Outline

- Grape Workshop Objectives & Agenda
- ARS structure & process
- ARS grape resources and impact
Purpose of the Workshop

- Present an update on changes in industry needs and priorities
- Present an update on ARS accomplishments in Grape/Wine research
- Build collaborative relationships for integrated research projects that span disciplines, locations and sectors
- Develop a strategy for future research.
Expected Outcomes

- New or expanding collaborative research projects across disciplines, locations, and sectors
- Strengthened professional and interpersonal relationships with other meeting participants and
- Knowledge, understanding, and contacts that will lead to increased research productivity.
TUESDAY

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PRESENTATIONS

- Exciting ARS research efforts on crops other than grape
  - How can these research resources benefit the grape industry?
  - In Plenary and Break-out sessions

- Grape Industry Panel
Posters

- Update on ARS grape research efforts since the 2007 workshop
- Each project leader will get 5 minutes to hit the highlights
- Followed by coffee break or lunch to allow participants to visit posters relevant to their interests
Breakout Sessions

- The heart of the workshop
- 5 Topic Areas
- Industry identified needs
- Begin or continue to build teams – build strength on strength
Tuesday Evening

- Reception
  - Opportunity to continue informal discussions while sampling grapes and grape products
  - Many thanks to the Grape Industry for donating the wine for tonight’s reception
Wednesday

- More posters
- Report from the breakout sessions
- Funding Opportunities
- Lively Discussion
- Identify next steps
Overview

- How does ARS work?
- How can industry provide input into ARS research priorities?
- How can we tell if industry input has made a difference?
- Where do the resources go? What does the grape industry get for the $15 M/year in ARS research?
ARS Profile

- Intramural science research arm of USDA
- Farm-to-table research scope
- Information and technology transfer
- Administration and stakeholder priority setting process
- National Programs
- 1,200+ projects
- 2,500+ scientists and post docs
- 6,500+ other employees
- 100+ laboratories
- $1.1 billion annual budget
- Partnerships with universities and industry
- International collaborations
ARS Mission

ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination to:

- ensure high-quality, safe food, and other agricultural products
- assess the nutritional needs of Americans
- sustain a competitive agricultural economy
- enhance the natural resource base and the environment, and
- provide economic opportunities for rural citizens, communities, and society as a whole.
# ARS National Programs

<table>
<thead>
<tr>
<th>Animal Production</th>
<th>Natural Resources</th>
<th>Crop Production</th>
<th>Human Nutrition</th>
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<tr>
<td>Food Animal Production</td>
<td>Water Availability &amp; Watershed Management</td>
<td>Genetic Resources, Genomics and Genetic Improvement</td>
<td>Human Nutrition</td>
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<td>Animal Health</td>
<td>Soil Resource Management</td>
<td>Plant Diseases</td>
<td>Food Safety (Animal &amp; Plant Products)</td>
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<td>Arthropod Pests of Animals and Humans</td>
<td>Climate Change, Soils, &amp; Emissions</td>
<td>Crop Protection &amp; Quarantine</td>
<td>New Uses, Quality &amp; Marketability of Plant &amp; Animal Products</td>
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<tr>
<td>Aquaculture</td>
<td>Pasture, Forage and Range Land Systems</td>
<td>Crop Production</td>
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<td>Agricultural and Industrial Byproducts</td>
<td>Methyl Bromide Alternatives</td>
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<td>Agricultural Systems</td>
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<td>Competitiveness &amp; Sustainability</td>
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<td>Bioenergy</td>
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USDA-ARS Input

Executive and Legislative Branch

Customers, Partners & Stakeholders

ARS Program & Budgeting Priorities

Scientific Communities

Agency Scientists & Managers
USDA/REE Priorities

- Climate Change
- Food Safety
- Children’s Nutrition / Health
- International Food Security
- Bioenergy
Implementation

Administrator

OFFICE OF NATIONAL PROGRAMS
National planning and coordination to meet Congressional directives

