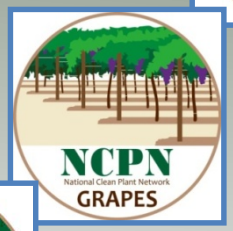
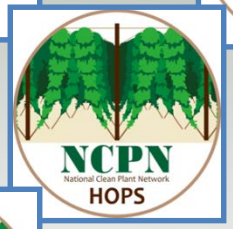
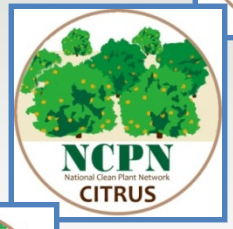
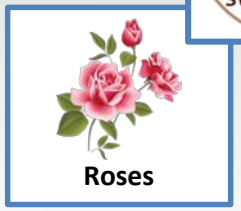
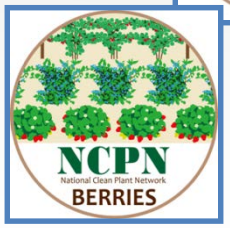
National Clean Plant Network (NCPN)











***Sweetpotato* Added**
Summer 2015

FARM BILL 2008 – Establishes NCPN

Food, Conservation, and Energy Act of 2008 Sec. 10202
National Clean Plant Network (NCPN) – Program Background

- ***Establishment*** - USDA shall establish a 'National Clean Plant Network' for pathogen diagnosis and elimination
- ***Products*** - Clean plant material made available to States for certification programs; and to private nurseries/producers
- ***Consultation*** - Consult w/State Departments of Agriculture, Industry, and Universities; governance
- ***Cooperation*** - Use existing Federal/State clean plant centers
- ***Funding*** - $5m/yr. x 4 years >2009-2012<($20m total) till expend

http://nationalcleanplantnetwork.org/

Farm Bill 2014 Section 10007 Reauthorizes and makes NCPN Permanent

- **House and Senate**
  - Approved the Farm Bill in late January and Early February 2014 respectively; sent to the President for signature
- **President**
  - Signed the Farm Bill into law on February 7, 2014
- ***NCPN Status*** – *Farm Bill 2014 Section 10007(e)*
  - **Language** – Same as in Farm Bill 2008 'NCPN' *except* …
  - **Includes** - NCPN in the Plant Protection Act (7 USC 7721, Sec. 420)
  - **Consolidates** – NCPN (Farm Bill Sec. 10202 *merged* with Farm Bill '08 Sec. 10201)
  - **Assures** - NCPN programmatic autonomy and self-determination of its own traditions
  - **Duration –** FY 2014–2018 "… and in every year thereafter" – makes NCPN permanent
  - **Surrenders** – Surrenders No-Year Funding *but* …
  - **Funding –** Congress provides for a base of not less than $5 million annually to NCPN

Start clean, stay clean
NCPN
National Clean Plant Network

http://nationalcleanplantnetwork.org/

Key NCPN Principle

NCPN establishes, administers, and manages
a **network** of collaborating
clean plant centers and programs specializing in
plant pathogen identification and therapy.

To do this, NCPN identifies and supports
a small but appropriate number of
stakeholder focused, nationally oriented
clean plant centers
that serve as centralized, cost effective hubs
to diagnose and 'clean' plant material and
provide foundational services
to industry and States.

Start clean, stay clean
NCPN
National Clean Plant Network

http://nationalcleanplantnetwork.org/

NCPN Activities – Primary **'Core'** Activities

NCPN Supports the <u>Primary 'Service' Activities</u> for Clean Plant Centers:

- **Importation or Introduction**
  - Quarantine --- Receiving Introductions **– does not apply to sweetpotato**
  - Establishing Material
- **Diagnostics**
  - Testing the Pathogen Status of Material submitted for Possible Clean-Up
- **Therapeutics**
  - Cleaning Material under Extant Protocols
- **Foundation Plantings**
  - Establishing Accessions
  - Maintaining Clean Material in Foundations
  - Releasing and Distributing Material to Nurseries and Growers

