

# 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!***



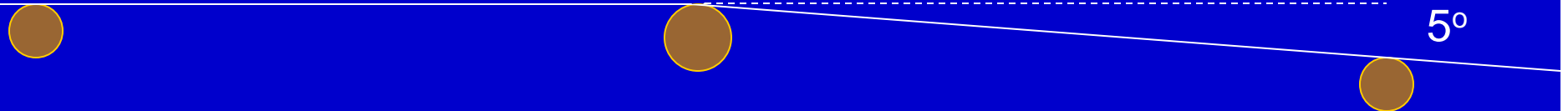
# Vineyard Layout

- **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

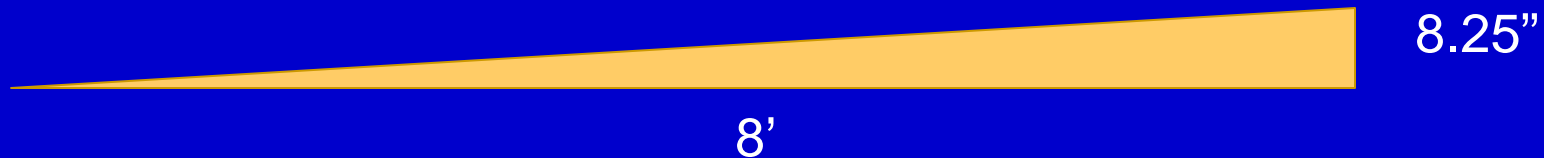
# Planting on a Contour

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.

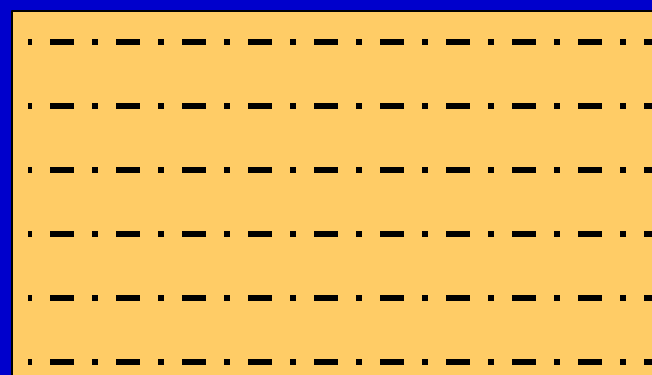
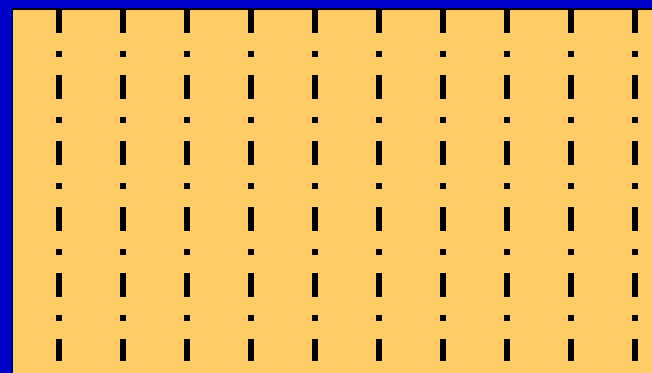
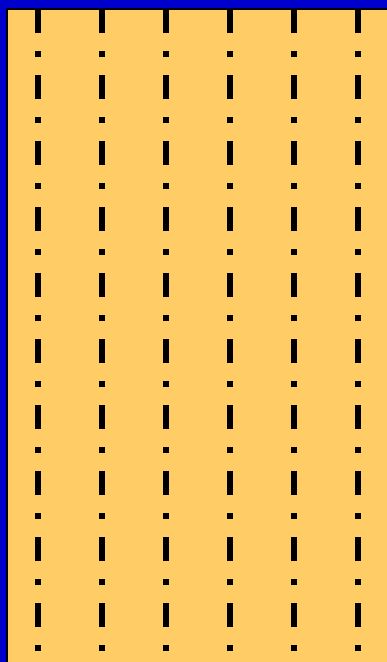
Pivot Post



