

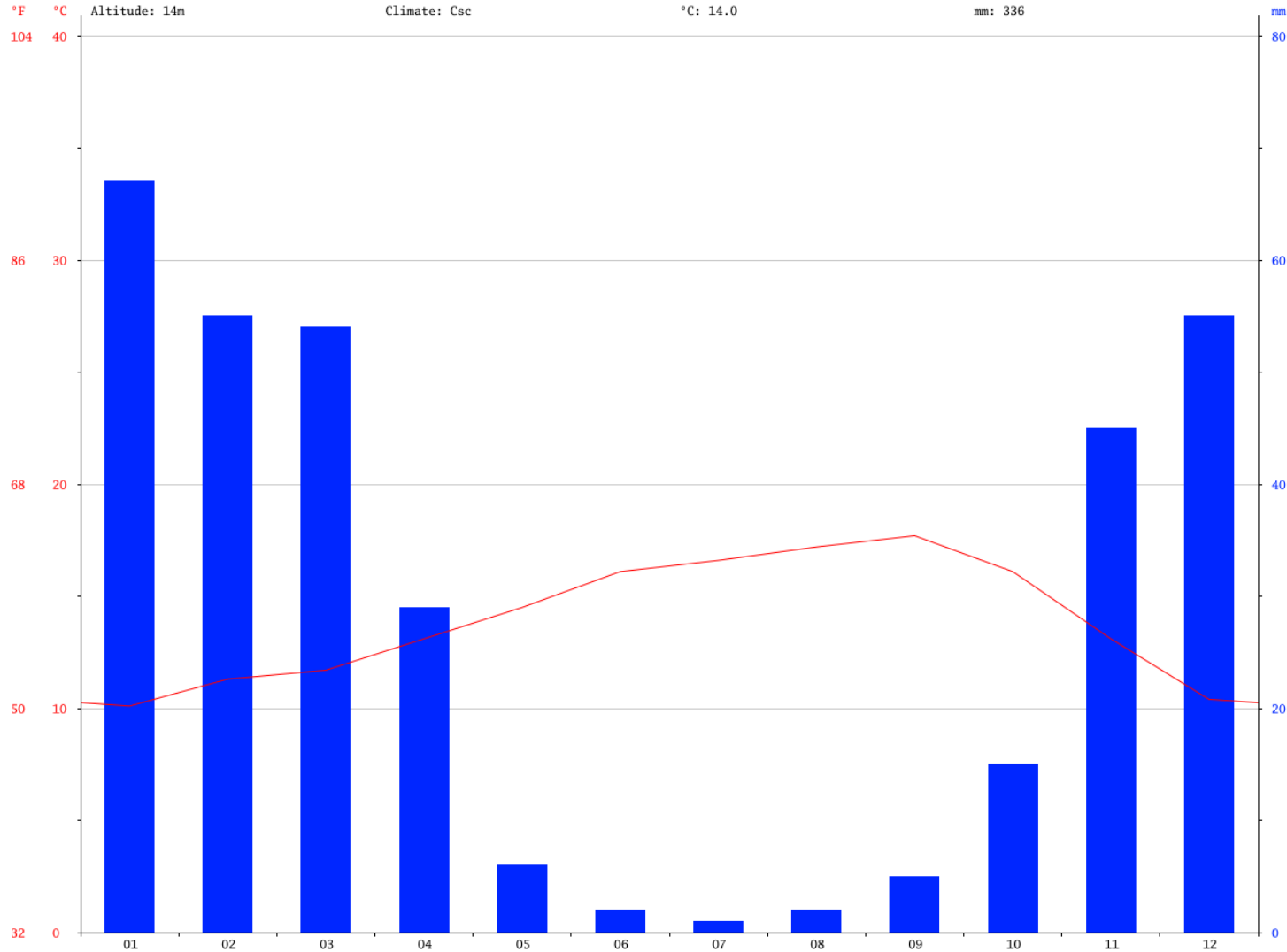
Grape Harvest in the Southeast: Complex Decision Making