http://nationalcleanplantnetwork.org/

NCPN Activities – Secondary 'Support' Activities

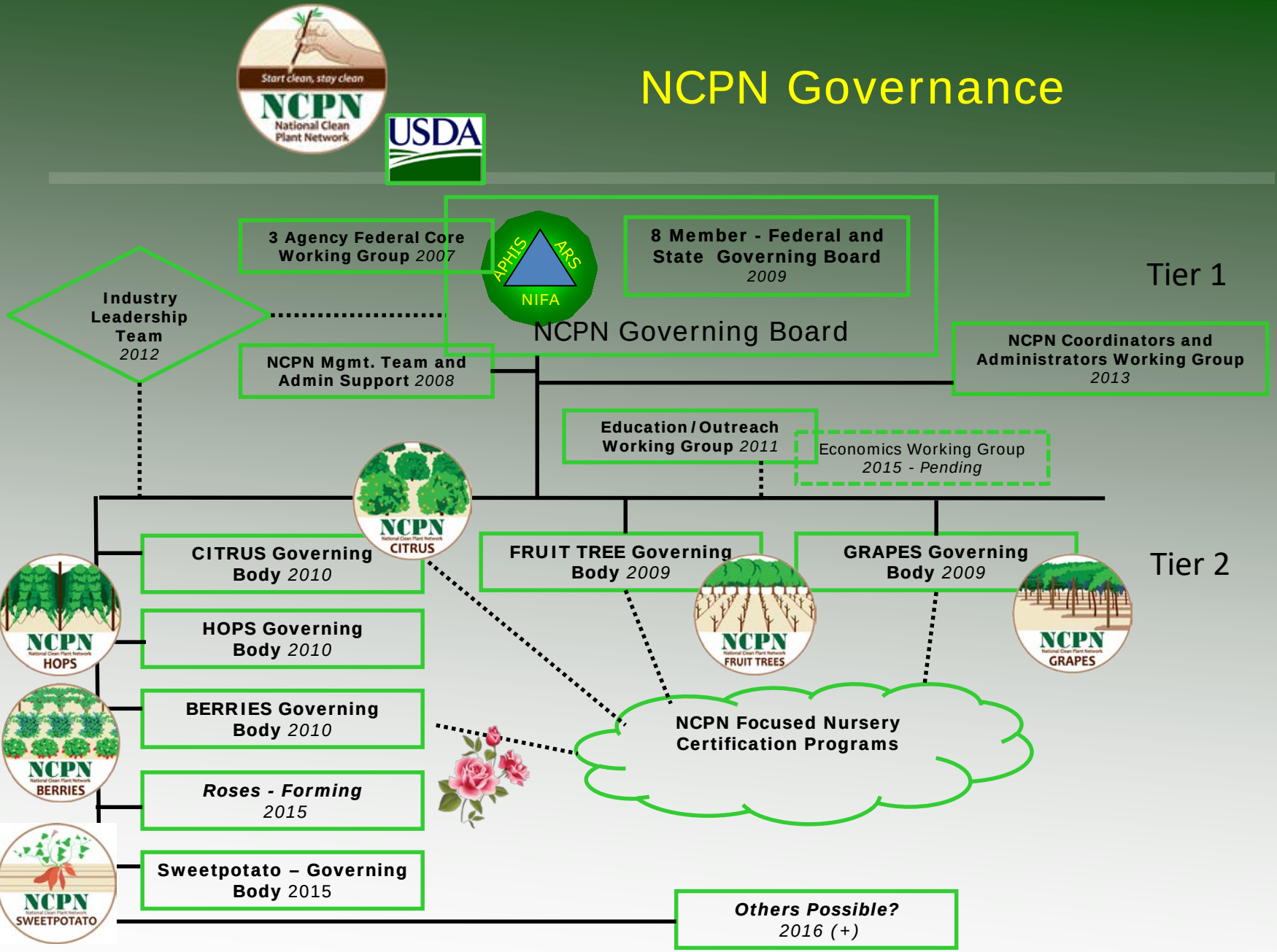
NCPN Supports <u>Secondary Needs</u> for Clean Plant Centers, including:

- **Governance**
  - Networking, Communications, Forums, and Planning
- **Methods Development**
  - New Technologies Usage
- **Education / Outreach**
  - Extension and Economics
- **Facilities Support**
  - Refurbishment, Equipment, Supplies, Quality Assurances
- **Regulatory Interests**
  - Discussions Forums
- **Does <u>not</u> support:**
  - Fundamental research
  - Certified seed production