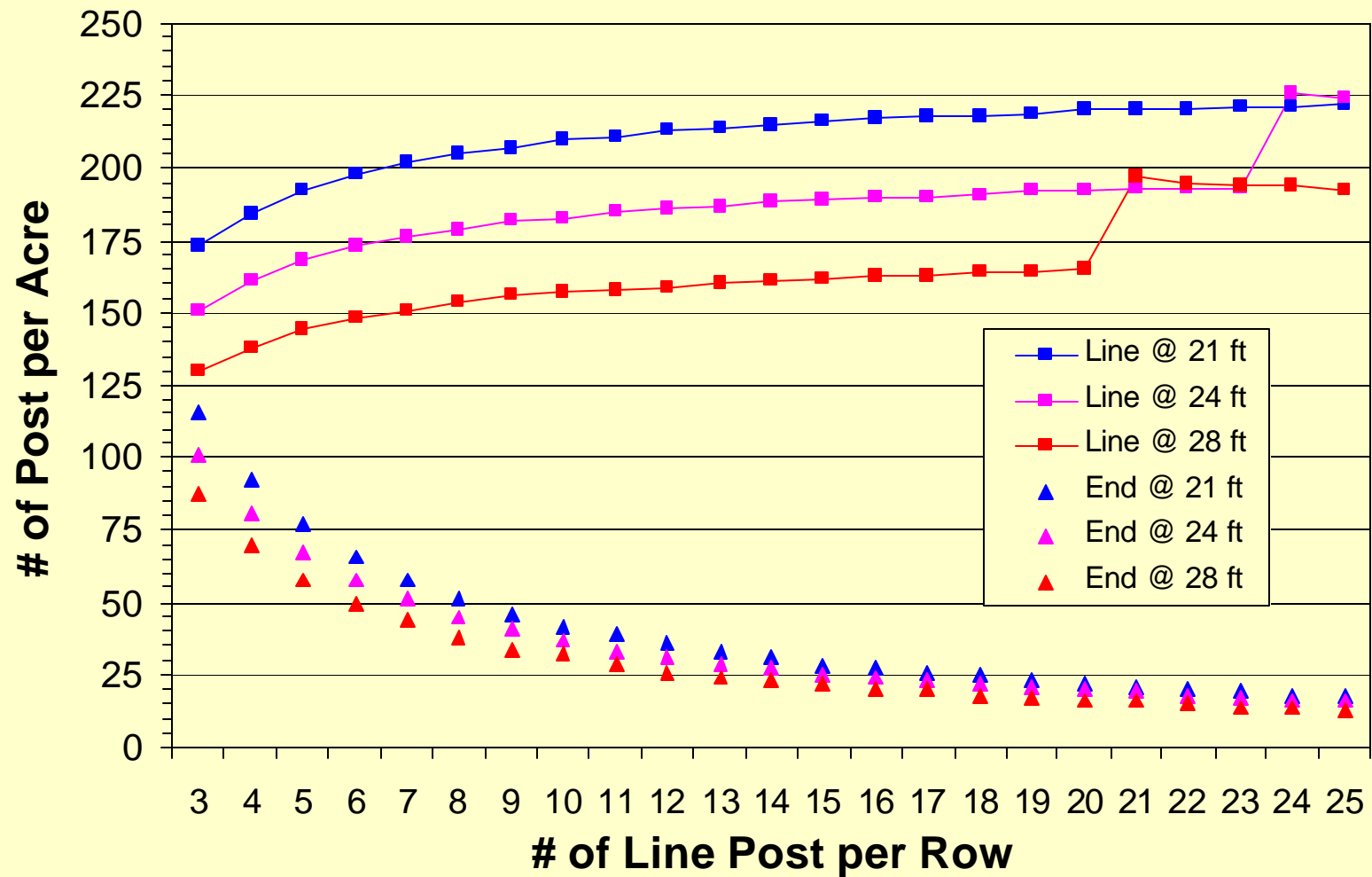
A plywood template can be made to gauge a 5 degree curve.