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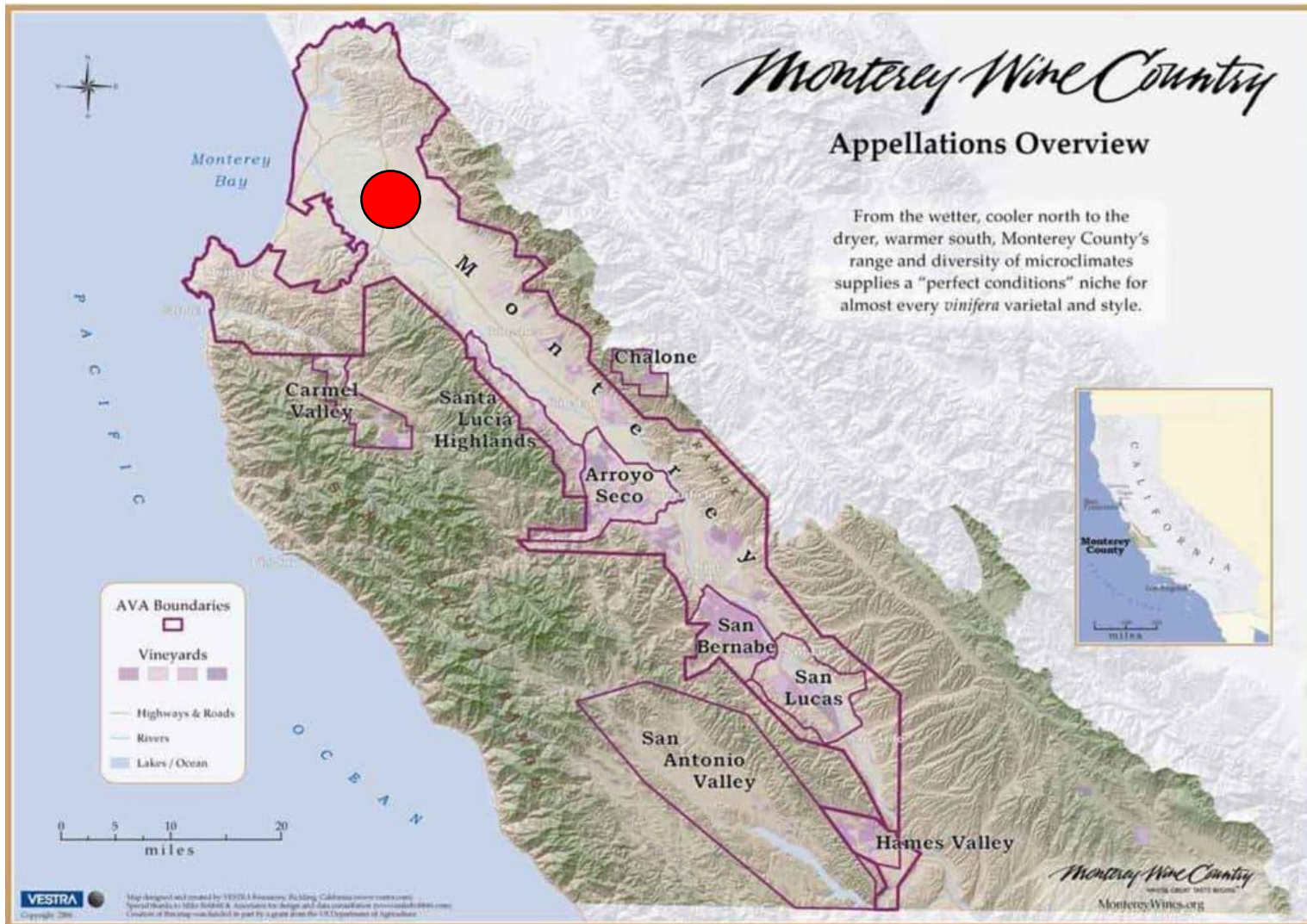
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Salinas, CA
13.2 Inches/year
Average temperatures between 50-70 F



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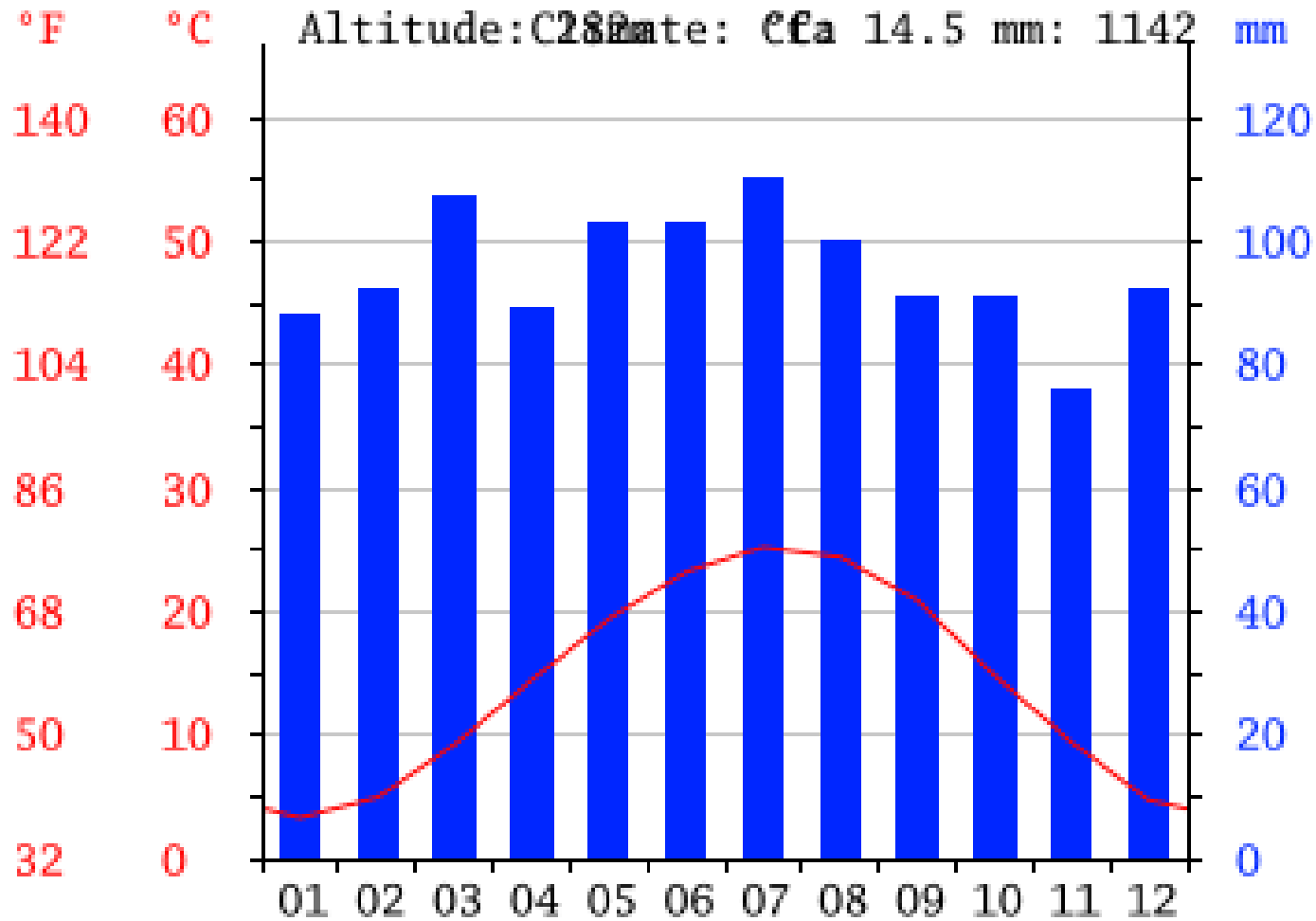