Start clean, stay clean
NCPN
National Clean Plant Network

http://nationalcleanplantnetwork.org/

NCPN Governance



http://nationalcleanplantnetwork.org/

NCPN Cooperative Agreements Program 2008-2016

An 'Engine' for Collaboration

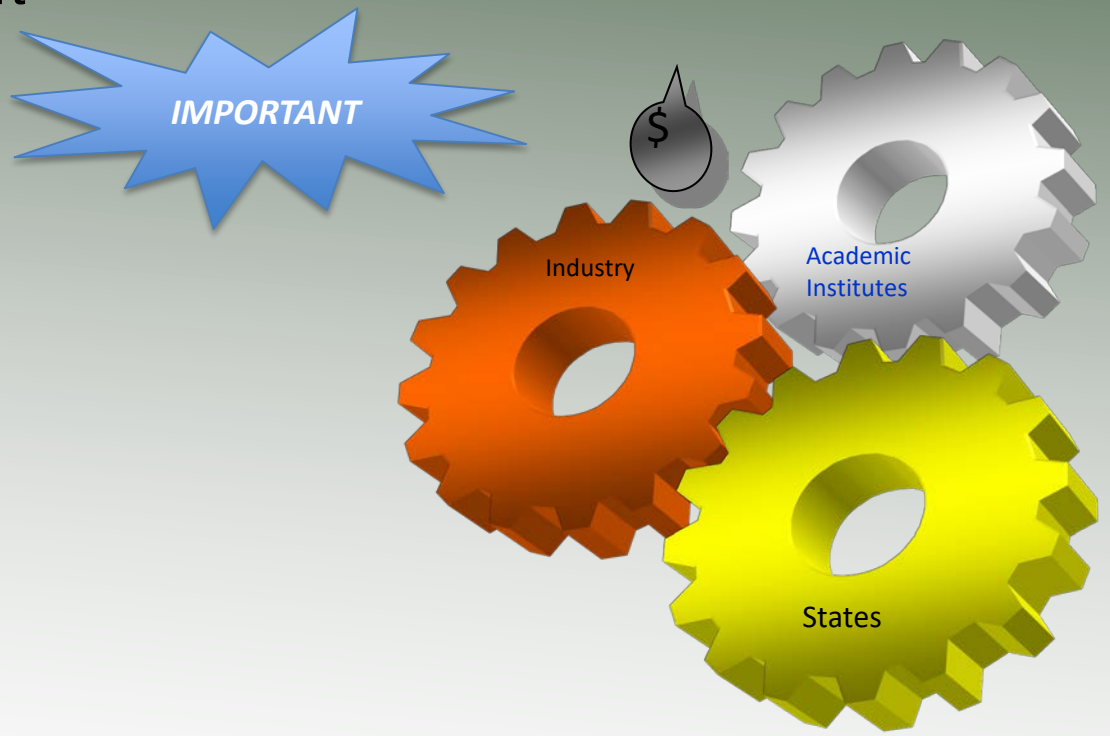
- Request for Applications (RFA)
  - Issued Annually
  - *Early Autumn – Open for 10 weeks*
  - Competitive Process
- Eligible Applicants:
  - Land-Grant Universities
  - Non Land-Grant Colleges of Agriculture
  - State Agricultural Experiment Stations
  - State or Local Governments
  - Federal Agencies
- 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
- *Discussion*

Start clean, stay clean
NCPN
National Clean Plant Network

http://nationalcleanplantnetwork.org/

NCPN Organizational Governance

- Tier 2 Decisional Process
- Charter Development
- Leadership
  - Chair, Vice-Chair
  - Executive Secretary
- Membership
  - Voting / Non-Voting
- Meetings
- Program Support



Governing Body

http://nationalcleanplantnetwork.org/

For more information:

Mr. Erich S. Rudyj, M.Sc.
Dr. David R. Prokrym, Ph.D.
Ms. Tammy Kolt, Nat'l Admin. Officer
National Clean Plant Network (NCPN)
USDA, APHIS, PPQ
Science and Technology
4700 River Road, Room 5C.03-41
Riverdale, Maryland 20737
Phone >>> (301) 851-2277