AREA DIRECTOR
Managing funds, personnel, facilities

Research Leader
Lab Director

OFFICE OF TECHNOLOGY TRANSFER
Managing intellectual property

Scientist
Implementation

OFFICE OF NATIONAL PROGRAMS

Judy St. John – Assoc. Admin
Molly Kretsch – Dep. Admin
Steve Shafer – Dep. Admin
Sally Schneider – Acting Dep. Admin
Peter Bretting - NPL
Kevin Hackett - NPL
Deb Fravel - NPL
Ken Vick - NPL
John Finley - NPL
Dave Klurfield - NPL
Frank Flora - NPL
Charlie Walthall - NPL
Mike Shannon - NPL

AREA DIRECTORS

Andy Hammond – Pacific West
Dariusz Swietlik – North Atlantic
Will Blackburn – Northern Plains
Dan Upchurch – Southern Plains
Larry Chandler – Midwest
Ed King – Mid-South
Deborah Brennan – South Atlantic
Joe Spence - Beltsville
How does ARS work?

How can industry provide input into ARS research priorities?

How can we tell if industry input has made a difference?

Where do the resources go? What does the grape industry get for the $15 M/year in ARS research?
USDA-ARS Input

Executive and Legislative Branch

Customers, Partners & Stakeholders (workshops)

ARS Program & Budgeting Priorities

Scientific Communities

Agency Scientists & Managers
Spring Visit

**OFFICE OF NATIONAL PROGRAMS**
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Dave Klurfeld - NPL
Frank Flora - NPL
Charlie Walthall - NPL
Mike Shannon - NPL

**Other ARS**
Ed Knipling – Administrator
Caird Rexroad – Assoc. Admin
Michael Arnold – Budget Director

**USDA REE**
Catherine Wotecki, UnderSecretary
How does ARS work?

How can industry provide input into ARS research priorities?

How can we tell if industry input has made a difference?

Where do the resources go? What does the grape industry get for the $15 M/year in ARS research?
5-Year National Program Cycle

National Program Leaders (NPLs) & scientists develop objectives for next 5 years

Since 2005 Grape Workshop, all projects have gone through the cycle

Check the objectives shown in the research summaries and continue to provide input

Plant Disease developing new objectives now

Breeding and Genetics will develop new objectives in about a year
Additional Resources

- Headquarters funded Post-docs
  - Scientists propose
  - NPLs and Area Directors Rank

- End of Year funds
  - 2007 nearly $1 million allocated to fund a 2-year grape genotyping project
President’s Budget

FY11 Budget includes $2 million in research relevant to the grape industry

- Germplasm collections
- Breeding & genetics
- Climate Change
Gaps Identified at 2007 Workshop (selected examples)

- **Human Feeding Studies**
  - Dietary modulation of immune function & oxidative stress – Zunino

- **Develop Cultivars with Enhanced Health Benefits**
  - New raisin grape selections – Ramming & McHugh

- **Disease & Pest Resistance**
  - Rootknot nematode resistant rootstocks – Cousins
  - Powdery mildew resistance – Ramming

- **Alternatives to Chemical Control**
  - RNAi to increase leafhopper mortality – Hunter
  - Biocontrol of vine mealybug - Sforza
Gaps (con’t)

Predictive Forecast Models
Powdery mildew – inoculum detection, weather forecast, and fungicide timing - Mahaffee

Sap Flow Sensors to Understand Grape Water Demand
Heat pulse technique to track water use - McElrone

Influence of Production Practices on Berry Quality
Reduced N increased berry quality, but . . . - Schreiner, Lee

Irrigation Management, Salinity
Sustainable water management in wine, table, raisin, and juice grape production - research set to begin!! – Ayars, McElrone
How does ARS work?

How can industry provide input into ARS research priorities?

How can we tell if industry input has made a difference?

Where do the resources go? What does the grape industry get for the $15 M/year in ARS research?
ARS Grape Research Funding

Graph showing the increase in ARS Grape Research Funding from $2,000,000 in 1996 to $16,000,000 by 2010.
~ $15 Million

- Breeding & Genetics: 22%
- Diseases: 45%
- Insects & Weeds: 11%
- Production: 20%
- New Uses: 2%
Davis, CA: 15%
Parlier, CA: 34%
Geneva, NY: 14%
Corvallis, OR: 18%
Weslaco, TX: 4%
Poplarville, MS: 4%
Headquarters: 5%
Other: 6%
- Davis, CA: 15%
- Parlier, CA: 34%
- Geneva, NY: 14%
- Corvallis, OR: 18%
- Weslaco, TX: 4%
- Poplarville, MS: 4%
- Other: 6%
- Headquarters: 5%
What does industry get?

