

# Annual Care for Bearing Vineyards

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# March

- Fix trellis
- Tighten cordon/cane wires to 250-300 lbs.
- Remove crown gall infested trunks, or flag for later removal
- Pruning... if absolutely necessary!
  - Check bud viability first!
  - 20+10 or 30+10 balanced pruning, or rough first pass if double pruning
- Soil analysis (every 2-3 years)

# Determining Bud Mortality



# Compensating for Bud Injury<sup>(5)</sup>

<b>% Dead Primary Buds</b>	<b>Compensation</b>
<b>0 – 20%</b>	Do not change normal pruning practice.
<b>20 – 80 %</b>	Increase the number of buds retained in proportion to the injury.
<b>&gt; 80 %</b>	Prune away only those nodes which will intrude into the space for adjacent vines or which will produce fruit so low that it hangs to the ground.

# April

- Vine row weed control
  - Pre-emergent herbicide?
- Pruning – in earnest
  - As late as possible best to delay budbreak
- Dormant fungicide application
- Electrify deer fence
- Remove pruning debris
- Replace missing vines
- Flea beetle/climbing cutworm control
- Lower movable foliage wires

# May

- Nitrogen application
- Disease control – phomopsis, powdery mildew, black rot, downy mildew (2-3X+)
- Insect pest management – twig/cane borer, phylloxera (foliar), grape cane gallmaker, grape cane girdler
- Vine row weed management

# May, Cont'd

- Sucker removal
  - **UNLESS** you expect/identify winter trunk injury, or need a second trunk!
- Water sprout removal on trunks, from the ground into the yoke
- Shoot thinning to  $\leq 6$  shoots/ft. of cordon<sup>(1)</sup>
  - Removal order:
    - Undesirable base shoots, or other "non-count" shoots (watch renewal positions carefully!)
    - Unfruitful shoots from "count nodes"
    - Fruitful shoots only as necessary
  - Pay special attention to "bull canes" forming in the yoke

# May, Cont'd

- Cluster thinning
  - Vines in their first bearing year:
    - Easy does it - don't overcrop!
    - $\leq 1/2$  length cordons: remove all crop
    - $1/2$ - $3/4$  length cordons: 1 cluster on alternating shoots
    - $3/4$ -full length cordons: 1 cluster per shoot
  - Trying to increase cluster size in table grapes?
    - Thin to 1-2 clusters per shoot, dependent upon normal cluster size
  - Delaying until after fruit set may be wise in mature vines to counteract a poor set

# May, Cont'd

- Shoot positioning
  - Low/Mid-wire Cordon/Cane Systems
    - Elevate movable catchwires as needed to maintain narrow canopy
    - Tuck shoots as necessary in fixed catchwire systems
  - High Cordon/Cane Systems
    - High vigor vines: separate shoots as needed to facilitate later positioning; perform before the tendrils become attached

# June

- Disease control: powdery mildew, downy mildew, black rot, botrytis (2-3X)
  - Critical period for successful control
- Insect pest management: grape berry moth, eight spotted forester, phylloxera (foliar), rose chafer, Japanese beetle, leafhoppers, leafroller, sphinx moth, grasshoppers
- Weed control
- Water sprout removal on trunks
- Cold injury assessment on trunks where damage is suspected <sup>(4)</sup>

# June, Cont'd

- Yield estimate post-set
  - Avg. cluster count per vine X avg. cluster weight = avg. yield/vine
- Crop load adjustment post-set
  - Cluster thin as needed to adjust the crop load : pruning weight ratio
  - Suggested crop load ratios vary from 5-15:1<sup>(1,2)</sup>. Advisable to begin cropping in lower ½ of this range ( $\approx 7-10$ ), and increase if vines prove capable of supporting higher yields.
- Contact buyers with yield estimates after adjustment

# June, Cont'd

- Shoot positioning
  - Low/Mid-wire Cordon/Cane Systems
    - Elevate movable catchwires as needed to maintain narrow canopy
    - Tuck shoots as necessary in fixed catchwire systems
    - Maintain upright shoot orientation!
  - High Cordon/Cane Systems
    - “Comb” shoots downward as soon as possible once shoots are sufficiently developed to resist breakage and heavy enough to remain in position
    - Strive to position  $\geq 80\%$  of the foliage below the cordon/cane

