true to type citrus trees
So Far in the C-CPN

1. Florida
   Department of Plant Industry:
   • Citrus Germplasm Introduction Program
   • Bureau of Citrus Budwood Registration

2. California
   • Citrus Clonal Protection Program – CCPP-University of California & Citrus Industry
   • National Clonal Germplasm Repository for Citrus & Dates- USDA-APHIS

3. Arizona, Texas, Louisiana, & Alabama
   • Various schemes (University and State) of Budwood Certification & Distribution Programs

Hawaii to follow
Collaborative Ventures

Funding

- State Departments of Agriculture
- Growers’ and Nurserymen’ Tax Box Boards
- Universities

Regulatory Platform for Operation

- State
- Federal
Elements of Citrus Programs

- Introduction
- Disease diagnosis
- Pathogen elimination
- Maintenance of tree sources
- Citrus material distribution

QUARANTINE

 RELEASE
NCPN Support for Citrus Programs

**Personnel:**
- Experienced and close to retirement
- New hires for overlapping and training
- Sustainability, growth, and improved services

**Facilities & Equipment:**
- Updates are required
- Under increasing pest pressure
- New Technologies need to be incorporated
Quarantine Facilities - FL & CA

Introduction →
Quarantine Facilities - FL & CA

Disease diagnosis →

A. Bio-indexing

B. Laboratory

- ELISA
- sPAGE
- PCR
Quarantine Facilities - FL & CA

→ and Pathogen Elimination

A. THERMAL THERAPY

B. SHOOT-TIP MICROGRAFTING
Quarantine Facilities - FL & CA
Introduction, Disease Bio-Diagnosis, & Pathogen elimination

• Personnel is required to support the quarantine activities

• Upgrade of quarantine facilities and equipment since…..
  
   o Pressure from pests and diseases is constantly increasing

   o The only three (3) people in the USA holding the USDA-APHIS-PPQ permits for Citrus Germplasm introductions operate in these facilities
si-RNA and deep sequencing technologies become increasingly affordable....
Maintenance & Distribution of Citrus Material
CA, TX, and FL
Maintenance & Distribution of Citrus Material
CA, TX, and FL

• Support the existing infrastructure with upgrades, personnel, and resources

• Support the CA, TX, & FL expansion and duplication their foundation collections

• Most importantly however....

NCPN should support AZ, LA, and AL to set up small foundation blocks for the varieties important for the local citiculture
Collaborative Ventures

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State Departments of Agriculture
Growers' and Nurserymen' Tax Box Boards
Universities

Regulatory Platform for Operation
State and Federal

NCP

NCNP
Facilitate and Enhance Existing National Interactions

- AZ & TX are depended on CA and FL programs for primary citrus propagative material. Currently, AL is also processing germplasm in CA.

- Citrus germplasm is readily exchanged among the programs (CA has approx. 65 var. from FL and 10 from TX).

The biggest challenge lies ahead...
The National Passport
For
Citrus Propagative Material

Uncharted waters...
NCPN Support is Required for the National Passport Program

• Dedicated people
• Travel among the programs
• Exchange of blind samples
• Co-training in the full array of diagnostics and therapy procedures
• Establishment of the regulatory foundation for:
  - Placement of safeguards and checks
  - Proper operation according to State and Federal regulations
Thank You