Cultural Practices and Pest Management of Small Fruits

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Site Selection

- Maximum sunlight
- Good drainage
  - air (slope)
  - water (deep soil)
Vineyard Establishment – Site Considerations

Topography and Air Movement
Soils

- **Type (acceptable range)**
  - Well drained
    - no hard pan
    - adequate aeration
  - Good water holding capacity
    - sand/clay ratio
  - Adequate depth
    - grapes deep rooted
    - avoid drought
Valois (Gravelly Silt Loam)
- Well-Drained
- Medium-textured
- Acid

Gravelly silt loam
Good water holding
Strongly acid (0-20”)

Coarse gravelly silt loam
Good root penetration
Acid to neutral (20-50”)

Gravelly loam, neutral to
calcareous below 72”

Valois Series

These well-drained, medium-textured, acid soils have developed in glacial till derived mainly from shale and sandstone. The substratum is typically firm or very firm till, but a few areas on complex topography have a loose till substratum. These soils are neutral or weakly calcareous below depths of 3½ to 5 feet. Soils of this series occupy a belt between the medium-lime Lansing soils on the north and the very acid Wooster and Bath soils on the south. This series is the well-drained member of the catena that includes the moderately well drained Langford soils, the poorly drained Erie soils, and the very poorly drained Alden soil.

Typical profile of Valois gravelly silt loam under forest:

A0	Black (10YR 2/1) finely granular humus, matted with fine roots; very strongly acid; 2 to 4 inches thick.
A1	0 to 1 inch, dark grayish-brown (10YR 4/2) gravelly silt loam, speckled with light gray; weak medium crumb structure; friable, nonplastic; very strongly acid; ½ to 2 inches thick.
B1	1 to 7 inches, yellowish-brown (10YR 5/6) gravelly silt loam; weak fine crumb structure; friable, plastic; contains many small and medium-sized roots; good water-holding capacity; 6 to 10 inches thick.
B2	7 to 20 inches, light yellowish-brown (10YR 6/4) gravelly silt loam; weak fine crumb structure; friable; good root distribution; good water-holding capacity; strongly acid; 8 to 16 inches thick.
B3 or A1, 20 to 28 inches, light olive-brown (2.5Y 5/4) gravelly silt loam or silt loam; contains coarse material that may be rounded gravel or angular sandstone fragments; weak fine to medium blocky structure; acid when moist; readily penetrated by roots; good water-holding capacity; medium acid.
B2	28 to 50 inches, light olive-brown (2.5Y 5/4) gravelly loam; weak medium to fine subangular blocky structure within very coarse prisms; thin coatings of dark yellowish-brown (10YR 4/4) slightly sticky clay on some of the blocks; vertical streaks of light yellowish-brown coarse silt surround the large prisms; firm to very firm; strongly acid in the upper part but only slightly acid or neutral in the lower part; 15 to 30 inches thick.
C2	50 inches, grayish-brown (2.5Y 5/2) gravelly loam; moderate thick platy structure; firm; neutral in the upper part, generally calcareous below 72 inches.

Valois gravelly silt loam, 5 to 15 percent slopes (Va).—
This is a well-drained, medium-textured soil with good water-holding capacity. It can be planted early in spring.
Establishment

- Year before planting
  - Map
  - Eliminate weeds
  - Manure (.5 lb/sq ft)
  - Soil test
  - Order plants

Varieties/Types
Grape “types”

*vinifera* relative to French hybrids and American species

- *vinifera* must be grafted to pest tolerant rootstock
- As a group, *vinifera* are more susceptible to fungal pathogens
- *vinifera* are more cold tender:
  - Native American spp > hybrids > V. *vinifera*
- *vinifera* grape prices roughly twice that of hybrid grape prices
Vitis vinifera relative to other species/hybrids