E-Mail >>> Erich.S.Rudyj@aphis.usda.gov
E-Mail >>> David.R.Prokrym@aphis.usda.gov
or
E-Mail >>> NCPN@aphis.usda.gov

http://nationalcleanplantnetwork.org/

NCPN- Sweetpotato:
Opportunity and Accomplishments

NCPN-SP meeting Jan 2017, San Diego, CA

Berry | Citrus | Fruit Tree | Grapes | Hops | Sweetpotato | Rose

- **NCPN Home**
- About the NCPN
- National Clean Plant Centers
- NCPN Newsletters
- NCPN Factsheets
- Education and Outreach
- Glossary
- Regulations
- Useful Links
- Events
- Contact Us
- National Clean Plant Network

Welcome to the National Clean Plant Network

The National Clean Plant Network (NCPN) was created to protect U.S. specialty crops such as grapes, nuts, fruit trees, citrus and berries from the spread of economically harmful plant pests and diseases. The NCPN will ensure the global competitiveness of U.S. specialty crop producers by creating high standards for our clean plant programs.

Information about NCPN from the USDA is found here:

USDA

SIGN UP FOR THE NCPN NEWSLETTER

* indicates required

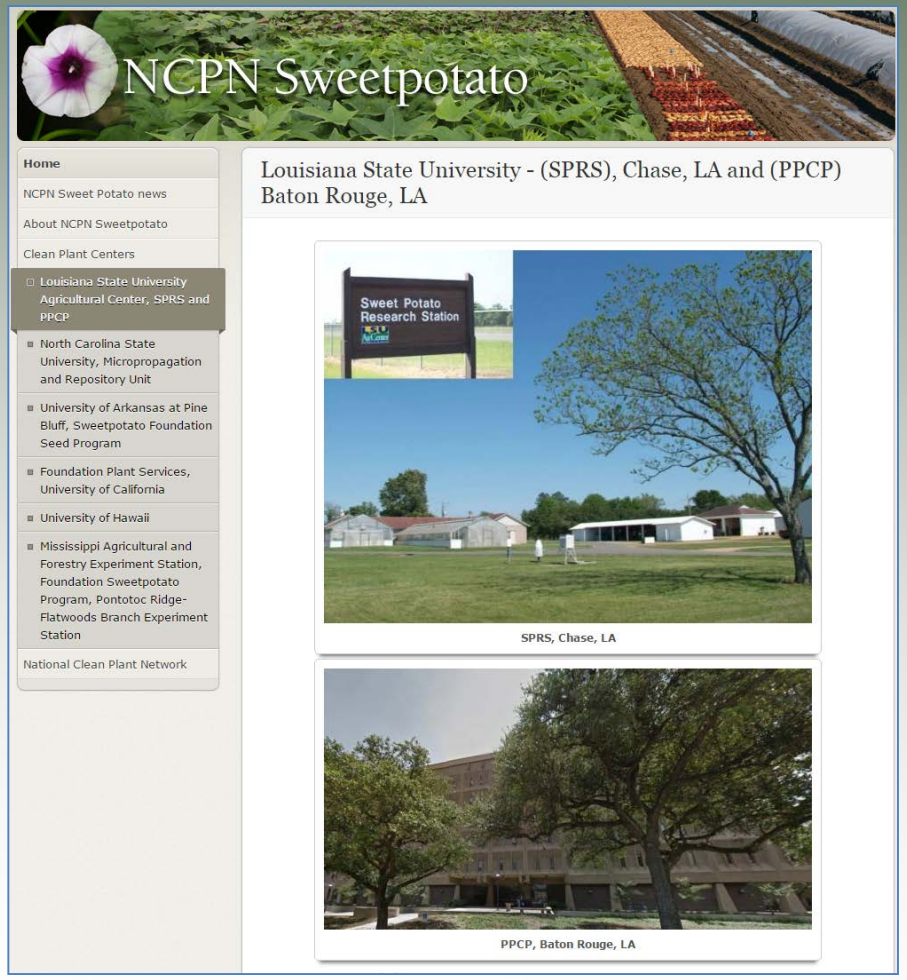
Email Address *

First Name

Last Name

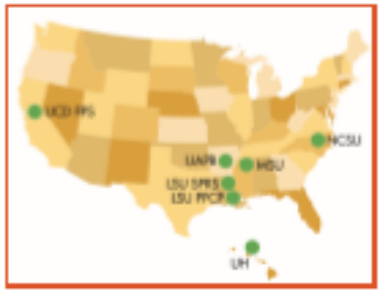
Subscribe

Virtual Tour of Louisiana Program



http://ucanr.edu/sites/ncpnsweetpotato/Clean_Plant_Centers/Louisiana_State_University/