Winston-Salem, NC

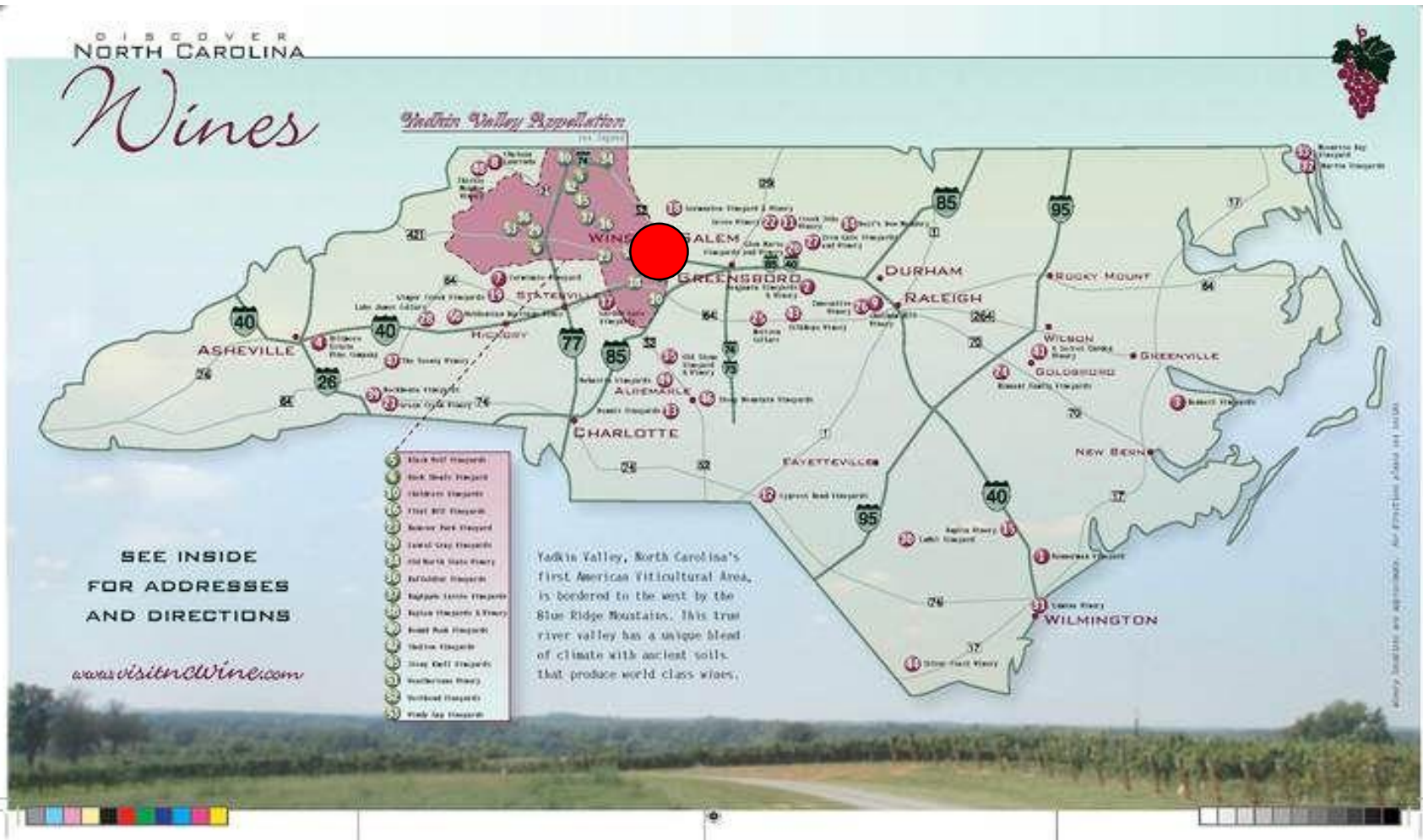
45 Inches/year

Average temperatures between 45-77 F

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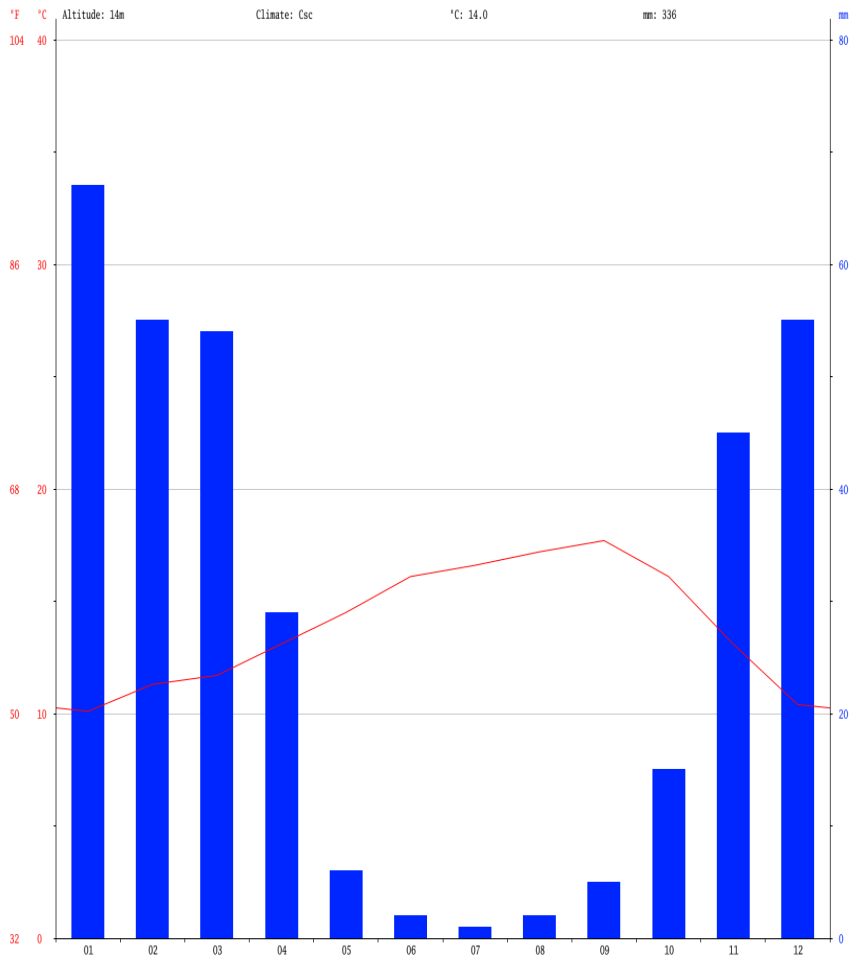