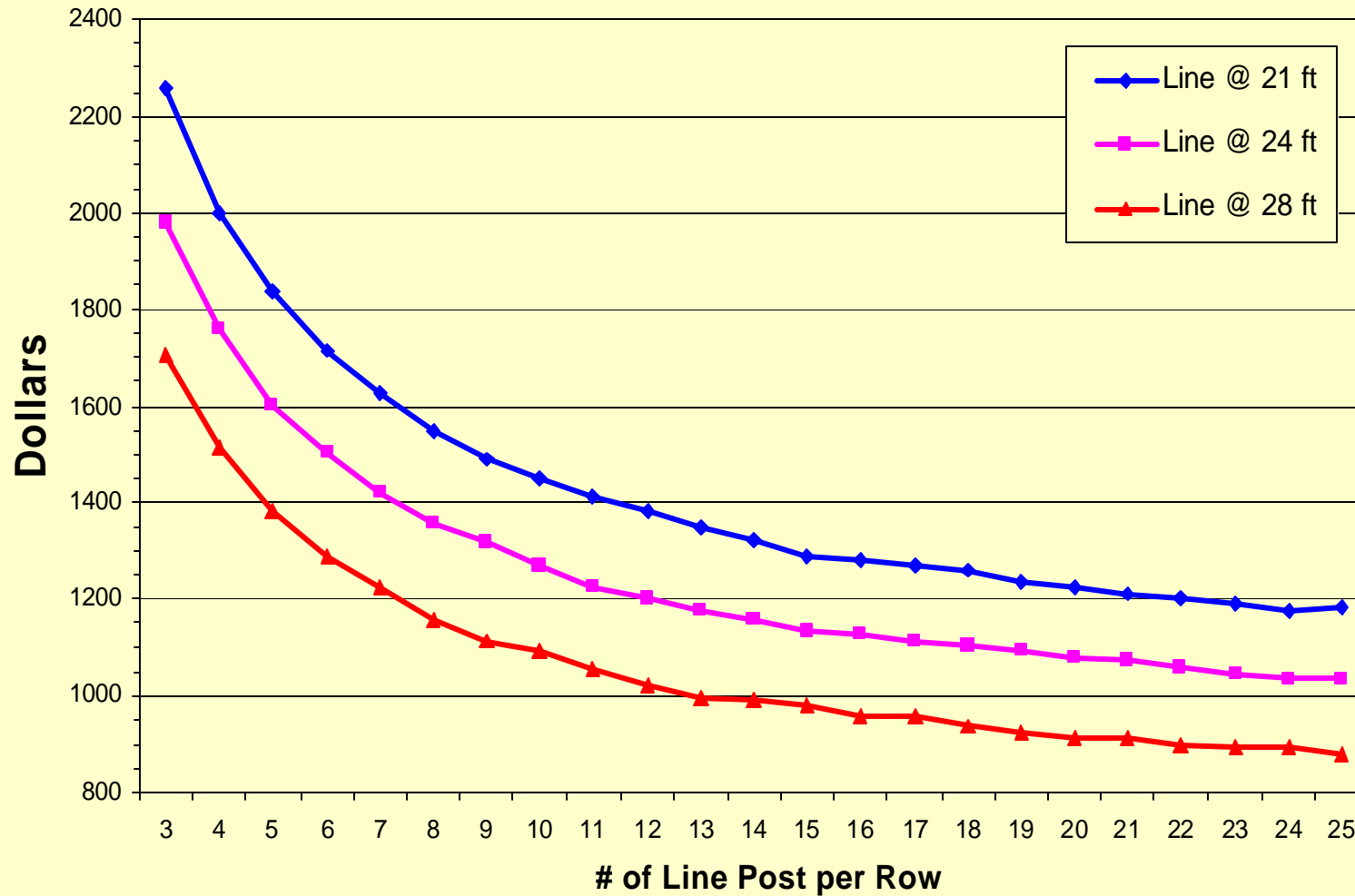
# Shape of the Field



# Number of Post per Acre



# Cost of Trellis Posts per Acre



# 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.

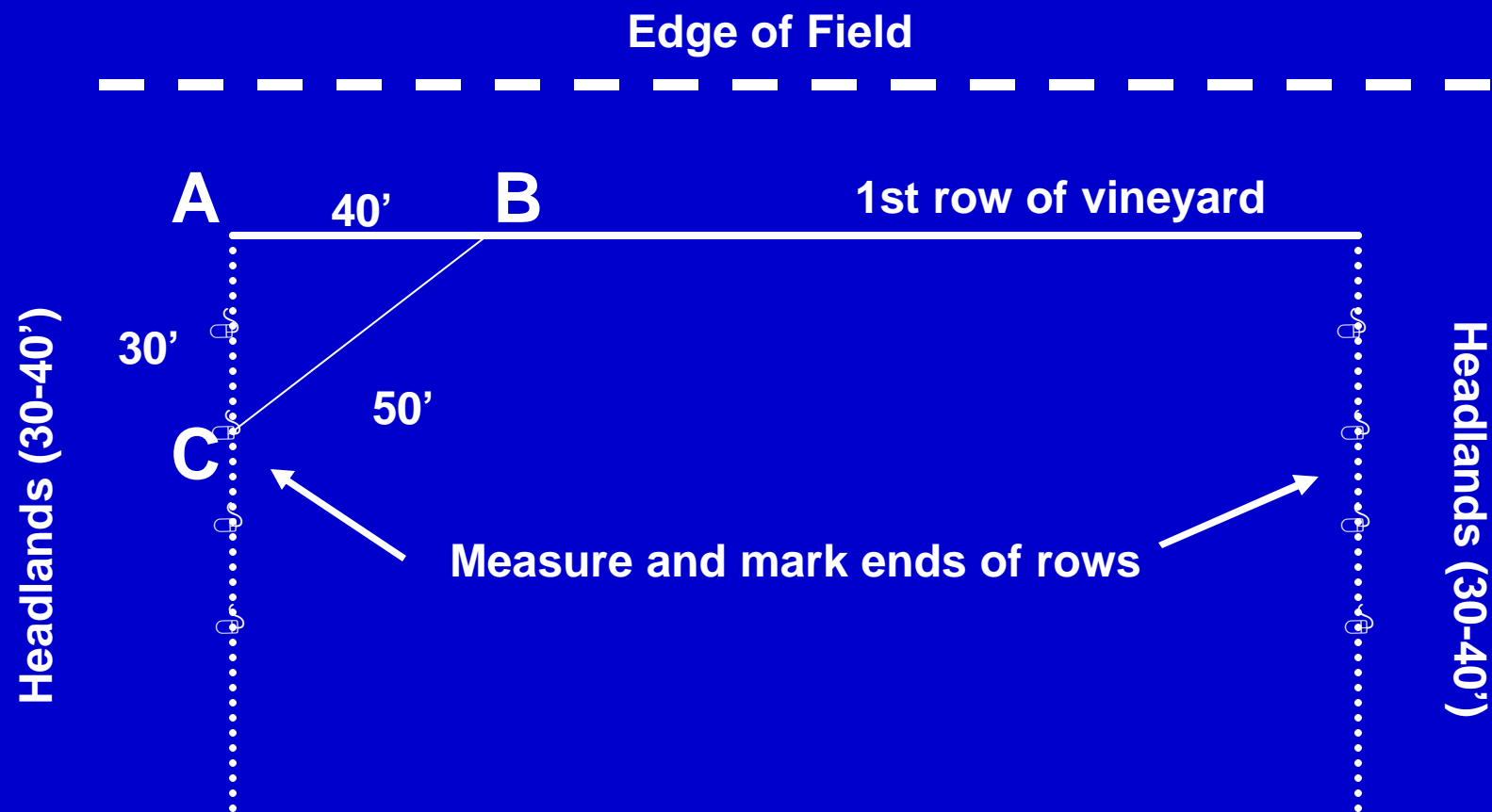
