Foundation Plant Services Program Update

MAHER AL RWAHNIH, DIRECTOR

NOVEMBER 19, 2024

CDFA IAB

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Today's Updates

- Annual Vineyard Testing
- Foundation Greenhouse Collection and Update
- Phase 2 Screenhouse Update
- Fruit Tree Tissue Culture
- Quality Management
- Accepted – Feature Article

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Annual Vineyard Testing

- Foundation grapevines are inspected and re-tested regularly to confirm they remain virus-free and are eligible in CDFA certification program.
- FPS testing exceeds CDFA requirement: in the fall we use leaf petiole samples to test **every vine** for GRBV and GLRaV-3, **eve**

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Annual Vineyard Testing of Orders

- FPS distributes dormant grapevine material
- Dormant material from every vine that material is distributed from is tested again, to ensure it is free of GRBV and GLRaV-3.

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2024 Classic Foundation Vineyard Testing Results

Year	Total Vines*	GRBV Positive Vines	GRBV Incidence	GLRaV-3 Positive Vines	GLRaV-3 Incidence
2018	4,075	0	0%	0	0%
2019	4,075	1	0.02%	0	0%
2020	4,270	0	0%	0	0%
2021	4,594	0	0%	0	0%
2022	4,660	0	0%	0	0%
2023	4,634	0	0%	0	0%
2024	4,881	0	0%	1	0.02%

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2024 Classic Foundation Vineyard Testing Results

For fifth consecutive year, no GRBV was detected.

Year	Total Vines*	GRBV Positive Vines	GRBV Incidence	GLRaV-3 Positive Vines	GLRaV-3 Incidence
2018	4,075	0	0%	0	0%
2019	4,075	1	0.02%	0	0%
2020	4,270	0	0%	0	0%
2021	4,594	0	0%	0	0%
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2024	4,881	0	0%	1	0.02%

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2024 Classic Foundation Vineyard Testing Results

For first time, GLRaV-3 was detected.

Year	Total Vines*	GRBV Positive Vines	GRBV Incidence	GLRaV-3 Positive Vines	GLRaV-3 Incidence
2018	4,075	0	0%	0	0%
2019	4,075	1	0.02%	0	0%
2020	4,270	0	0%	0	0%
2021	4,594	0	0%	0	0%
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GRBV and GLRaV-3

Grapevine red blotch virus (GRBV)

- Insect vector: three-cornered alfalfa hopper
- Symptoms:
  - Red or chlorotic blotches on leaves
  - Delayed fruit ripening
- Delayed fruit ripening leads to reduced fruit quality.

Grapevine leafroll-associated virus 3 (GLRaV-3)

- Insect vector: vine mealybug
- Infection can be transmitted in one hour of feeding (per Kent Daane)
- Symptoms:
  - Downward rolling and reddening or yellowing of leaves.
- Can cause significant yield loss