NCPN SWEETPOTATO CLEAN PLANT CENTERS



North Carolina State University
Micropropagation and Repository Unit,
Raleigh, NC

- Virus testing and elimination
- Maintains nuclear stocks in tissue culture and greenhouse
- Propagates and disseminates clean plant materials of NC 8U, L 8UA C and U 8DA cultivars important to North Carolina growers
- Conducts research on virus identification and Detection
- Leader in the development of new cultivars and disease and insect management
- Conducts outreach programs

Foundation Plant Services,
University of California, Davis, CA

- Virus testing and elimination
- Maintains nuclear stocks of cultivars important to California growers
- Propagates and disseminates clean plant materials of cultivars important to California growers

University of Arkansas at Pine Bluff
Sweetpotato Foundation Seed Program,
Pine Bluff, AR

- Virus testing and elimination
- Propagates and disseminates clean plant materials important to Arkansas growers
- **Conducts outreach programs**

Louisiana State University Agricultural Center
Sweetpotato Foundation Seed Program, Chase and Baton Rouge, LA

- Virus testing and elimination
- Maintains nuclear stocks in tissue culture
- Propagates and disseminates clean plant materials of L8UAC cultivars important to Gulf South growers – Bayou Belle, Beauregard, Bellevue, Evangeline, and Orleans as well as select heirloom cultivars
- Conducts research on virus identification and detection
- Leader in the development of new cultivars and disease and insect management
- Conducts outreach programs

Mississippi Agricultural and Forestry Experiment Station, Foundation Sweetpotato program, Pontotoc Ridge-Flatwoods Branch Experiment Station, Pontotoc, MS

- Maintains foundation greenhouse and propagates clean plants
- Maintains virus-tested tissue culture stock of commercially significant varieties
- Propagates and disseminates clean slips to commercial "seed" producer
- Conducts outreach programs

University of Hawaii at Manoa, HI

- Virus testing and elimination

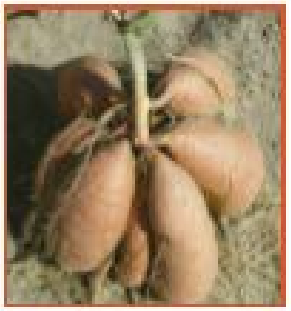
About the National Clean Plant Network (NCPN)

Established in 2008 and supported by the US Department of Agriculture, the NCPN is a national network of clean plant centers, scientists, educators, regulators and industry representatives who are concerned with the health of vegetatively propagated specialty crops.

nationalcleanplantnetwork.org

Start clean, stay clean.

NCPN
National Clean Plant Network
SWEETPOTATO



NCPN SWEETPOTATO

National Clean Plant Network

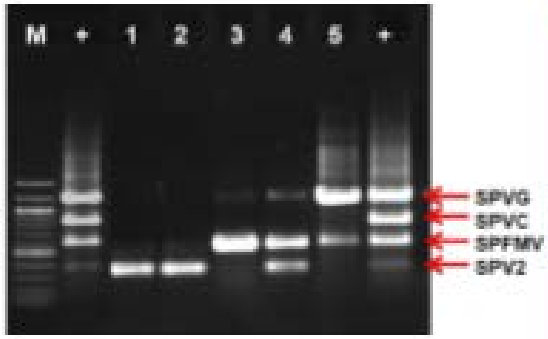
Sweetpotato is susceptible to many diseases caused by viruses, such as russet crack. These diseases can reduce yield and quality.

The National Clean Plant Network for Sweetpotato (NCPN Sweetpotato) is an association of clean plant centers, scientists, educators, state and federal regulators, certified seed growers, and commercial growers from the fresh market and processing industries concerned with the health of planting stock (seed roots and vine cuttings). It joined the NCPN specialty crops network in 2015. The network operates under the umbrella of the United States Department of Agriculture (USDA).

We eliminate viruses by meristem tip culture.

We rigorously test plants for viruses using testing standards that are the strictest possible.

Multiplex RT-PCR for Potyviruses Li et al., 2012



We propagate foundation stock in carefully controlled greenhouses and monitor for diseases.