# Vineyard Site Preparation

## 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







IOWA STATE UNIVERSITY  
University Extension

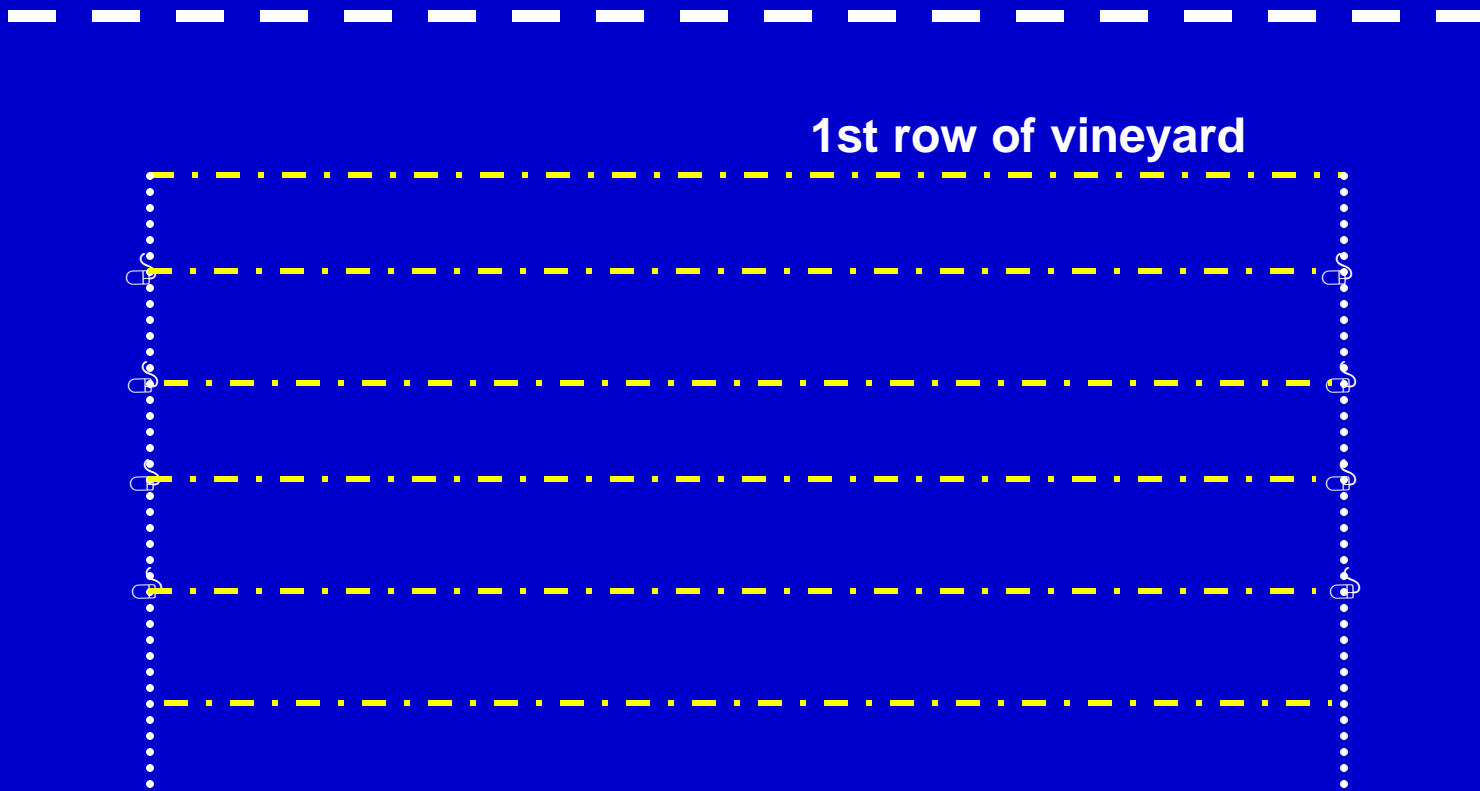




IOWA STATE UNIVERSITY  
University Extension

# Vineyard Layout

Mark out Rows and Vine Placement  
With Markers







IOWA STATE UNIVERSITY  
University Extension





## Nursery Grades

Grade	Top Growth	Root Growth
<b>1-X</b>	> 12"	> 12" numerous
<b>1-1</b>	> 12"	> 12"
<b>1-2</b>	6 – 12"	6-12"













