Grape Harvest in the Southeast: Complex Decision Making

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Salinas, CA
13.2 Inches/year
Average temperatures between 50-70°F
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Average temperatures between 50-70 F
Winston-Salem, NC
45 Inches/year
Average temperatures between 45-77 F
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Leading to harvest: What could be different???
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Monterey Co.                             Yadkin Valley

• Low disease pressure
• Water can be regulated
• Rarely bunch rots
• In a normal year, grapes can be harvested based on chemistry
• Chemistry can be manipulated by water usage

• High disease pressure
• Too much water
• Rots!
• Grapes need to be harvested on complex decisions
• Spring frosts and freezes
Let’s talk this through

What time of the season do harvest decisions start?

Dormant Pruning: Assess damaged buds

Intact bud

First cut

Pruning: Assess damaged buds

Buds are defined

Primary bud!

Second cut

Third cut

Dormant Pruning: Assess damaged buds

Fourth cut
Secondary and tertiary bud

Fifth cut
Too deep if done alone

What’s up with this one?
## Recommendations

<table>
<thead>
<tr>
<th>% dead primary buds</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15%</td>
<td>Just prune normally</td>
</tr>
<tr>
<td>15-80%</td>
<td>Increase number of buds retained in those areas which show a lot damage</td>
</tr>
<tr>
<td>More than 80%</td>
<td>Minimal pruning. Come back later and regulate vegetative growth.</td>
</tr>
</tbody>
</table>
Take Home Message

Dormant-Pruning is the first harvest decision of the season

- Retain undamaged primary buds
- Retain healthy wood
- Don’t leave dead wood in the vineyard!
What’s next?

Disease Control
When does disease control start?

DORMANCY

POST-HARVEST
What are the disease control tools?

• SANITATION
• CULTURAL
• CHEMICAL
EARLY SEASON CONTROL

Anthracnose (Birds-Eye)

_Elsinoe ampelina_

- Overwinters on infected canes
- Germinates in spring
EARLY SEASON CONTROL

Black Rot

*Guignardia bidwellii*

Overwinters on stem cankers, on old clusters still in the vineyard and mummified berries on the soil
Phomopsis

*Phomopsis viticola*

- Overwinters on canes, wood and mummified fruit
- Cool spring time weather: spores are released
EARLY SEASON CONTROL

Ripe Rot

*Colletotrichum gloeosporoides*
*Colletotrichum acutatum*
*Glomerela cingulata*

- Overwinters on canes, wood and mummified fruit
- Summer infection
- Inactive until fruit are ripe!!!
Most Important Diseases

Bitter Rot
*Greeneria uvicola*

- Overwinters on canes, plant debris and mummified fruit
- Spring: infection!!
- Pathogen latent until mature fruit
Most Important Diseases

Bitter Rot

Management

- Weed Control
- Pruning: dead spurs and canes
- Air circulation/leaf pulling/shoot thinning
- Chemical: *Early sprays to reduce infection*
- Chemical: Protect fruit from bloom to harvest!
- Chemical: late season sprays are important
Most Important Diseases

Gray Mold

*Botrytis cinerea*

- Overwinters on canes, plant debris and mummified fruit on soil
- Leaf infections: before bloom
- Best infection temp: 59-68F, moist conditions
Most Important Diseases

Gray Mold

Management

- Sanitation
- Good canopy management, air circulation (likes moist conditions)
- Cluster thinning!!! Especially with thin skinned, tight clusters.
- Chemical: most important: veraison -> harvest
Most Important Diseases

Gray Mold

Management

- Sanitation
- Good canopy management, air circulation (likes moist conditions)
- Cluster thinning!!! Especially with thin skinned, tight clusters.
- Chemical: most important: veraison -> harvest
## Botrytis Fungicide Resistance