Winston-Salem, NC
 45 Inches/year
 Average temperatures between 45-77 F

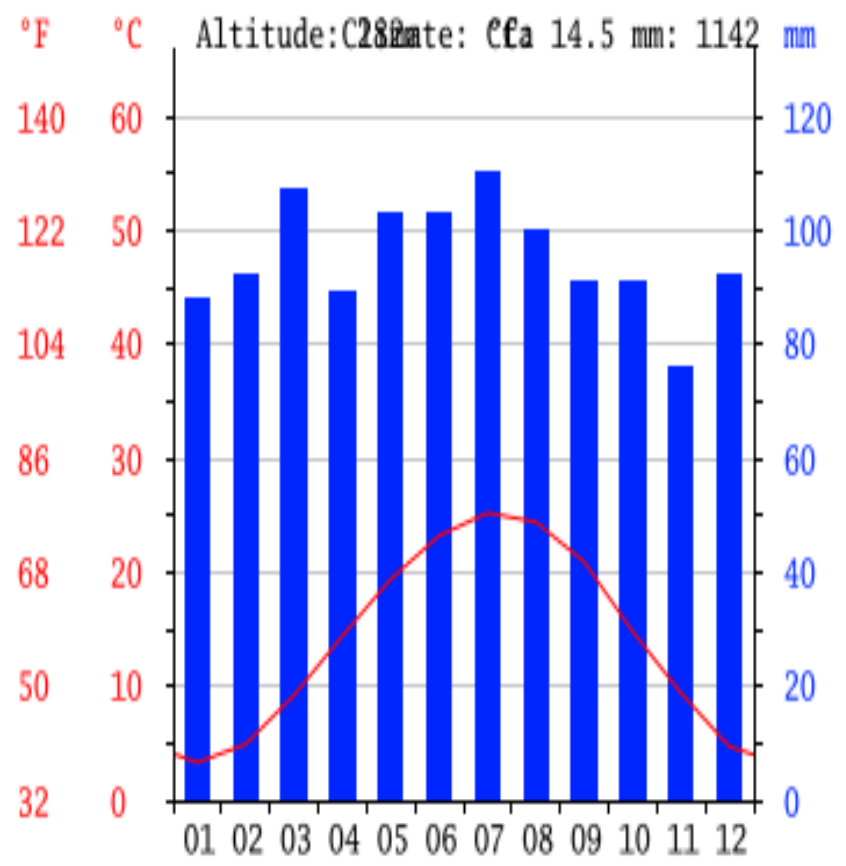


Leading to harvest:
What could be different???