GLRaV-3 infected grapevine

mealybug

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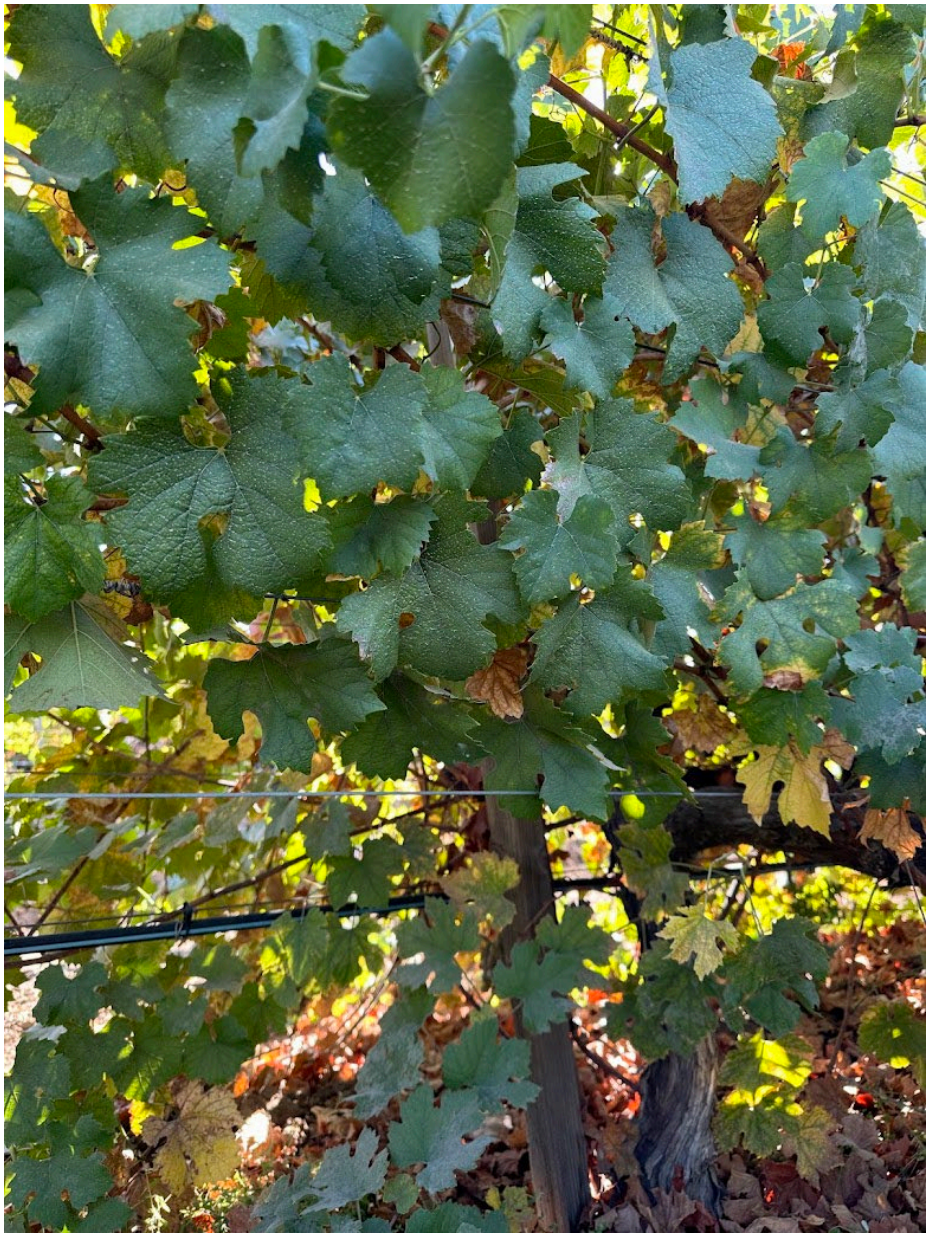
GLRaV-3 Positive Grapevine at Classic Foundation Vineyard

- Chardonnay [46]
- Asymptomatic at visual inspection.
- Low CT value (16) in RT-qPCR result indicate virus at high levels in vine.
- Repeated testing to confirm infection.
  - Repeated testing of neighboring vines to confirm their negative status.



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GLRaV-3 Positive Grapevine at Classic Foundation Vineyard

- Infected vine was immediately removed
- Arms on trellis were wrapped in plastic to quarantine.
- We will continue to test all surrounding vines
  - Multiple times over course of next year.

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GLRaV-3 Positive Grapevine at Classic Foundation Vineyard

- Budwood was collected for greenhouse propagation in January 2024.
  - GLRaV-3 **negative** when tested at collection
- Leftover is in cold storage.
  - Re-tested after the positive in the field vine, **confirmed negative**.

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GLRaV-3 Positive Grapevine at Classic Foundation Vineyard

- Vines propagated from the January 2024 collection were tested
  - **Negative** – no GLRaV-3!

This indicates a recent infection of the field vine!