- A cadre of productive scientists
  - Base-funded and temporary funding
  - Focused on grape and other crops

- National Program Leaders
  - Eager to consider industry input to manage their NPs

- Senior Leadership
  - Responsive to customer needs within the framework of Administration priorities

- A coordinated national research program
  - Geneva, Parlier, Weslaco

- Flexibility to respond quickly to urgent needs
  - Pierces Disease, Spotted-winged Drosophila
Impact of ARS Research (examples)

- Spotted-winged Drosophila/ Australian market - Walse
  - Market is worth $54 million / year

- Ozone for remediation of pesticide residues on table grape to meet Max Residue Levels for the European Market – Walse, Smilanick
  - Market is worth $24 million/ year

- Oregon Powdery Mildew Spray Timing - Mahaffee
  - Save 2.4 sprays/ year * $50/acre = $120/acre
  - If all 20,000 OR acres used this model, savings would be $2.4 million/ year
### Top Varieties by Volume - 2009

<table>
<thead>
<tr>
<th>Variety</th>
<th>Value</th>
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<tbody>
<tr>
<td>1 Crimson Seedless</td>
<td>$304.5 M</td>
</tr>
<tr>
<td>2 Flame Seedless</td>
<td>$226.9 M</td>
</tr>
<tr>
<td>3 Thomp. Seedless</td>
<td></td>
</tr>
<tr>
<td>4 Red Globe</td>
<td></td>
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<tr>
<td>5 Autumn Royal</td>
<td>?</td>
</tr>
<tr>
<td>6 Sugraone</td>
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</tr>
<tr>
<td>7 Princess</td>
<td>$ 56.2 M</td>
</tr>
<tr>
<td>8 Scarlet Royal</td>
<td>$ 43.2 M</td>
</tr>
<tr>
<td>9 Summer Royal</td>
<td>$ 15.8 M</td>
</tr>
<tr>
<td>10 Autumn King</td>
<td>?</td>
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**ARS Varieties**  >  $646.6 M / year
Raisin Varieties on Overhead Trellis - 2009

<table>
<thead>
<tr>
<th>Variety</th>
<th>% OH Trellis</th>
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<tbody>
<tr>
<td>DOVine</td>
<td>45 %</td>
</tr>
<tr>
<td>Fiesta</td>
<td>53%</td>
</tr>
<tr>
<td>Selma Pete</td>
<td>39%</td>
</tr>
<tr>
<td>Thompson Seedless</td>
<td>6%</td>
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Estimated Production Cost Savings - $1.2 M / year

- ↑ Mechanical Harvest
- ↓ Hand Labor
Estimated Value*

- Automated Yield Monitoring – such as Trellis Tension Monitor - Tarara
  - For harvest/delivery scheduling - $10 million / year
  - For dynamic pricing & contract decisions – up to $100 M

- Canopy Management - Tarara
  - Industry is spending $9 million/ year less on canopy management for sunscald than before ARS research
  - If prevention of quality deterioration due to sunscald is valued at $0.10 for every $7-10 bottle of chardonnay, then 3 million cases = $4 M saved

* Industry Estimate
Not Yet Quantified

- **Virus Disaster Avoided- Martin**
  - Increased awareness of grapevine leafroll virus in Oregon led to increased testing of scion wood prior to topworking

- **Weed Control- Baumgartner, McElrone, Steenworth**
  - Demonstrated that under certain management scenarios, # of tractor passes can be reduced without changes in yield – saves fuel, labor, wear on equipment, carbon emissions
Not Yet Quantified

- Pierces Disease/ GWSS – multiple groups
- Nematode Resistance - Cousins
  - Rootknot nematode resistant rootstocks released
- Genetics & Genomics – Geneva Team
  - Research is still relatively new – Stay Tuned!
What Industry Needs
(Solutions to problems)

Communication and Partnership

What ARS Wants
(Researchable questions to solve important problems)
On to the Presentations!