CITRUS – NCPN IDEAS & DISCUSSIONS

THE CALIFORNIA CITRUS CLONAL PROTECTION PROGRAM

Georgios Vidalakis
Dept. of Plant Pathology & Microbiology
University of California, Riverside

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TO HONOR
MRS. ELIZA TIBBETS,
AND TO COMMEND HER GOOD WORK
IN PLANTING AT RIVERSIDE IN 1873,
THE FIRST WASHINGTON
NAVEL ORANGE TREES
IN CALIFORNIA,
NATIVE TO BAHIA, BRAZIL;
PROVED THE MOST VALUABLE
FRUIT INTRODUCTION YET MADE BY
THE UNITED STATES DEPARTMENT
OF AGRICULTURE.
California

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

Florida

- Citrus Germplasm Introduction Program-Dept. of Plant Industry
- Budwood Protection Program-Dept. of Plant Industry
Citrus Clonal Protection Program-History

1937: Psorosis Free Program
- Voluntary, periodic inspection for Ps free trees
- Cal. Dept. of Agriculture & Nursery Services
- Dr. Fawcett & Wallace

1957: Citrus Variety Improvement Program
- Source of true to type & disease free budwood
- Dr. Calavan & Reuther
- PLPTH, BPSC, CDFA, UCAES, USDA, CCNS, CRB

1977: Rename to Citrus Clonal Protection Program
- Dr. Gumpf
- USDA-APHIS permit for budwood importation directly to CA
- PLPTH, CDFA, UCAES, CCNS, CRB

2009: UCR, CRB, CCNB, CDFA, USDA-APHIS-NCPN
Citrus Clonal Protection Program-CCPP

Purpose:
• To provide a safe mechanism of introduction of citrus varieties into California

• To maintain primary sources of disease tested & true to type citrus trees
Citrus Clonal Protection Program-CCPP

Funding:
Annual budget ~ $400,000

Citrus Research Board-CRB: ~ 80%
California citrus growers marketing order

California Citrus Nursery Board-CCNB: ~ 15%
Citrus nurserymen marketing order via the CDFA registration program

University of California: ~ 5%
50% - Director’s salary
Infrastructure - Facilities
Citrus Clonal Protection Program-CCPP

Functions:

- Introduction
- Disease diagnosis
- Pathogen elimination
- Maintenance
- Distribution

Personnel:

- 1-Director
- Extension Specialist
- 3-SRAs
- 1-Lab Assistant
- 2-Technicians

Facilities:

- Rubidoux Quarantine Center - Riverside
- Diagnostic & Research Laboratory-UC Riverside
- Lindcove Foundation Blocks-San Joaquin Valley
CCPP - Geography

Lindcove
Foundation Blocks-Retesting-Trueness to type-Outreach

Riverside
Introduction-Quarantine-Testing-Pathogen Elimination-Outreach
Rubidoux Quarantine Facility

1. Introduction:
2. Disease Bio-diagnosis:
3. Pathogen Elimination:
   A. THERMALTHERAPY
   B. SHOOT-TIP MICROGRAFTING
Asian citrus psyllid approaches Riverside

Asian citrus psyllid, entered CA August 2008
Today: 170 findings in 16 locations
Quarantine: 40 miles south and 60 miles east of Riverside
Rubidoux Quarantine Facility
Introduction, Disease Bio-Diagnosis & Pathogen elimination

NCPN:
• No upgrades for the last 20-25 years
• UC Riverside committed $100,000 for 2009
• Outreach, educate homeowners around Rubidoux
Laboratory Disease Diagnosis

HYBRIDIZATION

PCR

sPAGE

IMMUNOLOGICAL

ELISA

MOLECULAR

CULTURE & MICROSCOPIC OBSERVATION

Spiroplasma citri
Laboratory Disease Diagnosis

NCPN:
Research for the development of new and incorporation of existing technologies.

Example:
• Several diseases with unknown causal agent - No laboratory diagnostics

• Micro-, macro- diagnostic arrays and/or automated extraction nucleic acid technologies for high through put diagnostic protocols
Maintenance & Distribution
U.C. Lindcove Research & Extension Center

PROTECTED FOUNDATION BLOCK

2001-2006: ~150,000 Buds

FOUNDATION & EVALUATION BLOCK

~300 COMMERCIALY IMPORTANT VARIETIES
DISEASE RETESTING & EVALUATION
Endemic Diseases Threats

- *Citrus tristeza closterovirus* (CTV) is threatening the CCPP Foundation Blocks which is serving the citrus industry for more than 50 years.

- 2006: The first CTV positive trees in Foundation Blocks in more than 10 years.

- Transit to 100% distribution from Protected Foundation Blocks

- Citrus industry committed $300,000 for expansion of the existing greenhouse facilities

NCPN:

- Development of an operational 1 mile CTV zone around Foundation Blocks

- Support personnel for the care and management of the Foundation Blocks
CCPP also provides - NCPN Support

- Custom testing and importation of proprietary varieties
- Custom index for other citrus programs in U.S.A.
- Testing for the CDFA citrus budwood sources registration program
- Extension-outreach (online, fruit displays, walkthroughs, workshops)
- National & international visitors, training, committees - e.g. NAPPO
The National Passport For Citrus Propagative Material
Disease Threats

**Huanglongbing**
- Sudden death
- US$ 40M/year

**Asian citrus psyllid**
- Variegated chlorosis
- US$ 150M/year

- Canker
- US$ 10M/year

- Leprosis
- US$ ?M/year

*Source: Brazil-Cambuhy Farm*
Thank You