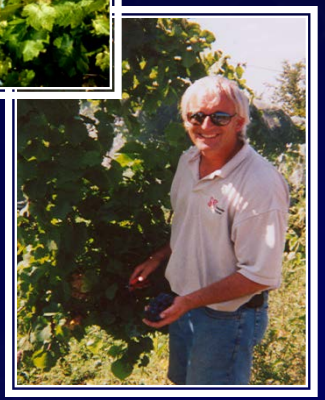
Beginning Viticulture

Paul E Read



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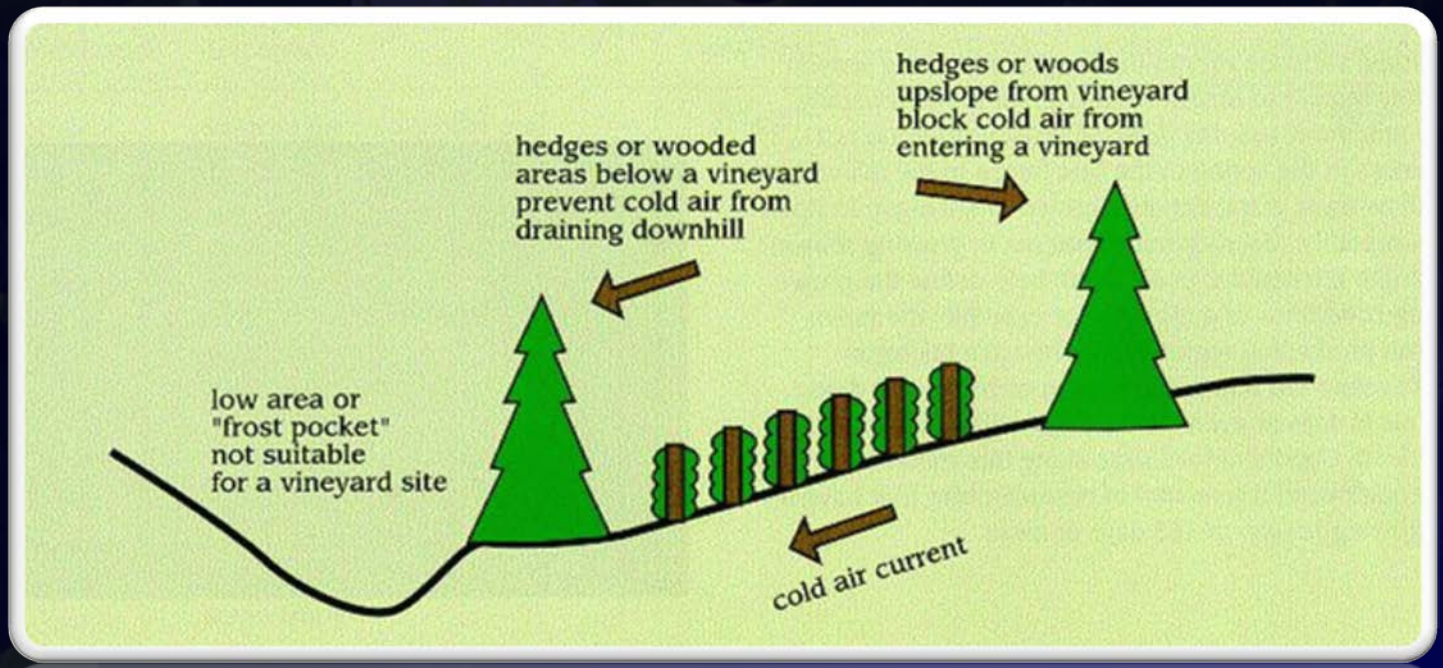
AGRONOMY AND HORTICULTURE
Institute of Agriculture and Natural Resources

Site Selection

- Select a site with good AIR DRAINAGE
  - Cold air flows downward
  - 3-5 degree slope
  - A tree or brush line will form a frost pocket
  - Slope orientation (North, South, East, West)

Site Selection



Site Selection

- Surface water drainage
  - Don’t want water standing for more than a day
  - 2-5 percent slope
  - Test for an impervious layer (hard pan)
  - Modifications to correct drainage problems can be expensive

Site Selection

- Check soil fertility (soil sampling)
- Has not had excessive erosion
- Has a favorable pH, organic matter content and texture
- A soil depth of at least 3 feet

