A Team-Oriented Approach to Winegrape Research and Extension in Oklahoma

Eric T. Stafne, Ph.D.
Assistant Professor
Department of Horticulture and L.A.
Where Did We Come From?
Historical Perspective

- Significant grape production in late 1800s into early 1900s

- ‘Catawba’, ‘Concord’, ‘Delaware’

- More than 5,000 acres reported in 1908

- Several species of grape native to Oklahoma
Early Oklahoma Grape Research

- T.V. Munson and H. Jaeger roamed through Oklahoma for germplasm
- OK A&M planted vines in 1892
- Grapes – 1894
  - Tested over 200 species and varieties
  - Mainly American and some hybrids
- Updated publication in 1898
Prohibition

- **1890s**
  - Anti-Saloon League and Women’s Christian Temperance Union

- **1917**
  - “Bone Dry” law bans importation of alcoholic beverages into Oklahoma

- **1918**
  - “Bone Dry” law overturned

- **1919**
  - 18th Amendment enacted prohibition

- **1919-1932**
  - Decline in grape production
Table Grape Production?

- From 1925-1928 Oklahoma produced >1800 tons of grapes on average

- More than any state in south central U.S. (aside from Arkansas)
Great Depression Era

- Dust Bowl
- Oklahoma A&M resurrected grape research in 1933
- 75 American and hybrids
- Added 43 more French-American hybrids in 1950
Prohibition Ends
Herman Hinrichs
- Max Knotts, George Girouard
- 1950s through 1970s

Released several varieties:
Sunset, Rubaiyat, Meteor, Vinok, Bounty, Eureka, Cimarron

Still have ‘Rubaiyat’, ‘Sunset’, and ‘Cimarron’
- Only ‘Rubaiyat’ grown commercially (small scale)
Wine Grape Interest

- Increased in 1960s and 1970s
- Waned in 1980s
- Resurgence in mid- to late 1990s to present
- 3 wineries in late 1990s to 50+ today
Recent OSU Grape Research

- Late 1980s to 1990s
  - R.K. Striegler, S. von Broembsen, P. Mulder, etc.

- Late 1990s to early 2000s
  - B.D. McCraw, S. von Broembsen, P. Mulder
  - Introduce Grape Management Short Course
  - To date more than 500 participants
New Initiatives

- Dr. McCraw retires
  - No replacement envisioned

- Surprise! 2005 ETS hired
Recent Additions at OSU

- Dr. Damon Smith
- Dr. Eric Rebek
- Dr. Edralin Lucas
- Dr. William McGlynn (not new but new to grape/wine research)
Where Do We Stand Now?
Grape Varieties

- European grapes (Vitis vinifera)
- French-American hybrids
- Hybrids
- American (V. aestivalis, V. labrusca, etc.)
State Grape Production

- 597 reported acres of grapes
- 50+ wineries
- ~80% *V. vinifera*, ~15% F-A hybrid (or other hybrid)
- 60% red grapes, 40% white grapes
- Lincoln County most acreage
## Most Popular Varieties

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rank</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabernet Sauvignon</td>
<td>1</td>
<td>mediocre</td>
</tr>
<tr>
<td>Merlot</td>
<td>2</td>
<td>mediocre</td>
</tr>
<tr>
<td>Shiraz</td>
<td>3</td>
<td>poor</td>
</tr>
<tr>
<td>Riesling</td>
<td>4</td>
<td>poor to med.</td>
</tr>
<tr>
<td>Muscat blanc</td>
<td>5</td>
<td>poor to med.</td>
</tr>
<tr>
<td>Chardonnay</td>
<td>6</td>
<td>poor to med.</td>
</tr>
<tr>
<td>Cynthiana</td>
<td>7</td>
<td>very good</td>
</tr>
<tr>
<td>Chambourcin</td>
<td>8</td>
<td>good to v. good</td>
</tr>
<tr>
<td>Zinfandel</td>
<td>9</td>
<td>poor</td>
</tr>
<tr>
<td>Chardonel</td>
<td>10</td>
<td>good</td>
</tr>
</tbody>
</table>
Why *V. vinifera*?

- Makes highest quality wine
- Likes hot and dry conditions in summer
- Name recognition
- Productive
Why Not *V. vinifera*?

- *V. vinifera*
  - Lack of cold hardiness
  - Overly vigorous
  - Overly fruitful
  - Little disease resistance
  - Must be intensively managed
Why Hybrids?

- Better Cold Hardiness
- Better Disease Resistance
- Better Productivity
Why Not Hybrids?

- Ignorance
- Perceived lack of quality
- “They don’t grow that in Napa!” (or Bordeaux or Tuscany or...)

Common Disease Problems
Black Rot

- **Guignardia bidwellii**
  - Major fungal disease
  - All *vinifera* highly susceptible
  - Hybrids range from highly susceptible to highly resistant
  - Attacks all parts of vine
  - Fruit becomes resistant at ~8-10 °brix
Crown Gall

- *Agrobacterium vitis*
  - Major bacterial disease (at least for now)
  - Often brought on by winter injury
  - Usually present in vine when received from nursery
  - No cure, remove vines
Pierce’s Disease

- **Xylella fastidiosa**
  - Debilitating disease
  - Destroyed wine grape production in eastern Texas and southern California
  - Vectored by sharpshooters (GWSS most efficient)
  - Now in Oklahoma
Other Diseases of Note

- Eutypa (*Eutypa lata*)
- Phomopsis (*Phomopsis viticola*)
- Downy mildew (*Plasmopara viticola*)
- Powdery mildew (*Uncinula necator*)
- Various bunch rots
- Viruses
- What’s next?
Common Insect Problems
Green June Beetle

- *Cotinis notida*
  - Eats near ripe fruit
  - Easy to control, but PHI is a problem
  - Voracious if not controlled
  - Definite variety preferences
Apple Twig Borer (Grape Cane Borer)

- *Amphicerus bicaudatus*
  - Only a problem on stressed vines
  - Will quickly infest vines that have cold damage
  - Timing of control not well understood
  - Becoming a serious issue
Other Insect Issues

- Grape Berry Moth (*Endopiza viteana*)
- Grape Phylloxera (*Daktulosphaira vitifoliae*)
Biggest Problem?

- Environment
  - Hot in summer
  - Cold in winter
  - Fluctuating temperatures
  - Stressful conditions
Where Do We Go From Here?
Departments Currently Involved

- Horticulture and LA
- Entomology and Plant Pathology
- Nutritional Sciences
- Agricultural Economics
- Plant and Soil Sciences
- FAPC
Needs to Evolve Program

- Breeding
- Molecular techniques
- Marketing and Management
- Economic analyses
- Distance education
- Waste products
- Entomology
- Wine making
- Nutrition/Health properties
Shortcomings

- Little to no industry support
- Part-time faculty involvement
- Part-time staff involvement
Recent Efforts

- Grape Management Short Course
- Viticulture Education Program
- OSU Viticulture and Enology Website (www.grapes.okstate.edu)
- Newsletter
- Extension Publications
  - Pocket Guide to Oklahoma Grape Diseases, Insects, and Other Disorders (E-1004)
- Grape Grower Data Collection Network
- Oklahoma Viticulture Handbook – end of 2009
Wine Appeal

- Cultural Cachet
- Historical
- Fun!