<table>
<thead>
<tr>
<th>Resistance</th>
<th>Which compound?</th>
<th>Which Fungicides don’t work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>FRAC 7</td>
<td>Endura, Luna Exp., Pristine</td>
</tr>
<tr>
<td>Single</td>
<td>FRAC 17</td>
<td>Elevate</td>
</tr>
<tr>
<td>Double</td>
<td>FRAC 7 + 17</td>
<td>All of the above: Endura, Luna Exp. Pristine, Elevate</td>
</tr>
<tr>
<td>Double</td>
<td>FRAC 12 + 9</td>
<td>Switch, Vangard, Scala, Inspire Super</td>
</tr>
<tr>
<td>Triple</td>
<td>FRAC 12 + 9 + 17</td>
<td>Switch, Vangard, Scala, Inspire Super, Elevate</td>
</tr>
<tr>
<td>Triple</td>
<td>FRAC 12 + 9 + 7</td>
<td>Switch, Vangard, Scala, Inspire Super, Endura, Luna Exp., Pristine</td>
</tr>
<tr>
<td>‘superbug’</td>
<td>FRAC 12 + 9 + 7 + 17</td>
<td>ALL of the ABOVE</td>
</tr>
</tbody>
</table>
## Botrytis Fungicide Resistance

<table>
<thead>
<tr>
<th>Stage</th>
<th>FRAC 7</th>
<th>FRAC 17</th>
<th>FRAC 7+17</th>
<th>FRAC 12+9</th>
<th>superbug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bud Break</td>
<td>Mancozeb + sulfur / Captan + sulfur / Copper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre Bloom</td>
<td>Mancozeb + sulfur</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bloom</td>
<td>Scala (FRAC 9)</td>
<td>Scala (FRAC 9)</td>
<td>Scala (FRAC 9)</td>
<td>Pristine (FRAC 7)</td>
<td>Captan</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;/2&lt;sup&gt;nd&lt;/sup&gt; cover etc.</td>
<td>Mancozeb + sulfur / Downy mildew control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bunch closure</td>
<td>Elevate (FRAC 17)</td>
<td>Pristine (FRAC 7)</td>
<td>Captan or FRAC 11</td>
<td>Elevate (FRAC 17)</td>
<td>Captan</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; cover</td>
<td>Captan + sulfur / Phosphite (Downey mildew)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veraison</td>
<td>Switch (FRAC 12+9)</td>
<td>Switch (FRAC 12+9)</td>
<td>Inspire Super (9+3)</td>
<td>Pristine (FRAC 7)</td>
<td>Captan</td>
</tr>
<tr>
<td>Pre-Harvest</td>
<td>Captan + 17 (Captavate)</td>
<td>Captan</td>
<td>Captan</td>
<td>Captan + 17</td>
<td>Captan</td>
</tr>
</tbody>
</table>
Botrytis Fungicide Resistance

• Monitor resistance can help to avoid crop losses
• Avoid using fungicides that are ineffective

Get your samples tested:

www.peachdoc.com
‘Fungicide Resistance Profiling’
We kept the best to the end

Sour Rot

*Injury, Fungi, Yeasts, Insects*

- Complex interactions
- You need all four components to have sour rot
- Thigh clusters, thin skins
We kept the best to the end

Sour Rot

Management

• Insect control!
• Start early: at Brix 11 or 12.
• Control mostly fruit flies
• Rotate IRAC codes
We kept the best to the end

Sour Rot

Management

Rotate e.g.:
• Delegate
• Oxidate
• MustangMaxx
• Venom
Defoliating will affect harvest

Downy Mildew
Pieceres Disease
Trunk Diseases
Decisions?
Close to harvest:

Weather

Disease Pressure

Berry Chemistry

![Graph showing temperature and rainfall over years](image-url)
Every decision in a vineyard is a harvest decision.
NEW: Grape and Wine Forum

The new Grape and Wine Forum

Discuss and post on the following topics:

- Sales/Needs; Training/Trellis; R&D; Cultivars; Events; Pest and Disease Management;
- Soil;

Please follow this link: NC State University Grape and Wine Forum
Welcome to the North Carolina Grape Growers Forum for commercial growers and extension agents.

The brand-new Grape and Wine Forum is a direct outcome of 2018 face-to-face discussions with grower groups in North Carolina. It’s open to all growers in the Southeast and it’s free to use.

The forum is set up to be used to trade your produce, farm and winery equipment, discuss trials, training and use it to share experience or questions regarding cultivars, post your events, discuss pest and soil management or advertise for positions.

Please use the hashtags #vinifera, #hybrid, #tablegrape or #moscato, according to your post.
Thank you for your attention