Site Selection and Vineyard Design in a challenging environment

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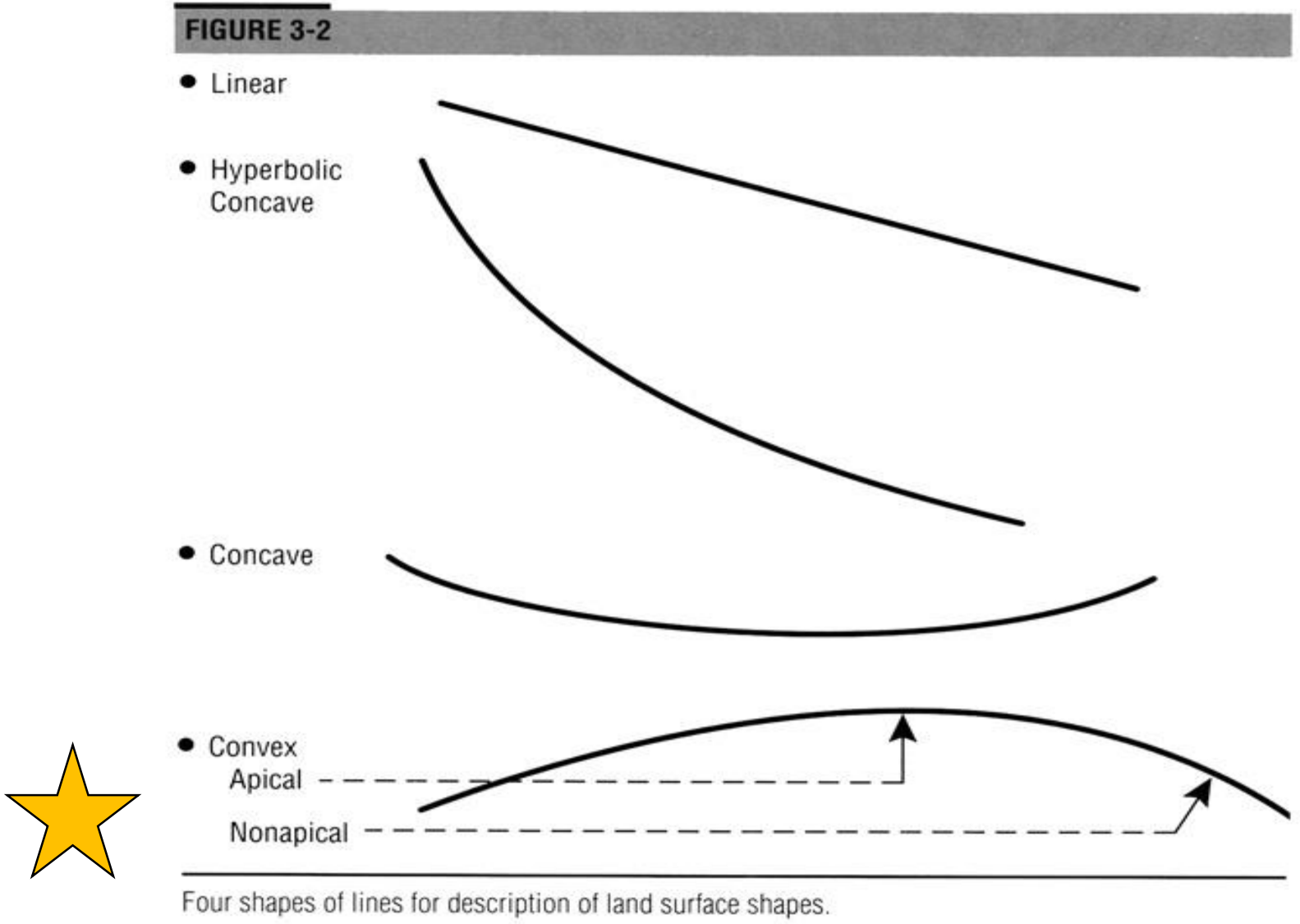
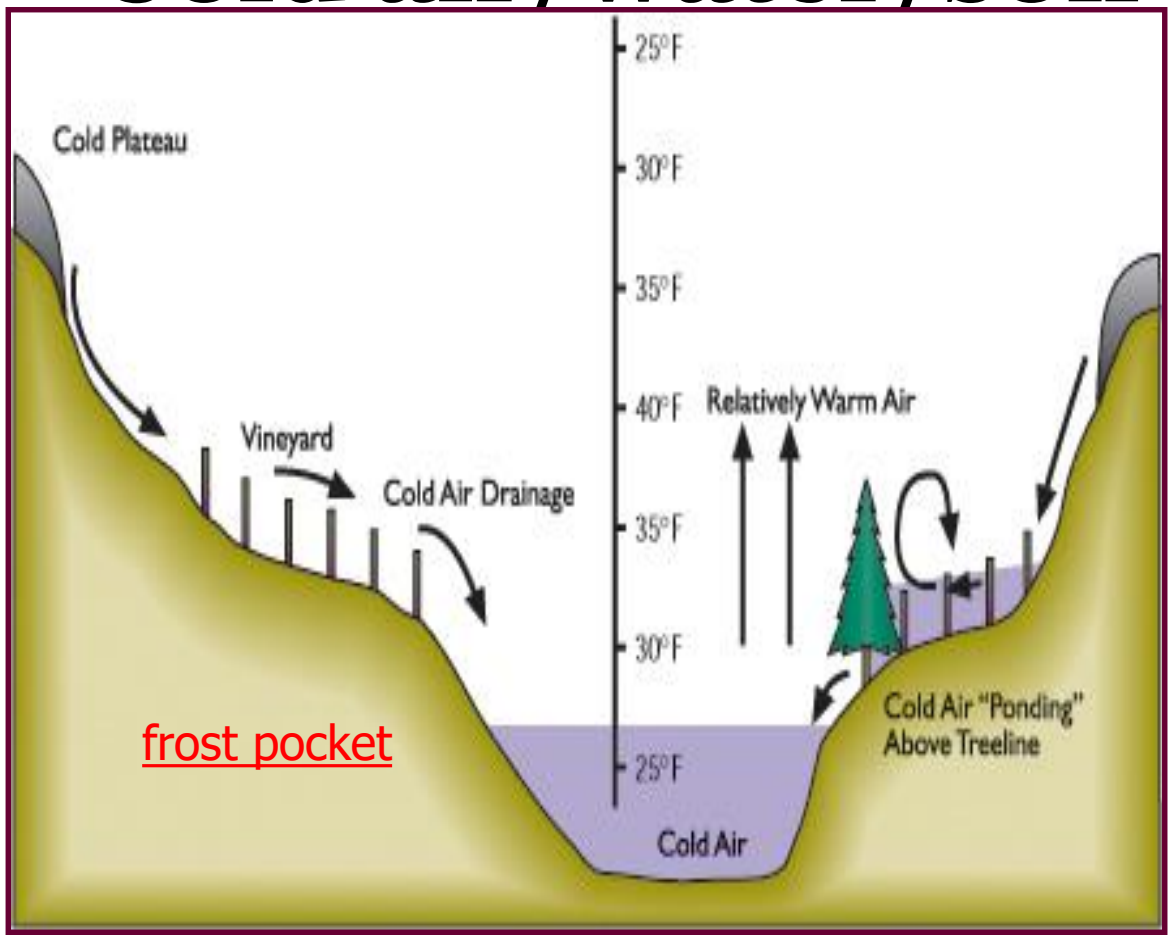


