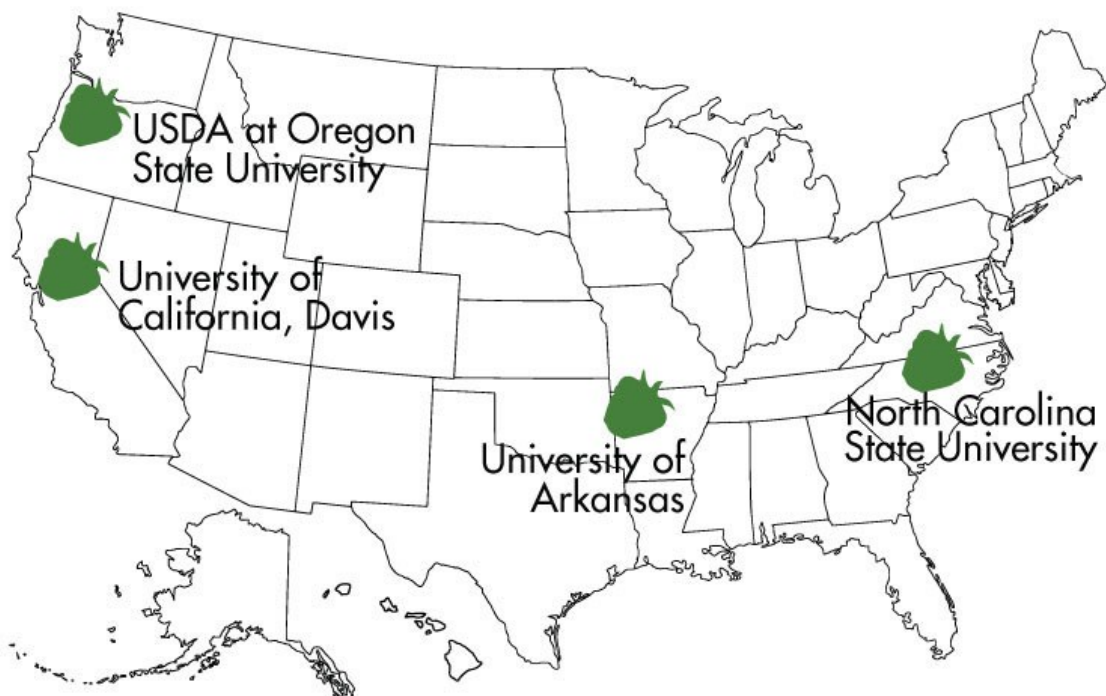




Taking a Closer Look at NCPN-Berries Clean Plant Centers

In this issue of the *NCPN Network News*, we continue our series examining the locations and activities of Clean Plant Centers serving specific crops within the Network. NCPN currently funds clean plant efforts for Fruit Trees (covered in the February 2023 issue), Grapes, Hops, Roses, Sweetpotatoes, Citrus, and Berries. For more information, visit the [NCPN-Berries website](#).



NCPN-Berries Corvallis Oregon Center

The Corvallis, Oregon, Center is fully managed by the USDA ARS, as part of the small fruit virology program. Most other NCPN Clean Plant Centers operate under major university programs. The Corvallis Center has the advantage of working directly with the USDA Virology Laboratory. And like all Centers, Corvallis aligns with the NCPN mission and activities to identify and eliminate pathogens that are economically detrimental to U.S. agriculture.

This Center supports the USDA public breeding programs for caneberry and blueberry, as well as the strawberry and *Rubus* breeding programs at Washington State University. Activities include testing, cleaning, and maintaining pathogen-tested advanced selections and cultivars that are ready for distribution to stakeholders. Additionally, on a limited scale, the Center supports industry partners with Controlled Import Permits, virus testing, and virus therapy. The Center specializes in graft indexing, an important part of the virus certification process for germplasm imports, exports, and plant movement between states.