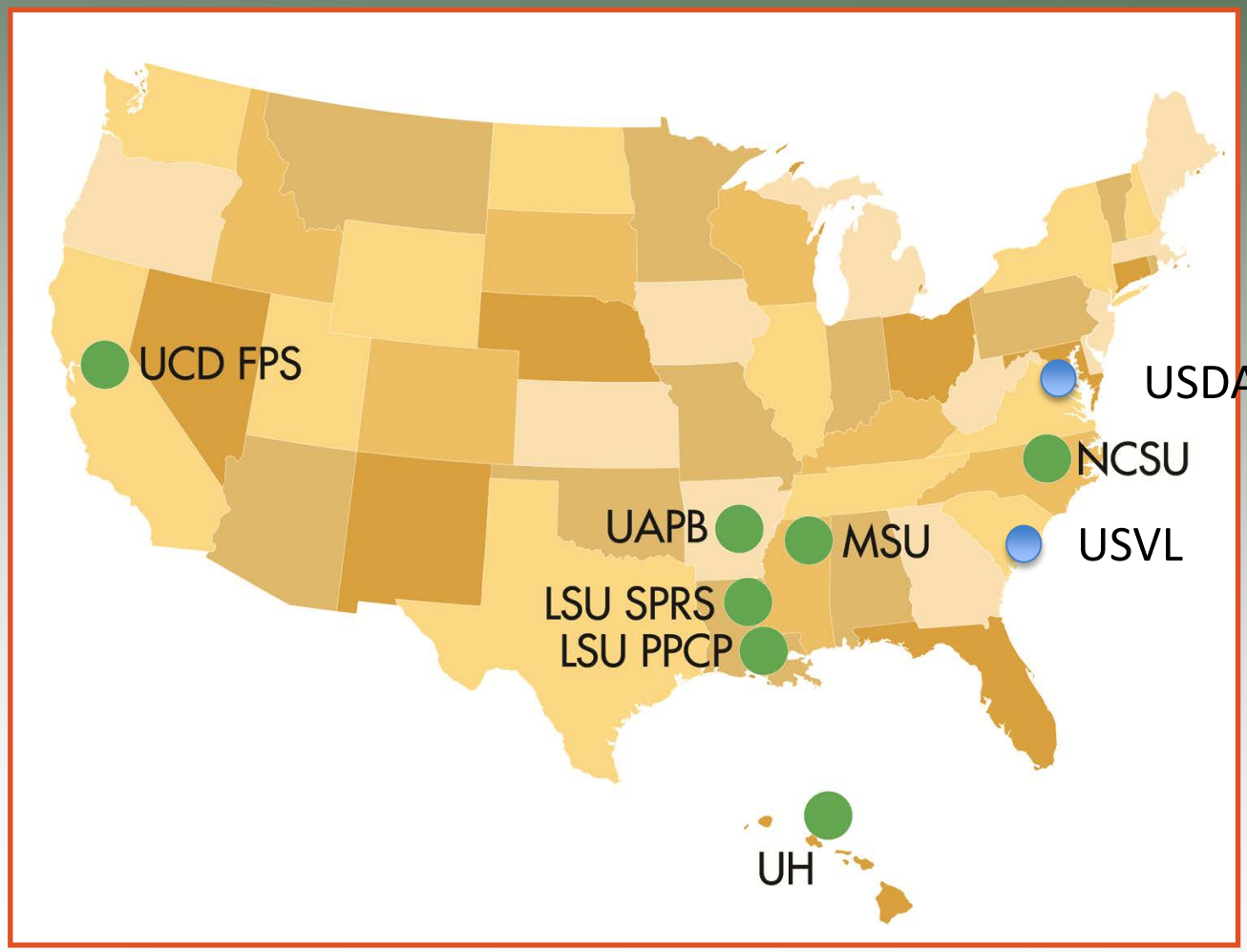
We provide clean, tested propagation material to certified seed growers, commercial growers and other clean plant centers throughout the United States and world.