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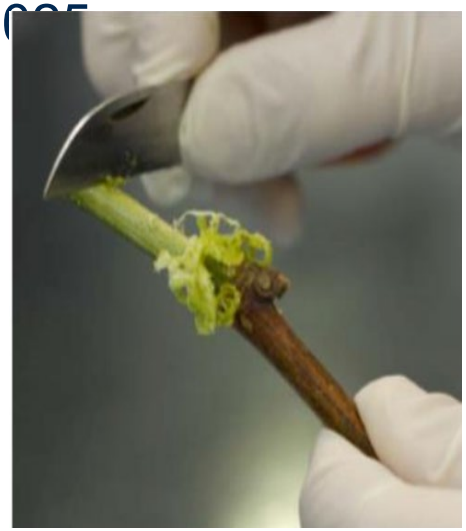
Remember: We will test again!

Orders and Foundation propagation

- **Test to order policy:** all orders are retested as dormant canes prior to distribution (2nd round of testing, after 1st testing of petioles)
- All foundation GH material is tested before propagation
- Neighbors of the GLRaV-3 positive will be tested throughout 2025



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Foundation Greenhouse Collection

- GLRaV-3 recent infection highlights the risk to the foundation vineyard.
- Increases the urgency for the greenhouse collection.

Classic Foundation Vineyard

Foundation Greenhouse

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FOUNDATION GREENHOUSE UPDATE

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Foundation Greenhouse & Propagation

- **1,195 clonal families** now in Foundation greenhouse.
  - Each one must be tested to confirm identity and re-register in certification program
- 178 clonal families in propagation for indoor collection

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Testing in Progress

- Vines have been sampled for DNA ID confirmation
- Diagnostic team collected and is processing material for virus testing
- Both ID and Diagnostic testing must be completed to register the collection as CDFA Foundation material.

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Rooting tray

4” Pot

Propagation Work Continues

1 Gallon Pot

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Phase 2 is needed ASAP

- More selections from outdoor vineyard must be added to indoor, protected collection.

- New selections arrive from international and domestic breeding programs every year, and we must have room for the collection's continued expansion.

Planning Process: Phase 2 Foundation Screenhouse

- UC Davis Design & Construction Management updated plans
  - FPS paid $257,813 for design work to initiate this project.
  - **Building plans are ready.**

- Estimate **$3.6 million** to build 14,400 sq ft screenhouse

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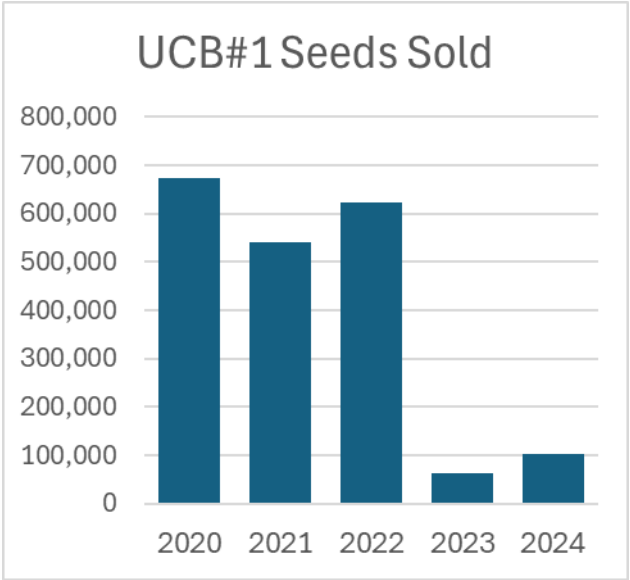
FPS Funding – Variable, and Varying

- Plant material sales plummeted
  - Attempting to build international markets for UCB#1 pistachio rootstock seed.
- User fees have decreased
  - Nurseries experiencing cash flow problems are not paying what is due.