North Carolina Clean Plant Center for Berries

The North Carolina Clean Plant Center for Berries is located at North Carolina State University in Raleigh, NC. This Center focuses on providing cleanup, virus testing and indexing services to stakeholders in the Southeast and industry at large. The Center uses meristem tip culture, heat treatment and virus testing to clean advanced selections and is currently serving breeders in North Carolina (*Rubus*, *Fragaria* and *Vaccinium*), Arkansas (*Rubus*) and Florida (*Rubus* and *Vaccinium*). Strawberry nuclear stock tissue culture plants are sold every year to Canada where massive nursery propagation occurs to supply North Carolina and Virginia farms. *Rubus* and *Vaccinium* tissue culture plants are also sold to multiple stakeholders.

Virus testing and graft-indexing services are currently being provided to industry and stakeholders who are importing material using the Center's Controlled Imported Permit (CIP). The Center has also established a partnership with the NC State Plant and Disease and Insect Clinic (PDIC) for berry/grape diagnostics to serve NC growers. Extension agents are working together with growers and PDIC to submit samples to be tested for viruses.



Rubus and Vaccinium Screenhouse at NC State

G1 material is being held here. *Rubus* and *Vaccinium* material has been generated from clean tissue culture plants. This material is pest free and retesting for viruses is done every 3 years following NCPN standards.

Two Farm Bill Proposals Funded to Address Virus Issues in Small Fruits

The USDA ARS Virology Lab has been funded to work on small fruit viruses. In collaboration with the University of Arkansas and Foundation Plant Services (FPS) at UC Davis, the team secured \$214,593 for year one of three (potential for \$643,779) to conduct nationwide strawberry virus surveys.

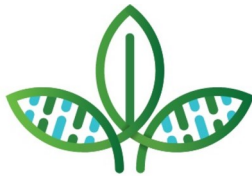
The project, titled "Strawberry nursery production in the U.S.: What are the high-risk viruses circulating in the system?" will better inform USDA APHIS, State Departments of Agriculture, and nurseries on the optimal use of resources when managing or auditing nurseries for targeted pathogens. This goal is to identify *high-risk* strawberry viruses, by production region, and establish evidence-based information on how to monitor for and develop Best Management Practices to exclude viruses and other targeted pathogens during plant production in nurseries. Specific objectives are to collect strawberry samples from nurseries in each strawberry-growing region in the U.S. The outcomes would be to develop a map of high-risk strawberry viruses by region and coordinate with regulatory entities on proposals for best management practices; provide training and technical assistance; and support virus mitigation protocols for nurseries.

The USDA ARS Virology Lab also secured funding for "Optimizing certification and quarantine protocols for *Fragaria* and *Rubus* nursery production and plant material movement." This proposal, a collaboration between FPS at UC Davis, Oregon Department of Agriculture, and the California Department of Food and Agriculture, provides \$207,915 for year one of three (potential for \$623,745). The project will compare virus-detection methods used for nursery certification and for movement of *Fragaria* and *Rubus* plant material. Data will be used to improve current State certification protocols and will be published as peer-reviewed manuscripts.

Tour of the Newly Renovated Clean Plant Center at the University of Arkansas

Attendees of the annual meeting of the Berries National Clean Plant Network Tier 2 board recently had the opportunity to tour the newly renovated Arkansas Clean Plant Center (<https://acpc.uada.edu/>) for Berries at the University of Arkansas in Fayetteville, Arkansas. The Center is part of the outlying farm facilities, a few miles from the main campus. With significant funding provided by the University of Arkansas, an existing building was renovated, fashioning five laboratories and a storage room. The Center was officially opened in November 2022. Under the leadership of Dr. Ioannis Tzanetakis and management of Dr. Dan Villamor, the goal of the Arkansas Clean Plant Center is to provide virus testing and clean-up of berry accessions. Crops covered are strawberry, blueberry, raspberry, blackberry, cranberry, elderberry, black and red currants, and gooseberry.