NCPN Program Funding History – FY 2008-2015

Specialty Crop	Farm Bill 2008 NCPN 2008-2012 TOTAL	Farm Bill 2014 NCPN 2014-2015	Total Program Funding To Date	Future Anticipated Yearly Ceiling Per Crop Base ~ $4.2-$4.7m
Fruit Tree	$ 5,073,462	$ 2,321,105	**$ 7,394,567**	*20%-25%* of available base
Grapes	$ 7,980,699	$ 2,806,637	**$ 10,787,336**	*20% -25%* of available base
Hops	$ 470,800	$ 381,794	**$ 852,594**	*3%-5%* of available base
Citrus	$ 3,858,224	$ 2,430,128	**$ 6,288,352**	*20%-25%* of available base
Berries	$ 1,959,507	$ 982,933	**$ 2,942,440**	*10%-15%* of available base
Sweet Potato	N/A	$ 459,232	**$ 459,232**	*8%-10%* of available base
Roses	N/A	$ 278,150	**$ 278,150**	*5%-7%* of available base
Outreach	$ 263,179	$ 32,783	**$295,962**	TBD
	$19,605,871	$ 5,077,621	**$29,361,883** 97.9% Efficient	

http://nationalcleanplantnetwork.org/

NCPN-SP Centers



NCPN-SP: Centers

- Centers are very diverse
  - AR – target clientele is smallholder farmers (< 5 acres)
  - HI – targeting purple & heirloom cultivars, Pacific Island farmers
  - MS – great potential for growth in supply and demand
  - CA - established, focusing on improvements
  - NC – established, potential for growth in demand
  - LSU – established, potential for growth in supply (aeroponics)

NCPN-SP Centers

Center	Virus testing and elimination	Maintain stocks in tissue culture	Propagate and disseminate clean plants	Research on virus identification and detection	FY 2015 funding
Ark. Pine Bluff	+	+	+	-	$77,500
UC Davis FPS	+	+	+	-	$60,000*
U. Hawaii	+	-	-	-	$38,051
LSU AgCenter	+	+	+	+	$93,676**
Miss. State	-	+	+	-	$83,550
NCSU	+	+	+	+	$72,270
USDA, APHIS	+	-	+	-	--
USDA, ARS	-	-	-	+	--

* Includes funds for outreach support, ** includes funds for travel support for all NCPN-SP

Emphasis on Deliverables!

Actual Deliverables (Quantities/Numbers)		Qtr 1	Qtr2	Qtr 3	Qtr 4	Total for the Funding Period		Comments
Introductions/Selections								
Plant Introductions (New Accessions)		Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____		
Tissue Culture Selections Created		Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____		
Diagnostics								
Disease Testing (Number of tests)		ELISA Tests: ____ PCR Tests: ____ Herbacous Tests: ____ TOTALS: ____	ELISA Tests: ____ PCR Tests: ____ Herbacous Tests: ____ TOTALS: ____	ELISA Tests: ____ PCR Tests: ____ Herbacous Tests: ____ TOTALS: ____	ELISA Tests: ____ PCR Tests: ____ Herbacous Tests: ____ TOTALS: ____	ELISA Tests: ____ PCR Tests: ____ Herbacous Tests: ____ TOTALS: ____		
Indexing Activities (Numbers)		Buds: ____ Indicator Plants: ____ Selections: ____	Buds: ____ Indicator Plants: ____ Selections: ____	Buds: ____ Indicator Plants: ____ Selections: ____	Buds: ____ Indicator Plants: ____ Selections: ____	Buds: ____ Indicator Plants: ____ Selections: ____		
Field Diagnostics (Numbers)		Assays: ____	Assays: _____	Assays: _____	Assays: _____	Assays: _____		
Therapeutics								
Therapeutics Conducted		Heat Therapy # of Plants: ____ Other Therapies # of Plants: ____	Heat Therapy # of Plants: ____ Other Therapies # of Plants: ____	Heat Therapy # of Plants: ____ Other Therapies # of Plants: ____	Heat Therapy # of Plants: ____ Other Therapies # of Plants: ____	Heat Therapy # of Plants: ____ Other Therapies # of Plants: ____		
Foundations								
Material Planted in a Foundation Planting		Plants: ____ Accessions: ____	Plants: ____ Accessions: ____	Plants: ____ Accessions: ____	Plants: ____ Accessions: ____	Plants: ____ Accessions: ____		
Total Material Maintained in a Foundation Planting						Plants: Accessions:		
Public Release								
New Releases (Imported and Domestic Accessions)		Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____	Public: ____ Total: ____		
Clean Plant Units Distributed		Buds: ____ Cuttings: ____ Rootstocks: ____ Plants: ____	Buds: ____ Cuttings: ____ Rootstocks: ____ Plants: ____	Buds: ____ Cuttings: ____ Rootstocks: ____ Plants: ____	Buds: ____ Cuttings: ____ Rootstocks: ____ Plants: ____	Buds: ____ Cuttings: ____ Rootstocks: ____ Plants: ____		