FPS User Fees		
FY	Grape	Pistachio
2020	$2,120,124	$689,541
2021	$1,433,752	$640,678
2022	$1,009,745	$504,441
2023	$1,673,351	$644,999
2024	$875,947	$273,641

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FPS Funding: National Clean Plant Network

- FY25 largest award to date, and likely the cap of what NCPN can provide

YEAR	TOTAL PROPOSED	TOTAL AWARDED	% FUNDED
2019-2020	$ 1,376,671	$ 1,378,060	100%
2020-2021	$ 1,801,165	$ 1,566,937	87%
2021-2022	$ 1,643,769	$ 1,620,647	99%
2022-2023	$ 2,031,918	$ 1,820,646	90%
2023-2024	$ 2,168,695	$ 1,885,768	87%
2024-2025	$ 2,438,756	$ 2,277,000	93%

FPS Funding: National Clean Plant Network

- Requested $3,140,928 for FY26
- FPS Grape Advisory Committee sent letter of support for increased funding

FPS Funding: CDFA Improvement Advisory Board

Year	Total Proposed	Total Funded	% funded
2019-2020	$ 1,104,221	$ 1,104,221	100%
2020-2021	$ 1,159,378	$ 1,159,378	100%
2021-2022	$ 1,343,470	$ 1,343,470	100%
2022-2023	$ 1,771,350	$ 1,771,350	100%
2023-2024	$ 1,832,402	$ 1,564,342	85%
2024-2025	$ 1,993,657	$ 1,564,342	78%

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Additional Sources of Funding

- High priority project for the PD Board
  - With support from PD/GWSS, we can continue the propagation and testing of up to 500 more selections.
- Presented the project at November 4 meeting.
  - Will submit full proposal for FY26 funding.

From: / To: BUDGET CATEGORY		2025	2026	2027
PERSONNEL: Salary and fringe benefits.		$168,968	$169,148	$166,038
TRAVEL		$0	$0	$0
MATERIALS & SUPPLIES		$60,000	$59,000	$56,000
EQUIPMENT		$0	$0	$0
CONSULTANT		$0	$0	$0
SUBRECIPIENT or UC PARTNER		$0	$0	$0
TOTAL DIRECT COSTS		**$228,968**	**$228,148**	**$222,038**
Indirect (F&A) Costs	***0.00%***	**$0**	**$0**	**$0**
TOTAL ESTIMATED COSTS PER YEAR		**$228,968**	**$228,148**	**$222,038**

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Total Request: $679,154

PPA7721 Funding Suggestions

- Plant Protection Act Section 7721: Plant Pest and Disease Management and Disaster Prevention Program Funding
- Submitted 1-year, $494,000 proposal for greenhouse propagation funding
    - Unlikely to be funded due to PPA 7721 budget.
- Submitted research proposals for USDA PPA 7721 funding, total >$530,000
    - Mainly to support staff where operational shortages exist.
    - Only partial funding is expected, again due to budget constraints.

