# Clean Seed Systems for Sweetpotato: What can SSA Learn from the USA?

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## NBF Objective 3:

| | |
|---|---|
| **CIP Program & professional development objective** | *Assess the influence of stakeholder networks on availability and accessibility of quality sweetpotato seed*<br>This is linked to CIP's Strategic Objective 1 (SO1): Resilient Nutritious Sweetpotato (https://cipotato.org/programs/resilient-nutritious-sweetpotato/) and Strategic Objective 5: Resilient Food Systems (https://cipotato.org/programs/resilient-food-systems/). |
| **NBF learning objective** | *Assess the role of the USA National Clean Plant Network for Sweetpotato (NCPN – SP) in ensuring industry needs are met sustainably, noting the pros and cons and drawing lessons for Tanzania* |

# Activities

a) *Interacted with key USA sweetpotato stakeholders by participating in the following meetings:*

i. National Sweetpotato Collaborators Group (NSCG) National Annual Conference held on January 19 – 21, 2018 in Wilmington, North Carolina.

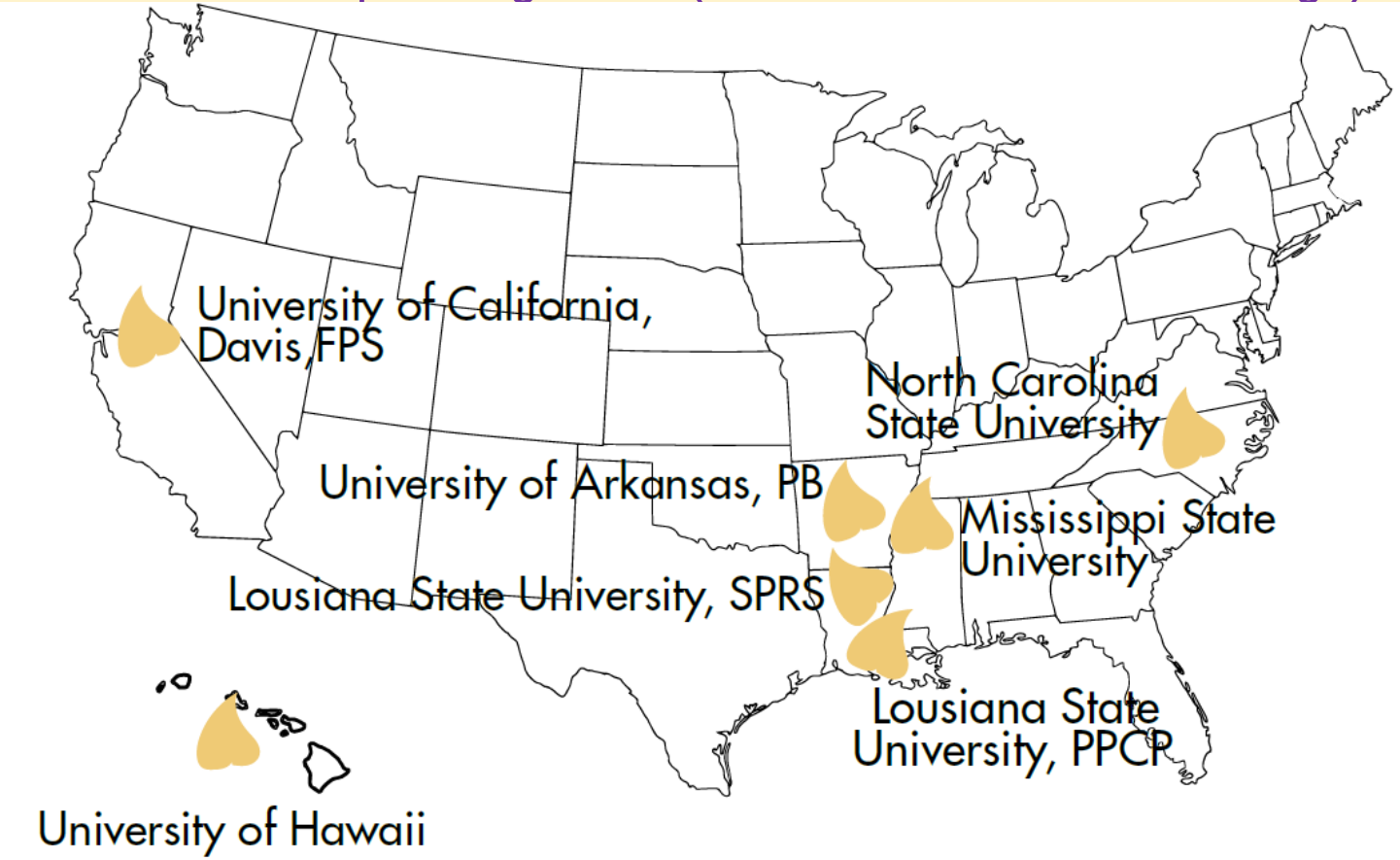
ii. National Clean Plant Network for Sweetpotato (NCPN – SP) Tier 2 Governing Body Meeting held on January 21, 2018 in Wilmington, North Carolina.

iii. 2018 Winter Sweetpotato Production Meeting organized by Mississippi State University's Clean Plant Center and held on February 23, 2018 in Pittsboro, Mississippi.

b) *Conducted a desktop review on the organization of the NCPN – SP to get an insight on its contribution to sweetpotato production, the role of the federal and state governments, influence of growers on research prioritization and economic sustainability of the model of the NCPN – SP*