And accountability to stakeholders NCPN – Sweetpotato Tier 2 GB

- University
  - Chris Clark (chair)
  - Scott Stoddard
- Admin/Education & Outreach
  - Sue Sim
  - Tara Smith
  - Diane Coats (Admin. Coordin.)
- Regulatory
  - Richard Miller (LDAF)
  - Ann Gallagher (NCDA)
  - Sean Runyon (CA)
- Industry
  - Jason Chandler (GA/FL)
  - Bill Foote (NC) (co-chair)
  - Matt Garber (LA)
  - Jim Jones (NC)
  - Sue Leggett (NC)
  - Steve Meyers (MS)
  - Dave Souza (CA)
- *Ex officio*
  - Jorge Abad
  - Bob Jarret
  - Kai-shu Ling
  - Erich Rudyj
  - Dave Prokrym

Priorities from T2GB Meeting

August, 2015

- **High**
  - Maintain existing clean plant material at including periodic retesting.
  - Perform pathogen-elimination therapy and testing on as many new and existing selections as possible.
  - Assist centers to obtain needed equipment.
- **Medium**
  - Develop protocols for virus elimination, propagation, and maintenance of nuclear stocks.
  - Develop best methods for virus detection and elimination.
    - Assure adequate supplies, staffing.
  - Develop outreach and extension programs.

NCPN-SP: Accomplishments

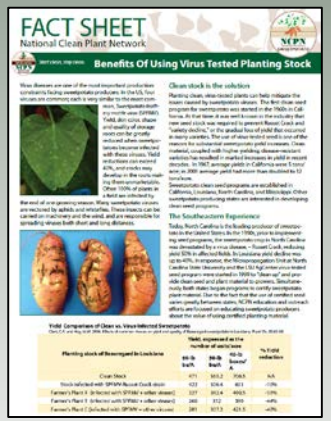
1) Developed virus testing protocols collaboratively
   - Compared current testing protocols
   - Recommended protocol and panel of viruses to test for
   - Paper – minimum virus testing protocols.
   - Resulted in procedural changes in each center
     - For ex. At FPS more virus types were included in panel; tests run on indicator plants
   - Better able to recommend procedures to new centers.

NCPN-SP: Accomplishments

2) Production of Clean Stock Increased

- Facilities improvements (supplemental lights,……
- Procedural improvement (aeroponics…
- Sharing results and clean plants with other centers

NCPN-SP: Accomplishments


FACT SHEET
National Clean Plant Network
Benefits Of Using Virus Tested Planting Stock

- 3) Outreach Efforts begun
  - ‘Benefits of Virus Tested Planting Stock’ Fact Sheet

NCPN-SP: Accomplishments

4) Unified Proposal 2018-19

– Consistent reporting across centers for Anticipated Accomplishments and Accomplishment Reports reflect the way different centers are addressing the varying needs of the stakeholders they serve.

NCPN-SP: Future plans

- **Hawaii** is proposing therapy, maintenance, virus testing, and providing clean plants to growers. Cultivars are unique to Hawaii
- **Mississippi** is broadening long-standing collaboration with Louisiana to re-test foundation planting materials.
- **Plans to increase collaboration** between established and newer centers to aid newer centers. Travel, technical training and outreach efforts will be discussed at meeting in January in NC
  - In the process of organizing a meeting for mid-March in Baton Rouge to focus on collaborative efforts especially enhancing capabilities of smaller centers
- Additional outreach materials (virtual tours, videos)

Pathogens and pests carried on ‘seed’ roots and slips

- Bacteria
  - Bacterial root and stem rot - *Erwinia chrysanthemi*
- Fungi
  - Black rot - *Ceratocystis fimbriata*
  - Foot rot - *Plenodomus destruens*
  - Fusarium wilt - *Fusarium oxysporum* f. sp. *batatas / nicotianae*
  - Scurf - *Monilochaetes infuscans*
  - Fusarium root and stem canker - *Fusarium solani*
- Nematodes
  - Root-knot nematode, *Meloidogyne* spp.
  - Reniform nematode, *Rotylenchulus reniformis*
- Insects
  - Sweetpotato weevil, *Cylas formicarius*

Questions?