1. Increase in number of ‘clean’ selections/varieties available to U.S. growers
2. More uniform plant material across the nation

Standardized protocols for disease testing
3. More fluid movement of grape material throughout the United States and internationally
4. Long term funding source for grape clean plant activities
BOTTOM LINE

• More ‘clean’ grape plant material
• Readily available to growers from all sources
• Improved disease detection and grape disease therapy
• Harmonization of State and National Standards
• Coordinated outreach effort to share information
Foundation Plant Services
Importation and Importation Services
RUSSELL RANCH FOUNDATION
Deborah Golino
Foundation Plant Services Grape Meeting
November 12, 2009
Russell Ranch Foundation

WHY A NEW FOUNDATION VINEYARD?

- National Clean Plant Network standards
- Isolation from existing vineyard plantings
- Propagation of FPS Foundation collection from meristem tip tissue culture
Grape Shoot Tip
Grape Meristem Shoot Tip
UC Davis
Russell Ranch

1,589 total acres
Section 9, 10, 15, 16, 17
Township 8 North, Range 1 East
Yolo County, California
Russell Ranch Foundation
Project Schedule

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<tbody>
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<td>Tractor bids</td>
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<td>Purchase tractor</td>
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<td>Contract/dig well</td>
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<td>Final alfalfa cut</td>
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<td>Rip and laser level</td>
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<td>30-acre parcel</td>
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<td>Install main irrigation lines</td>
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<td>FPS install trellising</td>
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<td>FPS install drip irrigation</td>
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<td>Plant grapes on 10-acre parcel</td>
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</table>
John Deere 5093 Vineyard Tractor: $70,000
- 4-wheel drive and attached front loader and attachments (mower, disker, brush rake)
- Must be dedicated for use at Russell Ranch

New Well to Service RR Vineyard – Design and Installation: $169,000
- Must not adversely impact nearby existing well
- 400-600 gpm
High-throughput pathogen detection using the Low Density PCR Arrays

Diagnostics at FPS

- Sample grinding
- Automated RNA Extraction
- MagMAX™-96
- RT-reactions: Universal cDNA pool
- Raw data extraction
- Real-time TaqMan® qPCR set-up for ABI PRISM platform

Geno Grinder 2010

Instruments acquired via NCPN Funding
NCPN Activities at Cornell

• Importation

• Indexing

• Therapy

• Diagnostic detection

• Outreach
• **V. vinifera cv. Cabernet Cubin from Germany**

• Selections for research purposes (France, Germany, Australia)

• Selections from other NCPN Centers (FPS, Mountain Grove)
Biological indexing

Graft-indexing

Corky bark on LN33

Stem pitting on *V. rupestris*
V. vinifera cv. Petite Manseng / GLRaV-3

Before elimination therapy

After elimination therapy
Diagnostic macroarray for the simultaneous detection of grapevine viruses

• Design of probes for an array to detect all *Grapevine leafroll-associated viruses* (GLRaV)

• Initiate validation of the array
Indexing for *Agrobacterium vitis*

- **Goal:** Develop a method that is sensitive and can be implemented for a large number of samples with a relatively quick turnaround

- **Steps in development of method to utilize in NCPN**
  - PCR primer evaluation
  - Enrichment media evaluation
  - PCR and qPCR procedures
  - Vine sampling protocols
Grape NCPN: Northwest Grape Foundation Service

Co-Directors: Ken Eastwell & Markus Keller
Mission
Established 1961

The Northwest Grape Foundation Service provides grapevine propagation material free of targeted plant pathogens and pests that cause economic loss to ensure the global competitiveness of grape producers in the Pacific Northwest and participants in the National Clean Plant Network.
Strategy

- Produce clean (elite) planting stock
  - Selection & introduction
  - Tissue culture to eliminate pathogens

- Maintain clean planting stock
  - 3-year maintenance testing rotation
  - Verify cultivars (DNA typing at FPS)
  - Careful record keeping

- Distribute clean planting stock
  - Maintain distribution system that is fair, open and responsive to industry needs

- Provide education
  - Educate industry members and students on virus diseases and importance of clean planting stock

- Website for one-stop “shopping”
  - http://nwgfs.wsu.edu
Facilities: current status

• New clean grape **foundation block** established in 2004
  – Currently holds 150 selections (5 plants/selection)
  – Expanded from 2 acres to 4 acres in 2009

• Research **laboratory** complex built in 2006
  – Houses tissue-culture facilities and cold room

• **Greenhouse** (3,070 ft$^2$) built in 2007
  – Dedicated to introduction and propagation of new selections

• Woody **indexing block** established in 2009
  – Currently testing for leafroll and rupestris stem pitting
  – First 20 selections grafted and planted in block

• **Screenhouse** (4,600 ft$^2$) under construction for 2010
  – Will hold 1 mother plant of each selection
Program capacity: current status

- 280 grape selections in program (http://nwgfs.wsu.edu)
- 200 selections with provisional release in 2010
- 30-50 new selections added per year
The Laboratory is to meet the special needs of the Midwest grape and wine industries by sustaining a foundation block of clean grapevines. The Laboratory will generate, maintain, and deliver clean grape varieties that are suitable for the Midwest regions.
Norton
Vignoles
Chambourcin
Chandonel
Vidal Blanc

Traminette
Cayuga White
http://mtngrv.missouristate.edu/cleangrapevineprogram/

1. Check price
2. Fill out Grower Agreement
3. Fill out Order Form
Thank you