- Must be grafted to pest tolerant rootstock
Wine Grape Varieties

- Red
  - ‘Chambourcin’
  - ‘Chancellor’
  - ‘vinifera’?
- White
  - ‘Vidal Blanc’
  - ‘Traminette’
  - ‘vinifera’?
Table Grapes

- Red
  - ‘Einset Seedless’
  - ‘Reliance Seedless’
  - ‘Vanessa Seedless’
- White
  - ‘Lakemont Seedless’
  - ‘Himrod Seedless’
  - ‘Marquis Seedless’
- Blue
  - ‘Venus Seedless’
Establishment

• Planting Year
  - store (cold)
  - plant early
  - soak roots
  - graft union
  - prune after growth
Canopy Management Basics

Graft Union above soil level
Grape - Spacing

- Between – 7 – 12’
- Within – 4 – 8’
  vigorous – 8’
  non – 4’
Establishment

- Irrigate
- Remove clusters
- Remove suckers
- Control pests
- Tie vines
- Trellis
Canopy Management Basics

Remove young clusters
Vineyard Floor Management
Canopy Management Basics

Grow tubes
Canopy Management Basics

Train 2 trunks
Canopy Management Basics

Vertical

Lateral

Varietal growth habit
Canopy Management Basics

“Sunlight into Wine”
Good Fruit Exposure
Canopy Management Basics

Figure 14 - A graphic representation of a One-wire Kniffin training system that was used in New York viticulture in the 1800's.

High Cordon Training
Canopy Management Basics

High Cordon Training
Figure 20 - A graphic representation of the Geneva Double Curtain training system which establishes cordons on wires which are offset from the central plane of the trellis.
Canopy Management Basics

Balance of vegetative and reproductive vigor
Canopy Management Basics

**Balanced pruning**

- **Balance** vegetative and reproductive growth
  - Number of buds
  - *vinifera*, hybrids, native American
  - Weight of pruning/Weight of grapes (yield)
  - Proper ratio for quality at your site
- Spur or Cane
- Ruthless!
Canopy Management Basics

Balance of vegetative and reproductive vigor
Seven Steps to Pruning Grapes

1) Select a training system

2) Remove dead wood, suckers, and “bull” canes - > 3/4” in diameter

3) Evaluate vine. Determine # of canes on plant to be pruned
Steps to Pruning Grapes (cont.)

4) Select canes for “arms”/main structure

5) Choose canes for spurs. Count buds to be left based on vigor/past crop

6) Remove all remaining wood

7) Cut canes and spurs to length
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ICM Program Components
- A “Whole Plant Health Care Plan”

- Cultural Management
  - nutrition
  - cultivar selection
  - canopy management
  - crop control
- Disease Management
  - monitoring
  - forecasting
  - synergists
- Insect Management
  - monitoring
  - trapping
  - mating disruption
- Weed Management
  - cultivation
  - cover crops
- Other Pests
  - birds, deer
Grape Black Rot Control

- Proper pruning & training
- Sanitation
- Captan
Phomopsis on fruit
Basics of Pest Management
Basics of Pest Management
Grape Powdery Mildew Control

- Proper pruning & training
  - Open canopy
- Benlate?
- Stylet Oil?
- Bicarbonate products?
Basics of Pest Management
Basics of Pest Management
Grape Downy Mildew Control

- Proper pruning & training
  - Open canopy
- Captan?
Canopy Management Basics

Light Exposure
Air Exposure
Pesticide Exposure
Gray Mold

- Open canopy
- Leaf pull
- Avoid insect damage
- Benlate?
- Captan
Basics of Pest Management
Basics of Pest Management
Japanese Beetle Control

- hand-pick
- Sevin
Basics of Pest Management
Grape Phylloxera Control

- resistant cultivars & rootstocks
- Destroy wild vines
Vineyard Floor Management

2,4-D damage to vine
No Nation is drunken where wine is cheap, and none sober, where the dearness of wine substitutes ardent spirits as the common beverage...

Thomas Jefferson