US Farm Bill 2014 Section 10007(e)
National Clean Plant Network (NCPN)

NCPN Program Update
Spring 2017

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USDA/APHIS/PPQ
Science and Technology
National Clean Plant Network (NCPN)
The National Clean Plant Network (NCPN)

NCPN is a ‘Network’ of clean plant centers located in U.S. gov’t agencies and universities with the mission of diagnosing plant pathogens in ‘mother’ (nuclear stock) plants and in applying therapy to ‘clean’ these plants in preparation for their ‘increase’ and use by industry.
**National Clean Plant Network (NCPN) – Background and Purpose**

### NCPN ‘Mission’

*The NCPN produces and distributes asexually propagated plant material free of targeted plant pathogens and pests to ensure the global competitiveness of specialty crop producers and protect the environment.*

### NCPN Core Activities

- Networking and Governance
- Plant Introduction
- Diagnostics
- Therapeutics
- Foundation Plantings

### NCPN Establishment

- **Law:** Farm Bill 2008/2014
- **Collaboration:** Consult with States, Industry, and Universities
- **Efficiencies:** Leverage Capacities with Existing Clean Plant Centers; Federal, State, and Universities
- **Funding – Important!**
  
  “A Base of Not Less Than $5,000,000 Each Year”
Safeguarding America’s Agricultural and Natural Resources
United States Department of Agriculture | Animal and Plant Health Inspection Service | Plant Protection and Quarantine

June 2017
NCPN – So How Does it All Fit Together?

• **NCPN – ‘National’**
  – National Networking, Coordination, Balance, and Visibility
  – Forum for all Relevant Critical Discussions
  – Organize Special Committees and Working Groups
  – Resourcing >>> Nat’l Funding Mechanism

• **NCPN – Tier 2**
  – Platform to Bring all Players to the Table
    • Research, Regulatory, Educators, and Industry
    • Charters, Membership, Governance, Collaboration
  – Identification, Prioritization, and Advocacy for Crop Needs

• **Clean Plant Centers**
  – Diagnostics, Therapeutics, and Foundations
  – Service Delivery to Stakeholders
  – Recipient of National Funds

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**Working Groups**
- Crosscutting Service
- Visibility

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NCPN Supported Clean Plant Initiatives - National

38 Collaborating Programs ‘TODAY’ located at 27 Centers in 19 States through 2017
Serving the Entire United States

Map showing the locations of collaborating programs in 19 states.
NCPN – at the ICVF

A number of ICVF attendees this year participating in Thessaloniki are also associated with NCPN and NCPN supported laboratories serving as clean plant center Directors, Researchers, Program Coordinators and in other capacities.
NCPN - How the Program Supports Stakeholders

- **Access** to plants otherwise prohibited entry into USA
- **Reduces** industry business risk and regulatory safety risk
- **Increased** likelihood of having ‘clean’ plants
- **Alternative** to high-value germplasm destruction
- **Supports** industry trade
- **Non-regulatory** solution to plant pathogen mitigation
- **New beginnings** --- Revitalize, renew, replant
- **Forum** to bring stakeholders together – broad discussions
- **Collaborative** cadre of cooperating scientists and stakeholders
- **Linkages** to ‘allied’ programs (e.g. PEQ, nursery certification)
NCPN
Cooperative Agreements Program
NCPN - Cooperative Agreements Program 2008-2017

The ‘Engine’ for Collaboration

• Request for Applications (RFA)
  – Issued Annually
  – *Late Summer/Early Autumn – Open for 12 weeks*
  – Competitive Process

• Eligible Applicants:
  – Land-Grant Universities
  – Non Land-Grant Colleges of Agriculture
  – State Agricultural Experiment Stations
  – State or Local Governments
  – Federal Agencies

• Select Program Priorities:
  – Existing Facilities
  – Highly Restricted Crops
  – Formative Program ‘Governing Bodies’
  – Service Activities – Industry Focused
  – Program Self-Sufficiency