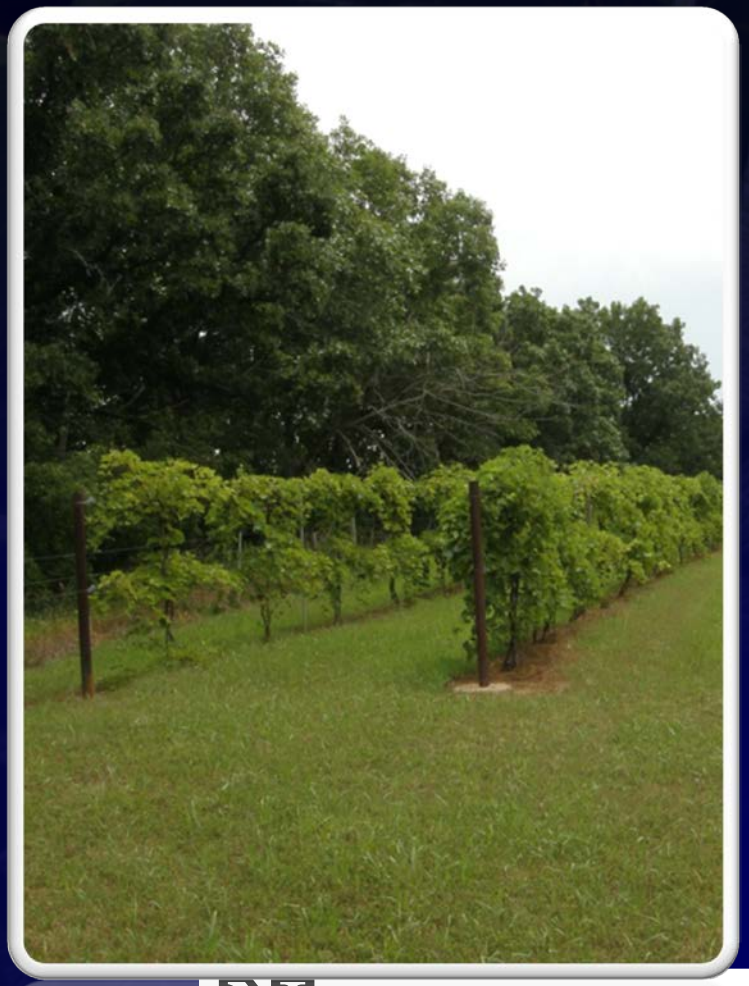
Site Selection

Fertility-it is not necessary that soils be highly fertile; too much fertility, especially nitrogen, may cause vines to be excessively vegetative. Desirable soil test amounts: (actual pounds per acre, phosphorous 40 to 50, boron-1.5 to 2.0 and zinc-8 to 10) and exchangeable pounds per acre, potassium-250 to 300 and magnesium-200 to 250.

Organic matter – 1 to 3% is desirable.

Site Selection

- Isolation-
  - Herbicide drift
  - Proximity to trees
  - Water source
    - Irrigation
  - Accessibility
    - Public
    - Private



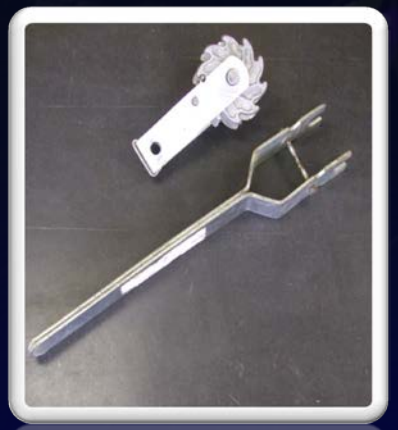
Physical Structure of a Trellis

- End post
  - Most important part of the trellis
- Line post
  - Support and hold wire in place
- Wire
  - Carries the weight of the vine
  - 12.5 gauge high tensile strength
- Anchors

Physical Structure of a Trellis

Other materials

- Strainers
- Staples
- Wire Splicers
- Cross arms
- Spinning Jenny



Canopy Management

Definitions

Canopy Management:

Pruning, training, trellising and canopy management all go hand in hand. Dormant pruning is the beginning and most dramatic process used to influence the vine into it's proper growth habit that will be used on the vine. In the process of pruning we will be training the vine to a type of trellis and influencing it's canopy characteristics and management for the coming season. The object of this presentation is to give you the basics from plant and operation terminology to an attainable goal of what the basic plant structure should look like, focusing on dormant pruning practices.