Monterey Co.



Yadkin Valley



**Leading to harvest:
What could be different???**

Monterey Co.

Yadkin Valley

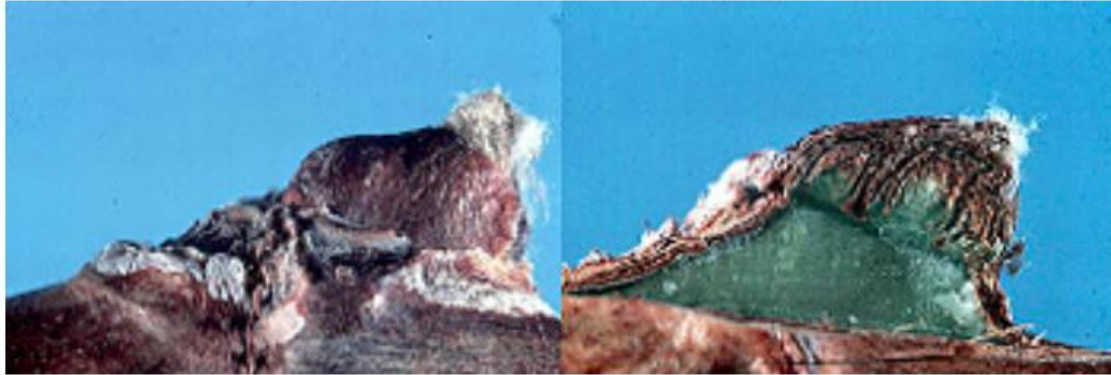
- **Low disease pressure**
 - **Water can be regulated**
 - **Rarely bunch rots**
 - **In a normal year, grapes can be harvested based on chemistry**
 - **Chemistry can be manipulated by water usage**
- **High disease pressure**
 - **Too much water**
 - **Rots!**
 - **Grapes need to be harvested on complex decisions**
 - **Spring frosts and freezes**

Let's talk this through

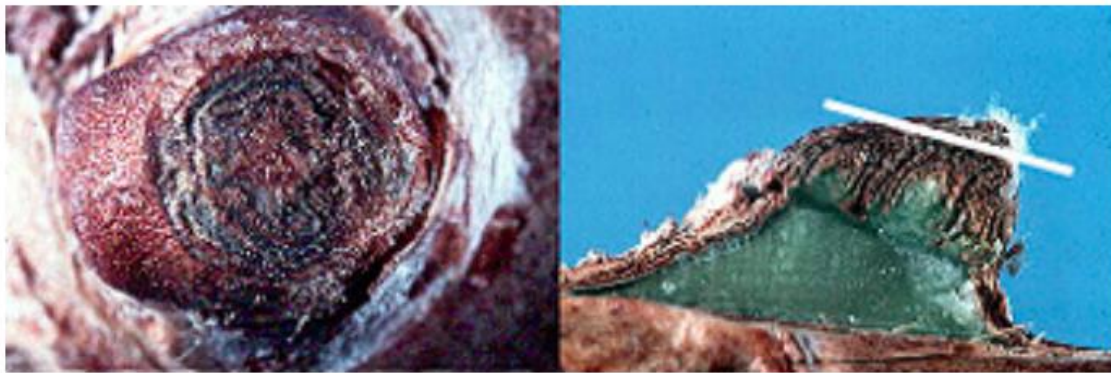
What time of the season do harvest decisions start?