# “Combing” – Before



Photo Courtesy Dr. Paul Domoto; Iowa State University

# “Combing” - After



Photo Courtesy Dr. Paul Domoto; Iowa State University

# Nicely Positioned "VSP"



Photo Courtesy Dr. Paul Domoto; Iowa State University

# Why Bother With Shoot Positioning?

1. At the minimum,  
during winter  
pruning, you get  
this...



**Instead of This...**



# Not to Mention...

2. Improved shoot periderm formation
3. Bud fruitfulness
4. Decreased incidence of cluster rots; esp. Botrytis
5. Reduced numbers of fungal infection periods in leaf canopy
6. Increased spray penetration, and improved coverage
7. Improved fruit, and resulting wine quality<sup>(3)</sup>
8. More efficient hand harvest

# June, Cont'd

- Shoot positioning not giving enough exposure?
  - Leaf thinning
    - Performed to adjust cluster exposure, particularly in low/mid-wire cordon/cane systems
    - Complete shortly after fruit set to minimize incidence of sunburn
    - Remove 1-2 basal leaves from bearing shoots, typically from east side of canopy on N/S rows, and north side of canopy on E/W rows
  - Lateral removal
    - Similar to above; typically only those laterals shading the fruit/renewal zone are removed
    - May be beneficial in all training systems; particularly for vines suffering from herbicide drift injury

# July

- Disease control: powdery mildew, downy mildew, black rot (1-2X+); Botrytis (veraison)
- Insect pest management: leafhoppers, Japanese beetle, rose chafer, grape berry moth (late)
- Shoot positioning
- Topping – upward positioned systems;  $\approx 12''$  above top catchwires

# July, Cont'd

- Skirting – downward positioned systems;  $\approx 12''$  above ground
- Hedging – traditionally employed in upward positioned systems; cutting to  $\approx 10-12''$  canopy width common
  - Remember – 12-15 mature leaves/shoot must be retained to ripen the crop! Hedging non-positioned canopies can be counterproductive<sup>(3)</sup>.
  - Delay shoot tip removal to minimize lateral growth<sup>(1)</sup>.



# July, Cont'd

- Employ bird/raccoon control measures before veraison
  - Bird netting:
    - Apply after vines cease growth, but before veraison, if possible
    - Mow cover crop before applying!
- Early cultivars: make harvest arrangements with buyer
- Begin monitoring fruit maturation ( $^{\circ}$ Brix, pH, titratable acidity) at veraison
- Allow vine row vegetation to re-establish to slow vine growth if needed

# August

- Early cultivars: test fruit maturation every 3 days until within  $\pm 3^{\circ}$  Brix of target, then daily
  - Maintain close contact with buyer!
  - Make arrangements for transport &/or refrigeration
  - Sanitize harvest lugs/bins
  - Harvest!
  - Collect cluster/berry weights!
- Insect pest management: grape berry moth, multicolored Asian lady beetle

# August, Cont'd

- Mid/late season cultivars: continue monitoring fruit maturation
- Tissue analysis
  - Petiole (leaf stem) sampling presently the most common in the Midwest
  - Early/mid August sampling is common
  - Establish a consistent sampling time for your vineyard (XX days after bloom annually)
  - Sample areas of different soil composition separately

# September

- Multicolored Asian lady beetle control
- Harvest mid/late season cultivars
  - Ideal: harvest  $\geq$  14 days prior to average date of the first killing frost
- Remove bird netting from vineyard
- Disease control: powdery mildew post-harvest
- Perennial weed control in vine rows with post-emergent herbicide as needed

# September, Cont'd

- Post-harvest irrigation, where possible, if soil is dry
- Post-harvest manure application where used as a nitrogen source

# October

- Not done yet!
- Reduce wire tension
- Repair trellis
- Shut down deer/raccoon fencing
- Drain irrigation system
- Order replacement vines
- Internal season review
  - Fruit quality discussion with buyer
  - Operational efficiency review
- Planning for following season

# Cited Works

1. Wolf, T. K. and E. B. Poling. 1995. *The Mid-Atlantic Winegrape Growers Guide*. North Carolina State University. Raleigh, N.C.
2. Bordelon, B. "Yield Assessment and Adjustment in Grapes." In: Facts for Fancy Fruit Newsletter. Purdue University. Vol. 9 – 1999.
3. Smart, R. and M. Robinson. 1991. *Sunlight into Wine*. Winetitles; Underdale, SA.
4. Pool, R. 2000. "Dealing with Winter Cold Injury to Grapevine Canes and Trunks."  
<http://www.nysaes.cornell.edu/hort/faculty/pool/trunkinjury/tihtml/trkinjtablecontents.html>
5. Pool, R. 2000. "Assessing and Responding to Winter cold injury in Grapevine Buds."  
<http://www.nysaes.cornell.edu/hort/faculty/pool/budcoldinjury/Assessingbudcoldinjury.html>