# Findings

- NCPN – SP comprises of 6 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)



# Findings

**a) Role of industry in stimulating need-based research and extension agenda**

- Industry is the most represented in the NCPN-SP Tier 2 Committee's voting membership – has seven members representing seed and commercial sweetpotato production
- Growers/farmers have a big influence in prioritization of research and extension agenda
- Their needs affect funds allocation from both federal and state governments
- **The USDA requires that priorities for sweetpotato and other commodity research come from industry (stakeholders)**
- **This has made the NCPN – SP to position itself strategically in addressing important issues that will spur sweetpotato production in USA**

# Current NCPN – SP opportunity based on industry needs

| State | Acres Planted | # Plants required if 50% acreage was planted with clean plants | # Clean Tissue Culture Plants Produced | # Clean Greenhouse Plants Produced[1] | # Estimated clean plants available[2] |
|---|---|---|---|---|---|
| North Carolina | 87,000 | 565,500,000 | 20 | 10,000 | 339,300,000 |
| Mississippi[3] | 27,000 | 175,500,000 | 18 | 92,000 | 31,200,000 |
| California | 18,500 | 120,250,000 | 10 | 60,000 | 192,400,000 |
| Louisiana[4] | 10,000 | 65,000,000 | ~2,000 | 150,000 | 13,866,667 |
| Florida | 5,600 | 36,400,000 | 0 | 0 | 0 |
| Arkansas | 4,000 | 26,000,000 | ~1,200 | 39,000 | 0 |
| Alabama | 2,600 | 16,900,000 | 0 | 0 | 0 |
| New Jersey | 1,200 | 7,800,000 | 0 | 0 | 0 |
| Hawaii(*2011) | 1,100 | 7,150,000 | 0 | 0 | 0[5] |
| Texas | 1,000 | 6,500,000 | 0 | 0 | 0 |
| Total | 157,600 | 1,027,000,000 | | 341,000 | 384,366,667 |

- Research and extension priorities of the NCPN – SP are reviewed annually during the Tier 2 Committee face-to-face meetings
- Changing industry needs given major consideration during this exercise

**b) Role of federal and state governments in the success of NCPN – SP seed system model**

- **USDA** played a critical role in the formation of NCPN networks including NCPN – SP
- The NCPN was created by the **Congress** in the **2008 Farm Bill** with a purpose of providing pathogen-tested seed and diagnostics

- The **Congress continues to recognize the importance of NCPN**
- The **Farm Bill of 2014, Section 10007, reauthorizes the bill** the same as in 2008 after recognizing its importance

- The NCPN is **included in the Plant Protection Act**, assures **autonomy** and **self-determination** of its own traditions
- The initial duration was FY 2014 - FY 2018
- This was to be renewed "in every year thereafter" making the NCPN permanent
- They provided for a **base of not less than $5 million program annually**

- As a key donor to NCPN- SP, USDA is represented in the Tier 2 Governing Body
- Plays a key role in the development of unified proposals
- Participates in NCPN-SP meetings contributing to decision-making on diverse issues

- Regulator's huge influence: a threat or an opportunity?
- Strong participation of USDA in meetings (including chairing some sessions) can arrest independence of thought among other stakeholders

- The NCPN-SP Clean Plant Centers also receive funding from state governments and industry
- This provides a large base of resources necessary for production and dissemination of clean seed

## c) Sustainability of the NCPN-SP seed system model

- Incorporation of the network into the larger NCPN implies recognition of the importance of sweetpotato by the government

- With funding from USDA, state governments & industry the NCPN-SP clean plant centers can produce virus-tested seed as demanded by growers

- Close working relationship with growers ensures proper demand projection
- Production of foundation seed based on orders by growers therefore avoiding wastage

- Reliable estimation of demand enables proper budgeting
- The Centers have diverse strategies that enable them to meet their goals - e.g. upstream production focused on few growers, some of them certified e.g. in North Carolina

- Different Centers have invested differently along the foundation seed production chain based on goals and competencies

- E.g, whereas LSU AgCenter has invested heavily on a robust virus-testing program, MSU has focused its resources in greenhouse bulking of VT plants received from LSU, NCSU or GRIN

- MSU multiplies three varieties starting with only 6 TC plantlets per variety therefore not requiring a very sophisticated TC laboratory
- About 90,000 – 100,000 vine cuttings are produced from the 18 TC plant

- This is a stark contrast from Centers like NCSU which do massive micropropagation in tissue culture. NCSU produces about 10,000 TC plants of the variety Covington per year

- The differences in production shows that the Clean Plant Centers understand their unique strengths and goals and resources are allocated accordingly

**In a nutshell:**

- Efficient coordination and interaction between the different members of the NCPN – SP have contributed in making the USA a leader in clean SP seed systems globally
- Funding provided by the federal government (through USDA), state governments and industry ensures smooth running of activities

**However,**

- Most NCPN-SP Clean Plant Centers have not done a cost-benefit analysis to determine the cost of production per unit of seed and the break-even price
- Therefore, current price of seed a mere estimate?

**The big question is:**

- **Will the Centers sustain production of virus-tested foundation seed without funding from USDA and the state governments?**

**Lessons drawn:**

- Governments have an important role to play in establishment of sustainable seed systems for sweetpotato
- Efficient coordination among various seed system stakeholders is essential in ensuring availability and access to clean planting material for sweetpotato
- Production of clean planting material for sweetpotato does not require sophisticated TC facilities

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