Dormant Pruning: Assess damaged buds

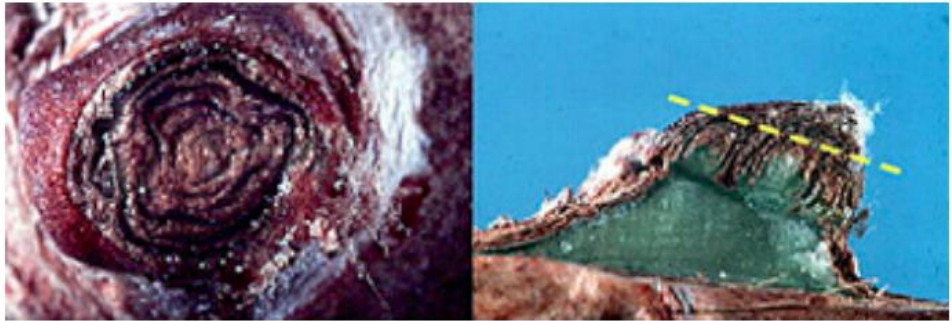


Intact bud



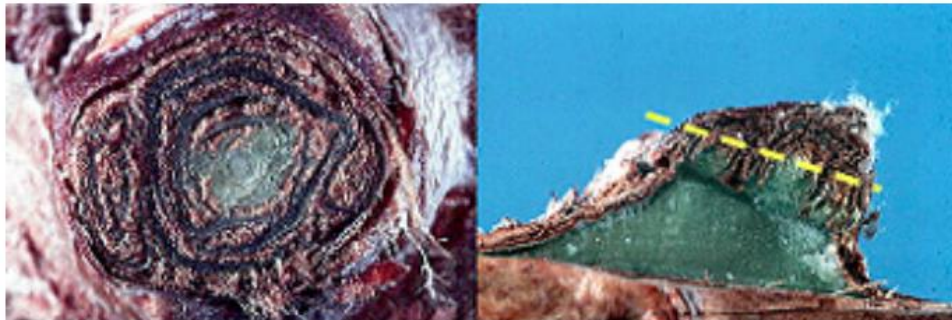
First cut

Pruning: Assess damaged buds



Second cut

Buds are defined



Third cut

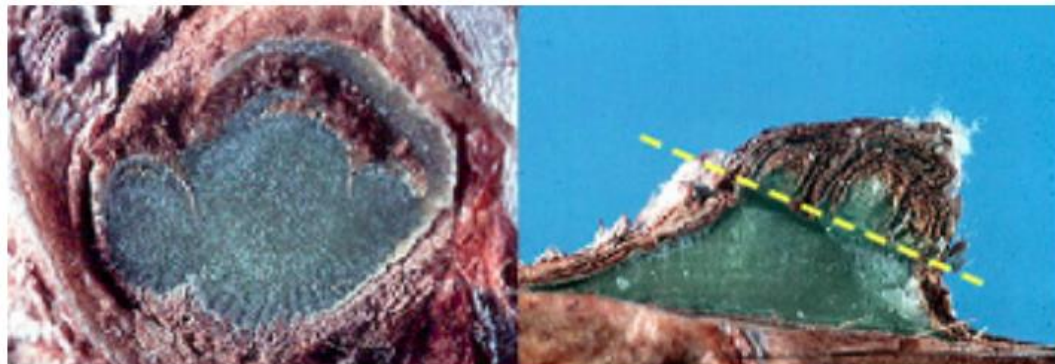
Primary bud!

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

% dead primary buds	What to do
0-15%	Just prune normally
15-80%	Increase number of buds retained in those areas which show a lot damage
More than 80%	Minimal pruning. Come back later and regulate vegetative growth.

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 CONROL

Anthracnose (Birds-Eye)

Elsinoe ampelina

- Overwinters on infected canes
- Germinates in spring



EARLY SEASON CONROL

Black Rot

Guignardia bidwellii

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



EARLY SEASON CONROL

Phomopsis

Phomopsis viticola

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



EARLY SEASON CONROL

Ripe Rot

Colletotrichum gloeosporoides

Colletotrichum acutatum

Glomerella 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

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Botrytis Fungicide Resistance



Resistance	Which compound?	Which Fungicides don't work?
Single	FRAC 7	Endura, Luna Exp., Pristine
Single	FRAC 17	Elevate
Double	FRAC 7 + 17	All of the above: Endura, Luna Exp. Pristine, Elevate
Double	FRAC 12 + 9	Switch, Vanguard, Scala, Inspire Super
Triple	FRAC 12 + 9 + 17	Switch, Vanguard, Scala, Inspire Super, Elevate
Triple	FRAC 12 + 9 + 7	Switch, Vanguard, Scala, Inspire Super, Endura, Luna Exp., Pristine
'superbug'	FRAC 12 + 9 + 7 + 17	ALL of the ABOVE

Botrytis Fungicide Resistance



Stage	FRAC 7	FRAC 17	FRAC 7+17	FRAC 12+9	superbug
Bud Break	Mancozeb + sulfur / Captan + sulfur / Copper				
Pre Bloom	Mancozeb + sulfur				
Bloom	Scala (FRAC 9)	Scala (FRAC 9)	Scala (FRAC 9)	Pristine (FRAC 7)	Captan
1st/2nd cover etc.	Mancozeb + sulfur / Downy mildew control				
Bunch closure	Elevate (FRAC 17)	Pristine (FRAC 7)	Captan or FRAC 11	Elevate (FRAC 17)	Captan
4th cover	Captan + sulfur / Phosphite (Downey mildew)				
Veraison	Switch (FRAC 12+9)	Switch (FRAC 12+9)	Inspire Super (9+3)	Pristine (FRAC 7)	Captan
Pre-Harvest	Captan + 17 (Captavate)	Captan	Captan	Captan + 17	