FPS Current Financial Challenges

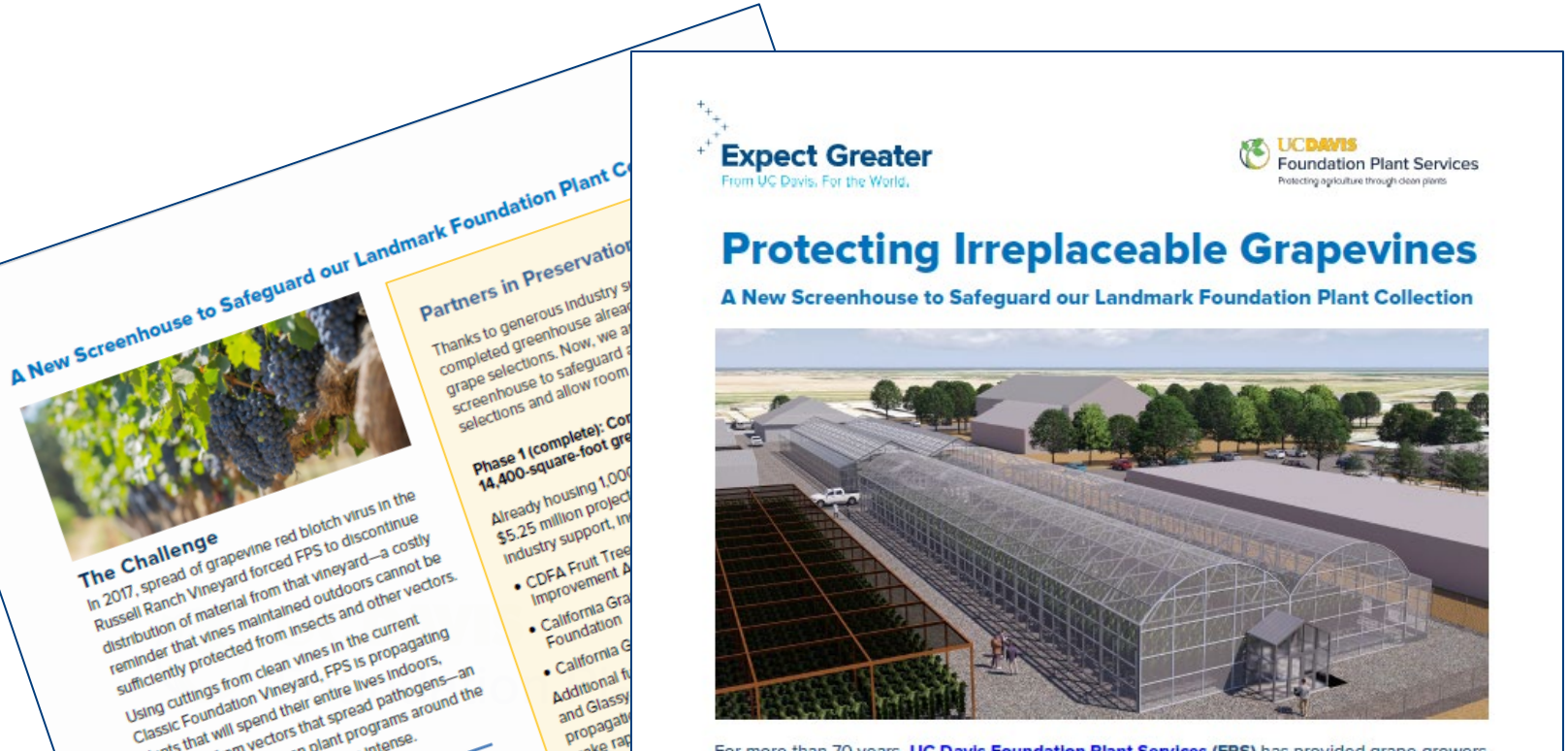
- Service awards from NCPN and IAB are of highest importance to continue operations and avoid staff layoffs.

FPS Funding for Phase 2 Screenhouse

- Met with FPS Grape Advisory Committee, who was supportive in brainstorming other federal and state grant options.
- Advisory committee connected with California Association of Winegrape Growers (CAWG), who organized meetings with state and federal lobbyists to discuss funding sources.
  - Too late for Farm Bill
  - No viable state options
  - CAWG concluded industry should urge UC Davis to pledge more direct support.
- CAES Dean's Office is very supportive of the need for this project.
  - Thank you Dean Helene Dillard for prioritizing the project!

FPS Fundraising for Phase 2 Screenhouse

- FPS supporter John Dyson has committed 10% of projected screenhouse cost ($360,000)
  - FPS will receive if matching donations can be secured.



Fruit Tree Tissue Culture Lab Progress

- Worked for one year with consultant John Driver.
- Great improvements to establishment and rooting of fruit trees in tissu

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Tissue Culture Lab – Cryotherapy Training

- Use of cryotherapy to tissues before meristem excision is an emerging tool in tissue culture labs.
- FPS sent two technicians to USDA-ARS/Colorado State University for cryotherapy training in September.
- This may improve our virus elimination success in fruit trees.

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Quality Management – Traceability, Data, and Personnel

- QR codes continue to improve our plant traceability.
  - Now added to tissue culture lab.