IOWA STATE UNIVERSITY  
University Extension

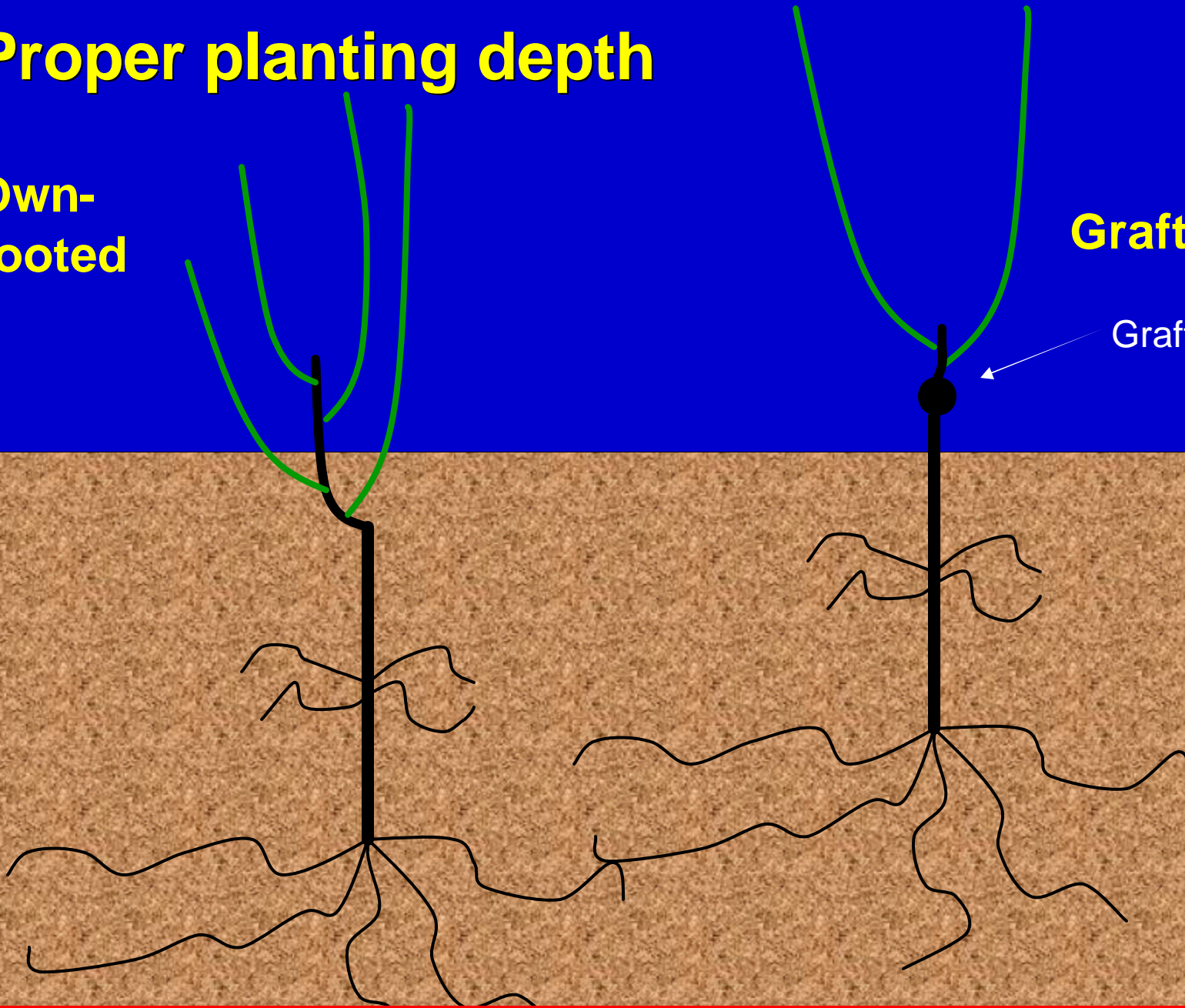


# Proper planting depth

Own-rooted

Grafted

Graft union