Botrytis Fungicide Resistance



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

Get your samples tested:

www.peachdoc.com

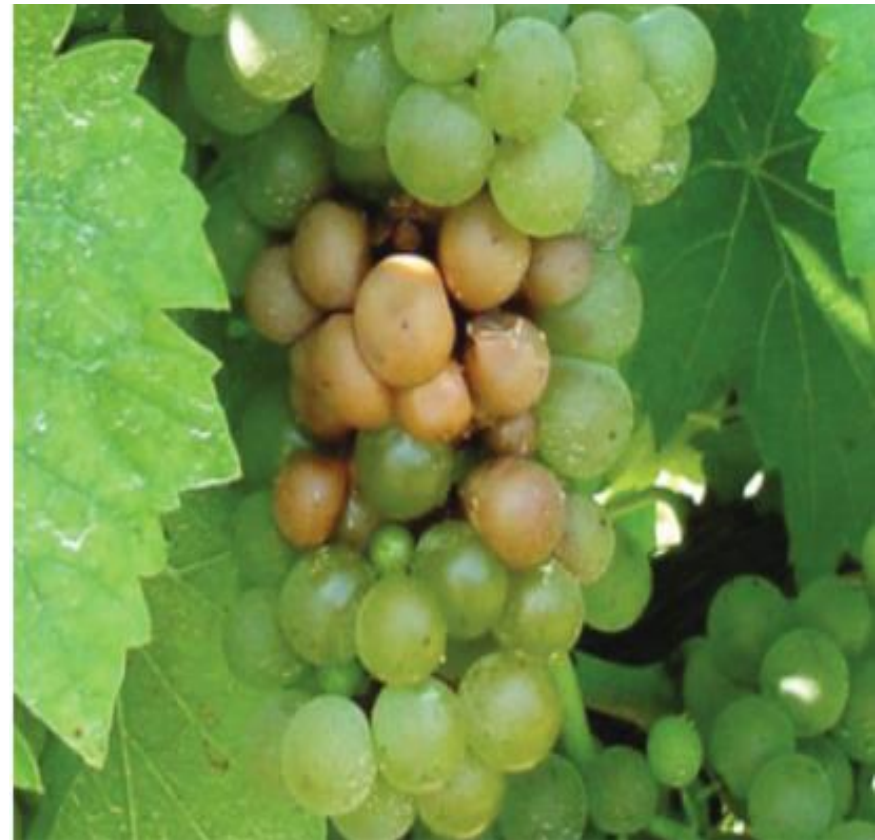
'Fungicide Resistance Profiling'

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

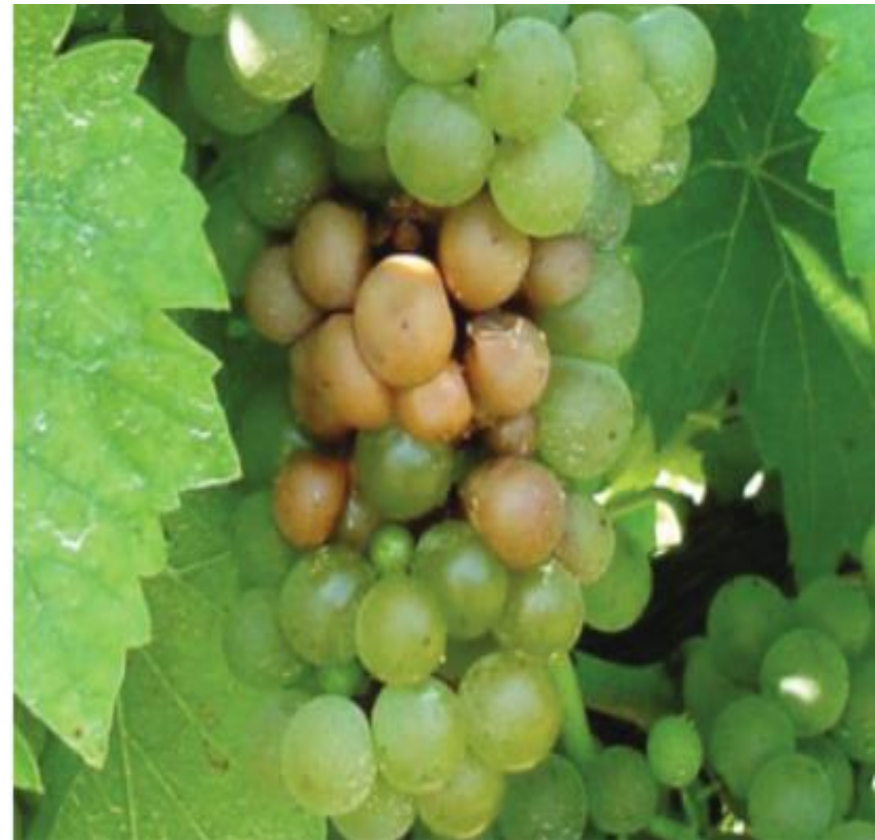


We kept the best to the end

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

The logo for NC State University, featuring the text "NC STATE UNIVERSITY" in white, bold, sans-serif capital letters on a red rectangular background.