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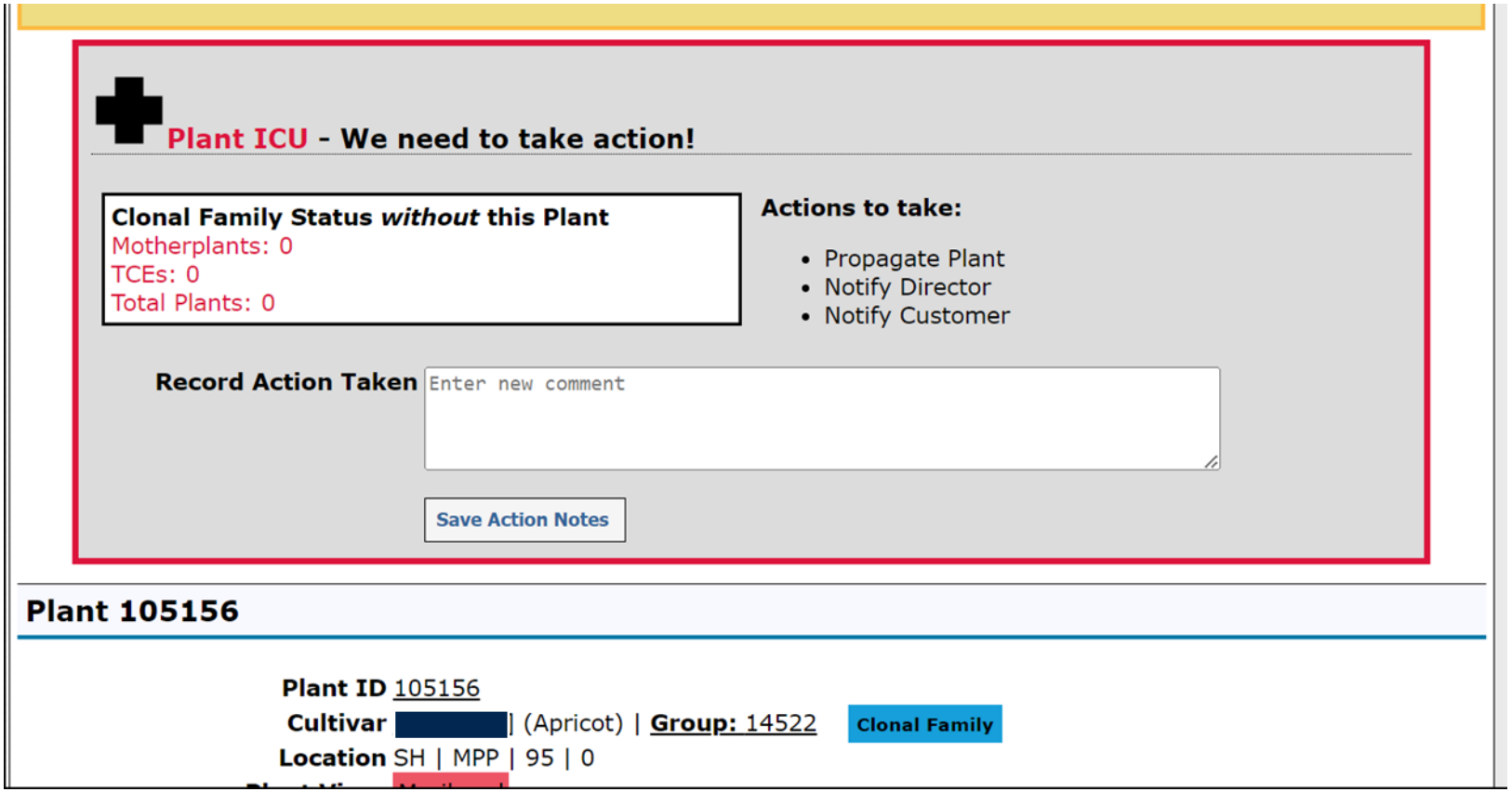
New Tools to Track and Manage Plant Material

- Intensive care unit for plants
  - Generates alerts when plants are marked ‘moribund’ to ensure we nurse back to health, or propagate from, to reduce risk of losing entire selections.