The first lab is the “dirty lab”, where plant samples are brought in and media preparation takes place. Samples are processed in the main lab, where extraction and ELISA are performed. Samples for PCR are then taken to the clean lab for further processing. There is a one-way system, where samples continue their path through the various labs without being in any room twice, reducing the risk of contamination. Potential contamination is especially critical in samples being prepared for high-throughput sequencing. In addition, there is a tissue culture and microscopy lab and a lab housing four growth chambers. The labs are well-equipped and sparkling clean. The group also viewed an existing greenhouse and an air-conditioned containment greenhouse under construction, currently a concrete pad. With the team doing a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis and taking leadership and operations management training, the Clean Plant Center at the University of Arkansas is slated for success and sustainability. In addition, the new logo and branding materials (t-shirts, pens, caps, etc.) provide increased visibility and recognition for the Center and NCPN.



THE ARKANSAS CLEAN PLANT CENTER

UC Davis Announces Five New Strawberry Cultivars

On April 18, UC Davis announced the release of five new strawberry cultivars. The new cultivars were bred for Fusarium wilt resistance, high yields, and improved fruit quality. Called UC Eclipse, UC Golden Gate, UC Keystone, UC Monarch, and UC Surfline, the new cultivars are available from Foundation Plant Services (FPS) for sale to California nurseries. Sales of new releases from the UC Davis Strawberry Breeding Program are limited to California nurseries for the first two years; in 2025, the new cultivars will be available outside of California.

Each strawberry plant supplied by FPS is a tissue culture meristem explant that is grown at the FPS tissue culture lab. Production of a meristem plant, from meristem excision to potting in soil, takes approximately one year. During the production process, plants are subjected to pathogen testing and DNA identification to ensure they remain clean and correctly identified. To accommodate the new cultivars, FPS reviewed the strawberries maintained in its program and is discontinuing seven. The sunsetting of the cultivars is taking place in two stages. Effectively immediately, Aromas, Oso Grande, and Diamante have been discontinued and are not available from FPS. Chandler, Camarosa, Gaviota, and Seascape can be ordered for distribution in 2024, after which they will no longer be maintained at FPS. The deadline to order plants for 2024 distribution is July 15, 2023.



The UC Davis Press release about these cultivars can be found here:

<https://www.ucdavis.edu/food/news/uc-davis-releases-5-strawberry-varieties-resistant-deadly-fungal-disease>.

Coordinators Corner

Network Strategic Planning Efforts

In 2021, the network released the National Clean Plant Network 2021-2025 Strategic Plan, with the three primary goals of:

Goal 1 - Network Operations

Optimize the production, maintenance, and distribution of clean plants.

Goal 2 - Advancing Special Initiatives

Optimize the adaptation and implementation of novel technologies and new ideas while increasing the awareness of the importance, availability, and use of clean plants.

Goal 3 – Governance and Networking

Optimize Network resources.

As part of implementation of the national strategic plan, several NCPN crop governing bodies have also been conducting strategic planning efforts for individual crop groups, with support from NCPN Coordinator, Jennifer Nicholson, and Sarah Trujillo, a strategic planner and facilitator from APHIS. These efforts have involved working groups representing center directors, research and extension, state regulatory, and industry representatives to bring together the various perspectives and needs for each crop. These groups have worked to assess the critical issues affecting clean plant programs through an analysis of Strengths, Weaknesses, Opportunities, and Threats (SWOT) to determine where each crop network currently stands and the desired future state. The SWOT analysis is then used to guide the development of strategic goals and objectives. The goal of these efforts is to help focus the actions and priorities of each crop network for the next 1-5 years.

The first group to complete a strategic plan is the NCPN-Grapes governing body, which identified Security, Redundancy, Capacity, Communication, and Sustainability as the primary goal areas. The Hops, Berries, Roses, and Fruit Trees governing bodies also have strategic planning efforts underway and expect to complete these this year. These plans will identify key activities to sustain and improve clean plant programs into the future.

Mission

Healthy Agriculture
through Clean Plants

Vision

Safeguarding and supporting specialty crops by providing a sustainable source of clean plant material through innovation, collaboration, translational science and outreach.

Purpose

To establish a network of Clean Plant Centers for diagnostic and pathogen elimination services to produce clean propagative plant material and to maintain blocks of pathogen-tested plant material in sites located throughout the United States.



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