Vineyard Site Preparation
Planting &
Trellis Systems

Dr. Paul Domoto
Dept. of Horticulture
Vineyard Site Preparation

Determine if the site is suitable for a vineyard.

- Climate
- Topography
- Soils

One year in advance to planting:

- Test the soil for pH, P, K, Mg, Zn and O.M.
- Amend the soil as needed for pH, P, K, Mg, & Zn.
- Correct any internal drainage problems.
- Begin planning the vineyard layout.
- Order your vines.
Cultivar Selection

- Adaptation to your climatic conditions.
- Intended Use (Market):
  - Fresh
  - Juice / Jam / Jelly
  - Wine
    - Sell to a winery
    - Establish your own winery
Cultivar Selection for Wine

Sell to a Winery:
- What adapted cultivars do the wineries want?
  - Proven cultivar
  - New cultivar
- How much do they want?
- Are they willing to develop a long-term contract?

Establish a Winery:
- What do customers want?
- What adapted cultivars make quality wine?
- What styles of wine do I want to make?
- How much risk am I willing to take?
  - Cultivar adaptation
  - New cultivars

Develop a sound business / marketing plan before planting!
Vineyard Layout

• **Row Spacing:**
  – 9 to 12 feet (depends on equipment size)

• **Vine Spacing within Rows:**
  – 6 to 8 feet (depends on vine vigor)

• **Number of Vines per Acre:**
  – $6 \times 9 = 807$  
  – $7 \times 9 = 691$  
  – $8 \times 9 = 605$
  – $6 \times 10 = 726$  
  – $7 \times 10 = 622$  
  – $8 \times 10 = 545$
  – $6 \times 12 = 605$  
  – $7 \times 12 = 518$  
  – $8 \times 12 = 454$

• **Direction of Rows**
  – North / South Preferred
  – Across Slope or Contoured
Planting on a Contour

Straight rows are preferred for stretching wire, but rows can be planted on a contour if the sharpness of the curve does not exceed 5 degrees per 30 ft of span. Pivot posts should be at least 4” dia. x 9’ and driven 3’ deep.

A plywood template can be made to gauge a 5 degree curve.
Shape of the Field
Vineyard Site Preparation

A Year in advance of planting:
• Determine if the soil is suitable for grapes.
• Order vines.

Fall in advance of planting:
• Kill problem perennial weeds.
• Amend the soil as needed.
• Subsoil if needed.
  – Soil needs to be dry.
  – Should be done in two directions, diagonal to each other.
• Seed the field to establish an erosion-controlling sod.

Winter in advance of planting:
• Determine final vineyard layout.
• Order trellis materials for spring delivery.
Vineyard Site Preparation

Spring of planting:

• Layout the vineyard.
  – Square the field.
  – Mark the location of the rows.
• Kill out sod strips for the vine rows.
• Mark the location for the vines.
• Plant the vines.
  – With an auger.
  – With a tree planter.
Vineyard Layout

3-4-5 Right Triangle Rule

Edge of Field

A  40’  B

1st row of vineyard

C  30’

50’

Measure and mark ends of rows

Headlands (30-40’)

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Dr. Bruce Bordelon,
Purdue University
Vineyard Layout

Mark out Rows and Vine Placement

With Markers

1st row of vineyard
# Nursery Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Top Growth</th>
<th>Root Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-X</td>
<td>&gt; 12”</td>
<td>&gt; 12” numerous</td>
</tr>
<tr>
<td>1-1</td>
<td>&gt; 12”</td>
<td>&gt; 12”</td>
</tr>
<tr>
<td>1-2</td>
<td>6 – 12”</td>
<td>6-12”</td>
</tr>
</tbody>
</table>
Proper planting depth

Own-rooted

Grafted

Graft union
Vine Planting with a Transplanter
Saves on labor, but require a larger tractor.
Vineyard Layout

Mark out Rows and Vine Placement

By cross scoring the field
Set at Proper Depth
Spacing and Tamping

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Trellis Establishment
Distribute and drive posts immediately after planting
Line Post
Driven vs setting in an Augered hole

- 3-4” x 8’ line post
- 3-4” x 9’ line post

Narrow End

Provide equivalent anchorage

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Grow Tubes
Vineyard Training Systems
Growth Habit

Trailing / Drooping
- Characteristic of American species

Upright
- Characteristic of V. vinifera & some French-Amer. hybrids
Single Curtain Bi-lateral Cordon
6-Cane Kniffen System
with wires at 2.5, 4 and 6 feet
Suitable for low vigor cultivars
Umbrella Kniffen System

Suited for American cultivars requiring pruning to long canes. Requires extra labor to tie canes to lower wires.
Geneva Double Curtain
Catch Wire System
for Upright & Semi-upright Cultivars

Catch wires spaced 10” apart

Cordon wire at 36 to 42”
Cultivars Suited for Vertical Shoot Positioning

<table>
<thead>
<tr>
<th>Semi-upright:</th>
<th>Upright:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chambourcin</td>
<td>Chelois</td>
</tr>
<tr>
<td>Chardonel</td>
<td>St. Vincent</td>
</tr>
<tr>
<td>La Crosse</td>
<td>Vignoles</td>
</tr>
<tr>
<td>Prairie Star</td>
<td></td>
</tr>
<tr>
<td>Seyval Blanc</td>
<td></td>
</tr>
<tr>
<td>Traminette</td>
<td></td>
</tr>
</tbody>
</table>
Considerations in Selecting A Training System

- Growth habit
- Vine vigor
- Cost of materials
- Labor to install
- Labor to maintain
  - Prune
  - Shoot positioning
  - Other cultural practices

Benefits?
- Fruit color development
- Fruit quality
  - SS
  - pH
  - TA
- Earlier maturity
- Pest problems ±
Cultural Practices in an Established Vineyard

March/April
- Inspect buds for winter injury
- Pruning, tying & brush removal
- Pre-emergence weed control
- Fertilize
- Dormant lime sulfur

May
- Disease & insect control
- Suckering
- Shoot thinning?
- Shoot positioning VSP

June
- Cluster thinning?
- Disease & insect control
- Shoot positioning VSP

July
- Disease & insect control
- Shoot positioning
- Post emergence weed control
- Shearing shoots
- Collect petiole sample
# Cultural Practices in an Established Vineyard

## August/September
- Install bird netting
- Disease & insect control
- Begin testing maturity
- Leaf pulling, lateral shoot thinning?
- Shoot positioning & shearing VSP
- Harvest

## September/October
- Remove bird netting
- Check soil pH

## November – March
- Winterize equipment
- Repair trellis
- Plan for the next season
Inspecting buds for winter injury
Weed Control
Apply Liquid Lime Sulfur
Grape Diseases

Black rot

Anthracnose

Powdery mildew

Downy mildew

Phomopsis

Bunch rot
Grape Insects

- 8-spotted forester moth
- Grape rootworm beetle
- Hornworm
- Grasshopper
- Japanese beetle
- Asian Ladybird beetle
- Grape Phylloxera
- Leafrollers
- Bees
- Grape berry moth
Shoot Thinning

- Primary shoot
- Secondary shoot
- Renewal spur
- Basal shoots
Cluster Thinning

Large & medium clusters – 1 per shoot
Small clusters – 2 per shoot
Shoot Positioning
Wildlife Control

Birds
- Sound
  - Cannons
  - Distress
  - Predator
- Reflectors
- Netting

Raccoons
- Exclusion
- Habitat reduction
- Trapping, etc.