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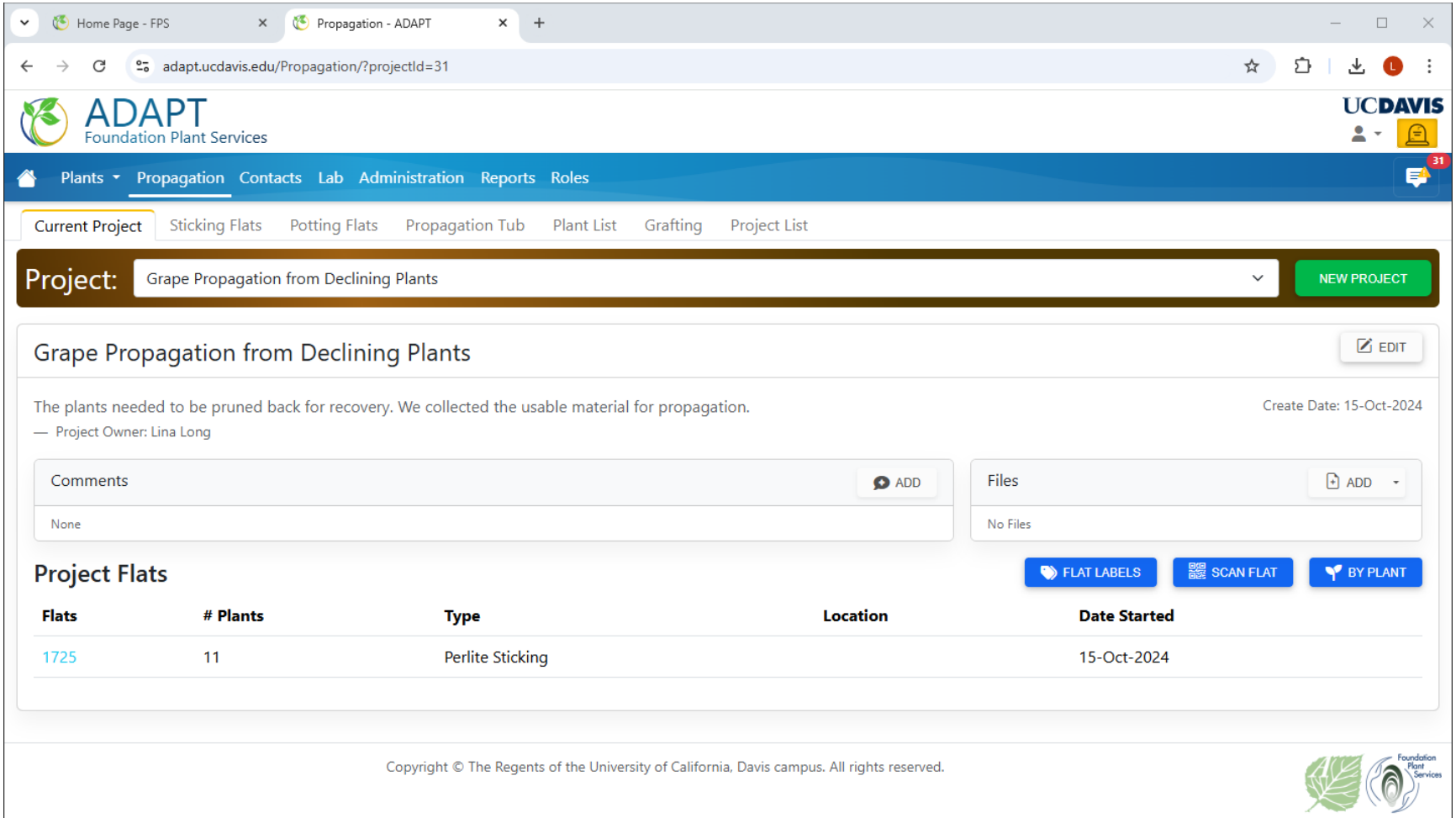
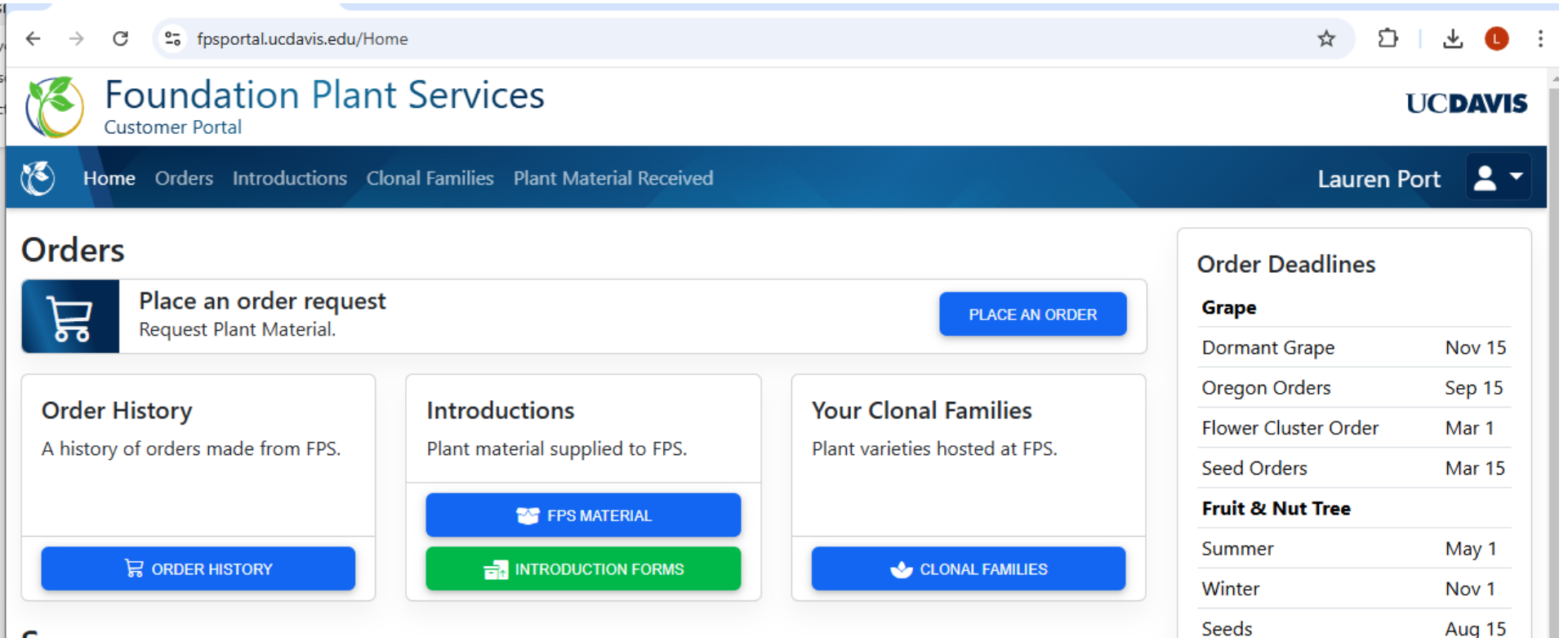
New Tools to Track and Manage Plant Material

- Propagation tools that were first developed for Greenhouse Ark project are being refined for use throughout FPS.
  - Used now for propagating introductions, rescue efforts, and general multiplication needs.



Improved Customer Tools

- Online ordering was launched in 2023
  - Now 90% of requests are submitted online.
- Online introduction forms replaced PDF forms in October.



Our Commitment to Quality Management

Ejay Dehal was hired in July as *Director of Production and Quality Assurance*.

- Previously worked at Sierra Gold Nurseries, Conception Nurseries, and Sunsweet Growers
- Leads both Nursery and Field production teams.

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Accepted: Feature Article submission to Plant Disease

Long-awaited article outlines our approach to validating and seeking approval of HTS for quarantine and certification testing.

A New Era in Federal Quarantine and State Certification Diagnostics at Clean Plant Centers in the USA

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THANK YOU

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