Definitions

"Canopy management is the practice which results in the modification of position or amount of leaves, shoot, and fruit in space to achieve a desired arrangement."

Dr. Richard Smart, co-author of

Sunlight into Wine

Definitions

Training: Arranging the fruiting buds of a vine for greatest efficiency of management and production of fruit according to the climate, soil and growing conditions. Training systems usually refer to the relation of the fruiting wood to the permanent parts of the vine (trunk and cordon arms).

Definitions

Trellis: A framework of stakes and wires used to train and arrange the vine growth in the most advantageous manner. Without training the vines would grow like bushes on the ground. There are countless ways to train vines, each with its own advantages and disadvantages.

Definitions

Pruning or dormant pruning is the deliberate removal of plant parts during plant dormancy to redirect or regulate growth, or to promote and control fruiting and flowering in the subsequent growing season.

What to Consider

- Vigor of the cultivar
- Soil fertility
- Trellis selection

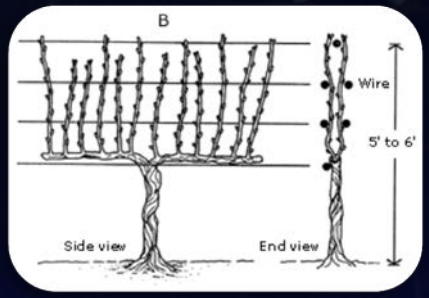
circa 1500

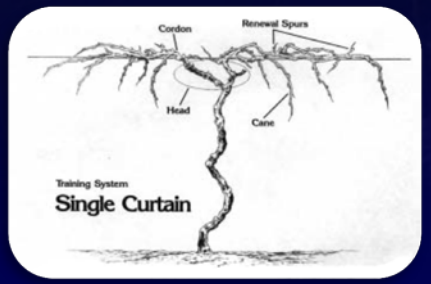
Trellis Types

- Selection is dependent on
  - Soil fertility
  - Plant vigor
  - A plant's growth tendencies

Trellis Type

- Upright plant growth
  - Low wire system
    - Vertical shoot positioning (VSP)
      - Scott Henry
      - Smart Dyson
- Trailing plant growth
  - High wire system
    - High cordon
      - Geneva Double Curtain (GDC)





Vine Canopy

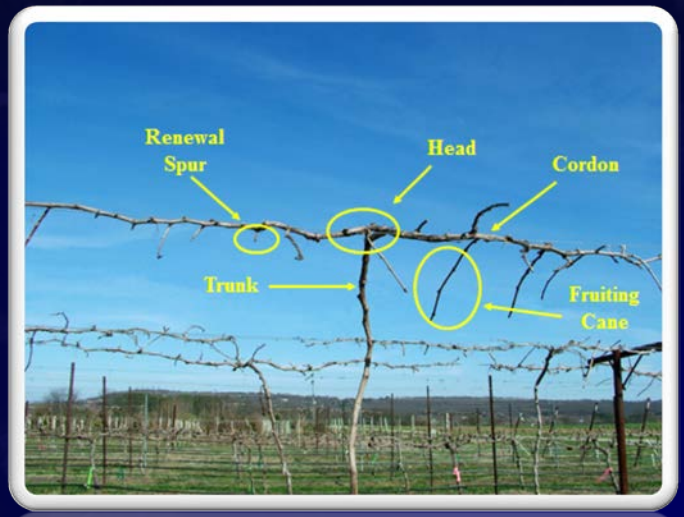
- Shoot System
  - Stems
  - Leaves
  - Fruit clusters

Canopy

- Described as
  - Length
  - Height
  - Width
  - Leaf area
  - Number of leaf layers
  - Shoot density

Shoot Density

- Is referred to by
  - The number of shoots per foot of row or foot of canopy



Benefits of Canopy Management

- Maximizing sunlight interception
- Increased air movement
- Improved spray penetration
- Improved fruit composition and varietal character
- Increased bud fruitfulness
- Improved winter hardiness