• Funding Availability
  – Approximately $5 million annually

• Proposal Reviews
  – ‘Ad Hoc’ Committees – Pre-Proposals
  – Governing Board – Final Proposals

• What’s Supported?
  – Governance
  – Critical Staffing Needs
  – Equipment/Supplies
  – Infrastructure Improvements
  – Service Work
    • Diagnostics
    • Therapeutics
    • Foundations

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June 2017
<table>
<thead>
<tr>
<th>Specialty Crop</th>
<th>Farm Bill 2008 NCPN 2008-2012</th>
<th>NCPN 2013 Not Funded</th>
<th>Farm Bill 2014 NCPN 2014-2017</th>
<th>Total Program Funding To Date</th>
<th>Future Anticipated Yearly Ceiling Per Crop Base ~ $4.5-$4.7m</th>
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</thead>
<tbody>
<tr>
<td>Fruit Tree</td>
<td>$ 5,073,462</td>
<td>$ 4,568,850</td>
<td>$ 9,642,312</td>
<td>20%-25% of available base</td>
<td></td>
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<tr>
<td>Grapes</td>
<td>$ 7,980,699</td>
<td>$ 5,106,167</td>
<td>$ 13,086,866</td>
<td>20% -25% of available base</td>
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<tr>
<td>Hops</td>
<td>$ 470,800</td>
<td>$ 710,791</td>
<td>$ 1,181,591</td>
<td>3%-5% of available base</td>
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<tr>
<td>Citrus</td>
<td>$ 3,858,224</td>
<td>$ 4,622,292</td>
<td>$ 8,480,516</td>
<td>20%-25% of available base</td>
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<tr>
<td>Berries</td>
<td>$ 1,959,507</td>
<td>$ 1,994,910</td>
<td>$ 3,954,417</td>
<td>10%-15% of available base</td>
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<tr>
<td>Sweet Potato</td>
<td>N/A</td>
<td>$1,196,125</td>
<td>$1,196,125</td>
<td>8%-10% of available base</td>
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<tr>
<td>Roses</td>
<td>N/A</td>
<td>$ 690,397</td>
<td>$ 690,397</td>
<td>5%-7% of available base</td>
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<tr>
<td>Other</td>
<td>$ 263,179</td>
<td>$ 96,033</td>
<td>$359,212</td>
<td>TBD</td>
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<tr>
<td></td>
<td>$19,605,871</td>
<td>$ 18,985,565</td>
<td>$38,591,436</td>
<td>96.5% funding to cooperators</td>
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NCPN
Education/Outreach Initiative
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NCPN
Strategic Planning
NCPN - Strategic Planning 2017 – Some Early Thoughts

- **Core Planning Team** > Established – 10 Members plus support
- **Strategies** > How might we advance; add value?
- **Networking** > Expanding the ‘Networks’ connections
- **Crops** > Is there a need and room for more?
- **Program Quality** > The ‘Gold’ Standard – How Achieved?
- **Resources** > “… a base of not less than $5m.”
- **Sustainability** > People, resources, plans
- **International** > Colleagues abroad; learning/teaching
- **Post Planning** > Action Teams / Next Steps
NCPN — FY 2017 Critical and Emerging Issues

• Strategic Planning – Nat’l/Intn’l
  – Developing the Plan
  – Establishing Special Task Teams
  – Linkages Among the “Little N’s”
  – Foreign Clean Plant Collaboration

• Sustainability
  – Moderating Needs from a Source
  – Succession Planning
  – Resourcing – Role of Industry

• Hi Thruput Sequencing
  – What it means for NCPN
  – Regulatory Connections - Permitting

• Education/Outreach
  – Visibility and Service
  – Economics

• Information/Data
  – Needs and Efficiencies

• Nursery Programs
  – Linkages to NCPN
  – Service to Industry

• Center Enhancements
  – SOP’s
  – Program Reviews
  – QA/QC/Certification
NCPN Data/Information Management
NCPN Special Topics:

- Information Management
- Education/Outreach
- High-Throughput Sequencing
- Nursery Certification
- Economic Studies
- Permits
- Material Retention
- Public vs Proprietary Material
- Export
- Succession Management

June 2017
Movement of plant material

- Introduction (domestic)
- Breeders, Root Stock, Germplasm Repositories
- Diagnostics
- Therapeutics
- Foundation
- Export (foreign)
- Certification
- Production (nursery, growers, brokers)
- Retention (storage, preservation)
- Routine retesting
- Permits
- Importation, Quarantine (foreign)
- Movement of plant material
- Certification
- Safeguarding America’s Agricultural and Natural Resources
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- June 2017
NCPN
Next Generation Sequencing (NGS)*
Some Observations

* Also called:
  • High Throughput Sequencing
  • Massively Parallel
  • Deep Sequencing
NCPN — Next Generation Sequencing – Observations

**HTS - Benefits**
- Powerful Diagnostics Tool
- Sequencing > Millions of Fragments
- Increased ID Resolution
- Short Turn-Around Time
- Low Cost > Getting Lower Rapidly
- Can Detect the Previously Undetectable
- Illuminates Novel Sequences
- Can Detect Unknowns

**HTS – Some Discussion Points**
- Process to Approve/Validate Methods?
- International Policies Regarding NGS?
- Diagnostics ---- In-House vs Contracting Out > Pros/Cons?
- Bioinformatics > Centralized or Decentralized?
- Regulatory Decision-Making and Keeping Up With the Science?
- NGS Costs/Benefits?
- Getting Industry Support?
- Role of NGS in Certification and Quarantine Programs?
Becoming a Network Lessons Learned
NCPN — Lessons Learned in Becoming a Network

1. Gather **Stakeholders** – Establish a Program **Strategic Plan**
2. ID and Secure Program **Resources** and **Funding**
3. Clearly **Define** Program **Boundaries**
4. **Recognize** the Needs of **Industry** as your Primary Goal
5. Focus First on Becoming a **Network** with **Governance**
6. Be **Inclusive**; Researchers, Regulators, Educators, Industry
7. Focus also on the Constituent **Parts**; the **Centers/Programs**
8. Champion **Non-Regulatory Solutions**
9. Serve as a **Forum** for Wide-Ranging Discussions
10. Become a **Bridge** to Programs that Impact Clean Plant Initiatives
11. Handle **Basic** Needs Initially
12. Be Positive and **Inspire**
13. Reach Out to Allied Programs and Expand **Linkages**
14. Address **Advanced** Aspirations Later
15. Review and **Revise** the Program and the Strategic Plan

June 2017
NCPN
Program ‘Deliverables’
NCPN — Crops ‘Deliverables’

- **Fruit Trees** (Stone and Pome Fruits)
  - Maintain about 2,250 clean fruit tree accessions in foundations that have delivered more than 500,000 cuttings, scions, and plantlets as well as more than 1.7 million buds to nurseries and growers.

- **Grapes**
  - Maintain about 1,000 selections of clean grapevine accessions in foundations and distributed more than 700,000 clean grape-wood cuttings, buds, plants, or special seed to industry.

- **Hops**
  - Maintain about 75 clean hop selections in foundations that are used to accommodate about 30 percent of the world’s need for clean hops.

- **Berries** (Strawberries, Blueberries, Cane Fruit)
  - Diagnose and clean about 75 new berry accessions annually and maintain clean plant foundations that provide mother plants to industry that have produced nearly 30 million clean berry plants annually.

- **Citrus**
  - Maintain about 400 clean citrus tree accessions in foundations and deliver ‘starter material’ to industry that has resulted in more than 275 million clean citrus trees over the past 6 years.

- **Sweetpotato**
  - Add about 40 new sweetpotato accessions annually to existing foundations.

- **Roses**
  - Initiated advanced testing of about 600 rose selections currently maintained in foundations.
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