IOWA STATE UNIVERSITY  
University Extension

# Vine Planting with a Transplanter

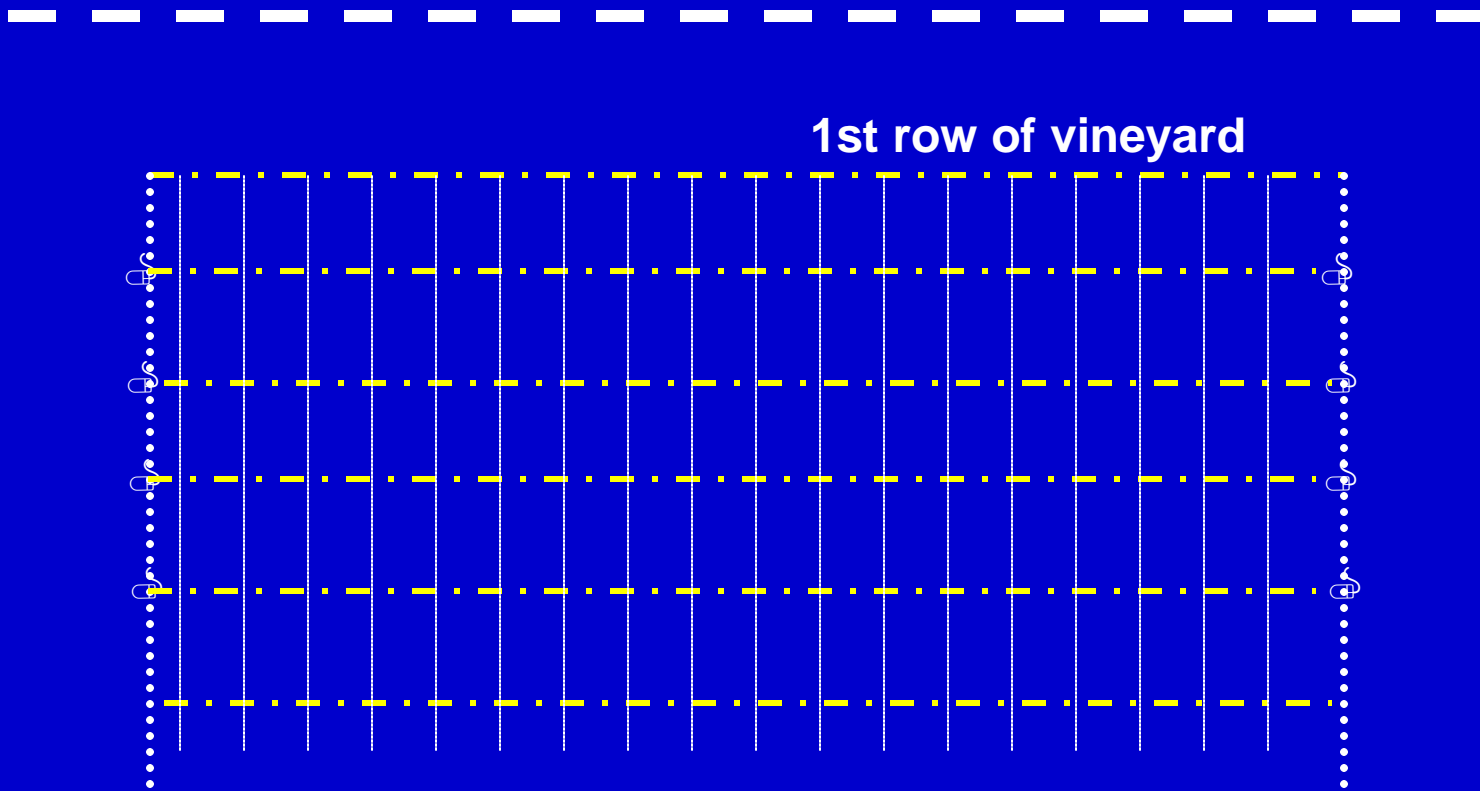
Saves on labor, but require a larger tractor.