Five Major Steps in Canopy Management

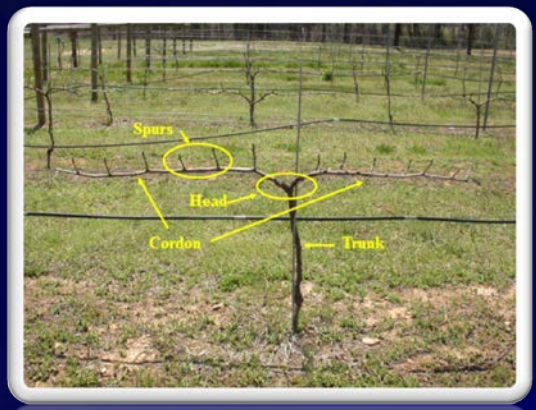
1. Shoot thinning
2. Shoot positioning
3. Cluster thinning
4. Leaf removal
5. Shoot hedging and skirting

Shoot Thinning

- Removal of excess shoots
  - On the trunk
    - One or two may be left on the trunk for replacement
  - On the cordon
    - Unfruitful shoots are removed unless needed for spur renewal

Shoot Thinning

- Four to six shoots per foot along the cordon
  - 8 ft spacing, 32 to 48 shoots per vine single curtain/high cordon
  - 64 to 96 for divided canopy (GDC)



Shoot Thinning

- Best done when shoots are 1 to 3 inches for the ones on the trunk and 6 to 12 inches for those on the cordon.
- Done after the last chance of a spring frost

Shoot Positioning

- Ideal world - shoots are parallel to the trunk
- Real world - they grow parallel to the cordon with tendrils attached to the cordon wire
- Shoot positioning discourages lateral and horizontal growth

Shoot Positioning

- Tucking
  - Generic term for positioning shoots upward
  - Used on
    - Low wire systems such as vertical shoot positioning (VSP)
- Combing
  - Generic term for positioning shoots downward
  - Used on
    - High cordon
    - Geneva double curtain (GDC)

Shoot Positioning

- Combing/tucking
  - Used on
    - Vertically divided canopies
      - Scott Henry
      - Smart Dyson

Shoot Positioning

- When
  - As soon as possible after bloom
  - And when shoots develop enough to avoid snapping or breakage

Cluster Thinning

- Cluster thinning helps promote long term benefit to the well-being and life span of the vineyard

Cluster Thinning

- Some Cultivars may require cluster thinning
  - Seyval
  - Chancellor
  - Vidal
  - Chambourcin
  - Frontenac

Cluster Thinning

- When
  - Two times
    - Pre Bloom
      - Removal of flower clusters
    - Post Fruit Set
      - Berry set will be less per cluster than Pre Bloom thinning
      - More time consuming
      - Yield, sugars, vine size and hardiness may be improved

Cluster Thinning

- Post Fruit Set Thinning

  (75% canopy development)

  – Remove all clusters from shoots less than 12 inches long

  – Leave one cluster per shoot for shoots 12 inches to 24 inches long

  – Leave two clusters per shoot for shoots more than 24 inches long

Leaf Removal

- Two goals to be accomplished
  1. Improved air movement and spray penetration
  2. Improve sunlight exposure to the fruit and basal buds

Leaf Removal

- On the sunny side of the canopy
  - Is completely avoided or very minimal
- On the shady side of the canopy
  - Two or three leaves are removed around the base of each shoot or cluster

Leaf Removal

- Should be performed after fruit set.
- Should be avoided after veraison as this may lead to fruit sunburn.

Shoot Hedging and Skirting

- Removal of shoots that grow beyond their allocated space.
  - Hedging
    - Used on upward trained shoots (VSP, Smart Dyson or Scott Henry)
  - Skirting
    - Used on downward trained shoots (High Cordon or Geneva Double Curtain)

Shoot Hedging and Skirting

- When
  - Shoots grow beyond their allotted space
  - They impede daily vineyard practices
  - Should not be done after veraison

Harvest Timing for New Vineyards

- °Brix (refractometer reading)
- pH
- TA (titratable acidity)
- or – when the winery wants the crop

Harvest Timing for New Vineyards

- First growing season – no harvest remove all clusters early
- Second growing season – no harvest remove all clusters early
- Third growing season – small to modest harvest (leave enough buds/clusters for 1 to 1 ½ T/A
- Fourth growing season – 3 T/A plus

Cheers!!!