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Sour Rot

Management

Rotate e.g.:

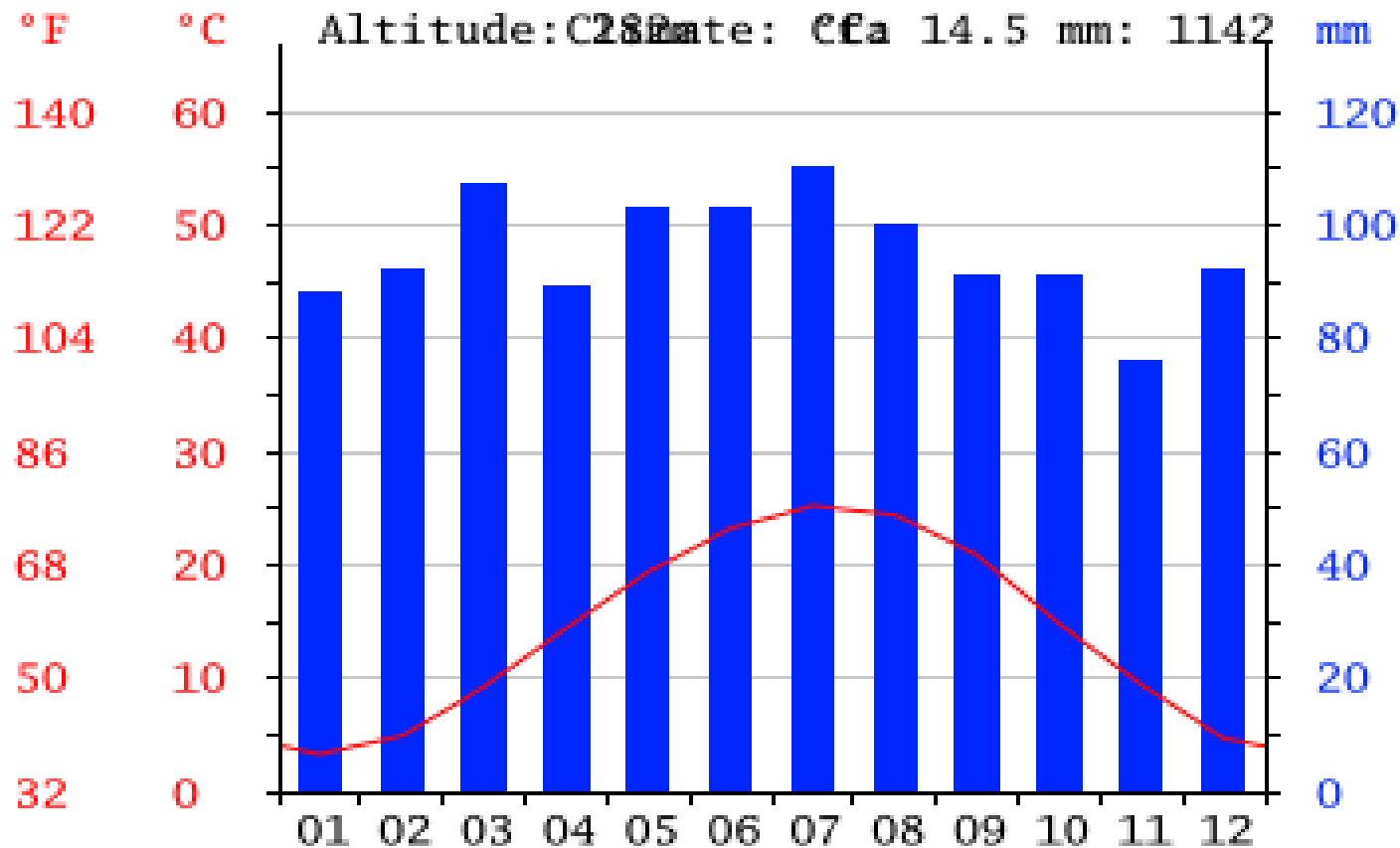
- Delegate
- Oxidate
- MustangMaxx
- Venom

Defoliating will affect harvest

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**Downy Mildew
Pierces Disease
Trunk Diseases**

Decisions?

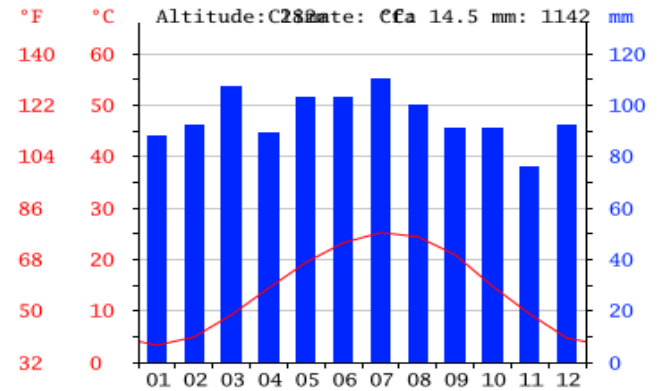


Close to harvest:

Weather

Disease Pressure

Berry Chemistry



Take home

**NC STATE
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**Every decision in a vineyard
is a harvest decision**

<https://grapes.ces.ncsu.edu>

NC STATE EXTENSION

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NEW: Grape and Wine Forum

The new Grape and Wine Forum

Discuss and post on the following topics:

Sale/Needs; Training/Trellis; R&D; Cultivars; Events; Pest and Disease Management; Soils;

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11 of 11 topics (3 unread) ☆












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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 trellis, 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 #muscadine, according to your post.

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<input type="checkbox"/>	 TERROIR (1) By me - 1 post - 0 views	5:58 PM
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Thank you!

Thank you for you attention

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