NRCS
http://soils.usda.gov/technical/manual/contents/chapter3.html

Relative Elevation and Slope
Cold air/water/soil



Vineyard Site Selection
Authors: Tony K. Wolf and John D. Boyer, Professor of Viticulture and Lecturer, Virginia Tech
Publication Number 463-020, December 2003

Vineyard logistics

- Harvest logistics
- Spray tanks
- Fruit production
- Access lanes

Vineyard development:

- Much easier to work field before trellis in place
- Soil amendments
- Weed management
- Clear trees, outcrops, holes
- Cultivation

  - NRCS?

Vineyards are complex: Disassemble into components

- Row orientation
- Row spacing
- Vine spacing
- Cordon/spur vs head/cane
- Grapevine training systems

VIRGINIA AGRICULTURAL EXPERIMENT STATION
VIRGINIA TECH

Row orientation

- **North-south**
- East-west
- Up and down the hill
- Side-slope

Parameter	Aspect			
	North	South	East	West
Time of bud-break	Retarded	Advanced	Retarded	Advanced
Daily maximum vine temperature	Less	Greater	Less	Greater
Speed of foliage drying in morning	-	-	Advanced	Retarded
Radiant heating of fruit	Less	Greater	Less	Greater
Radiant heating of vines in winter	Less	Greater	Less	Greater
Minimum winter air temperatures	Lower	Higher	-	-
Length of growing season	Shorter	Longer	-	-

Row spacing

- Shading 1:1

- Maximizing trellis per unit area

- But, be realistic…. 3 foot (1.5’ +1.5’)buffer around equipment

Vine spacing (practical considerations)

- 5 feet between vines
- More vines per acre = greater establishment costs
  - Vines
  - Stakes
  - Planting labor
- More rapid trellis fill with closer vine spacing
- Missing vine = empty trellis

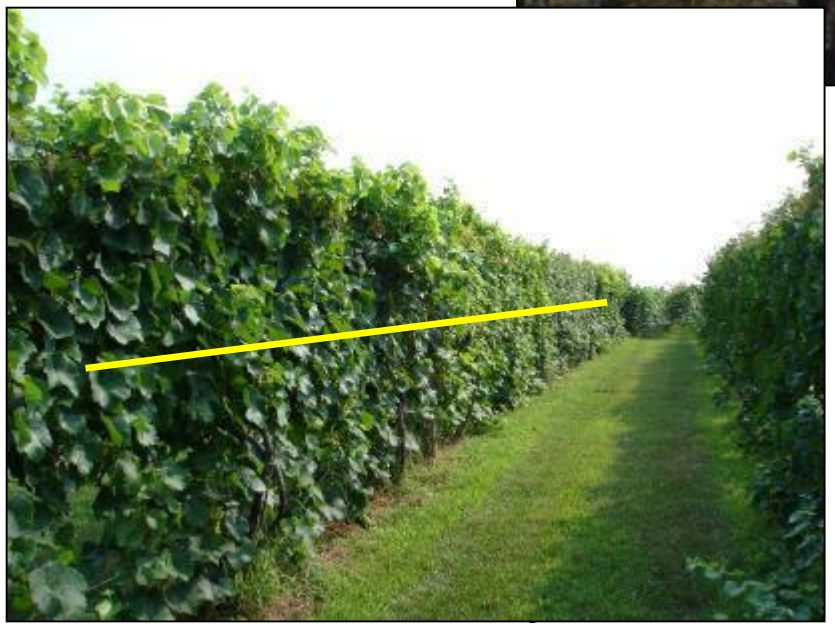
Vine spacing (interpretation)

- Low Plant Available Water site -> low capacity (small) vine -> high density vineyard
- High Plant Available Water site ->high capacity (big) vine -> low density vineyard

Divided Canopies: manipulate spacing, increase yield, increase labor

Geneva Double Curtain

Labor per ton



Smart-Dyson

Grapevine training systems: Wildlife deterrence

- Fences
- Nets
- Perimeter-block geometry

Addressing site limitation

- Wind machines
- Tile drainage

Risk management is the identification, evaluation, and prioritization of risks

Addressing site limitation: Irrigation

Positive

- Vineyard development- crop production in early years
- Means to supply supplemental water in drought
- Injector
  - Fertilizer
  - Insecticides

Negative

- Material cost
- Installation cost
- Infrastructure/design
- Inconsistent need in established vineyard
- Maintenance

Temporary irrigation for vineyard installation

Every vineyard is unique

- Site
- Varieties
- Production goals

Vineyard Establishment

- Site preparation begins at least one year prior to planting
  - Soil testing, amendments, cover crop, weeds, soil preparation
  - Vineyard layout and design

Happy Holidays!

Thank you for attending today!