# Vineyard Layout

Mark out Rows and Vine Placement

By cross scoring the field





# Set at Proper Depth



# Spacing and Tamping



# 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

2' deep

3' deep

Provide equivalent anchorage





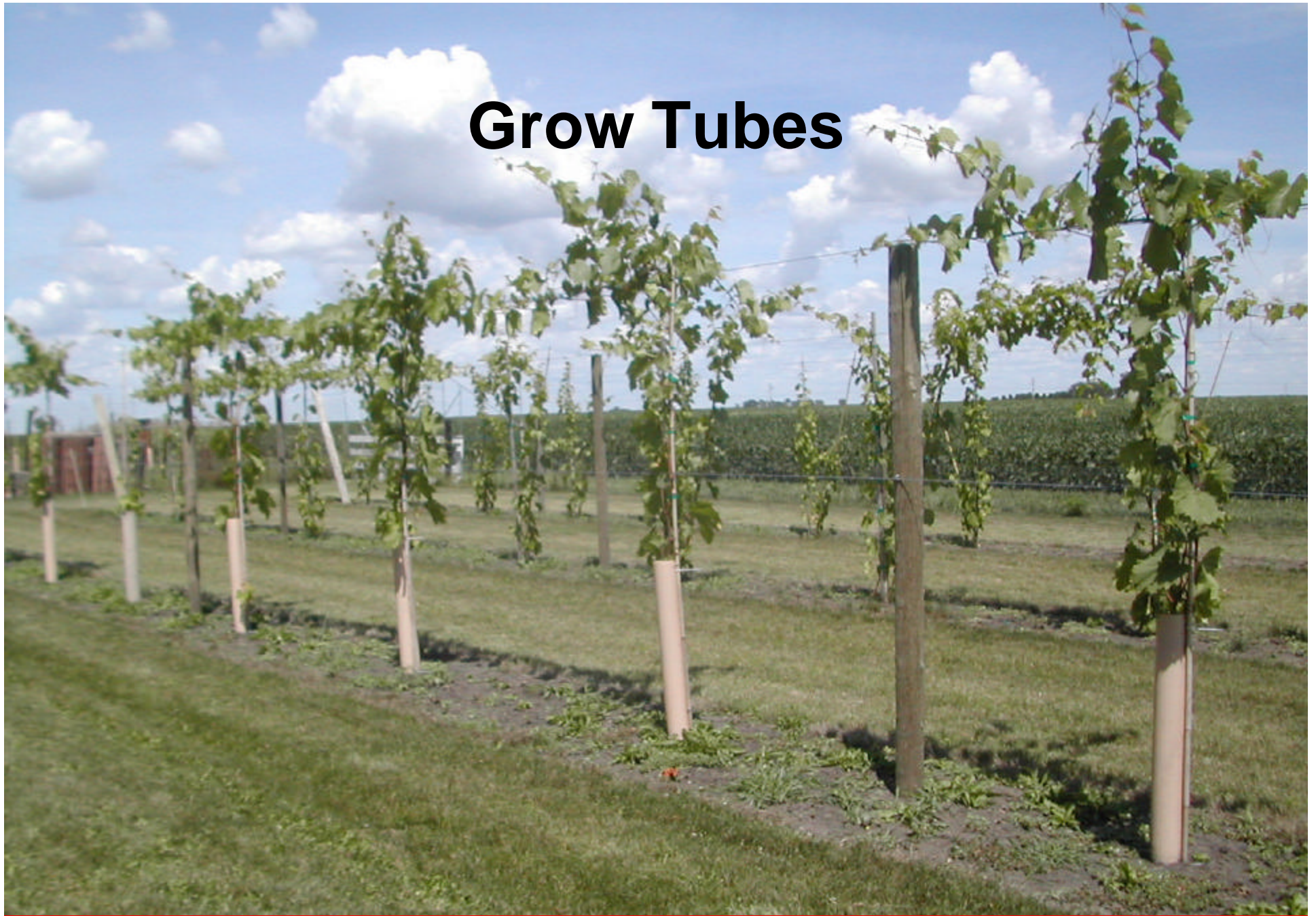
IOWA STATE UNIVERSITY  
University Extension



**IOWA STATE UNIVERSITY**  
University Extension



# Grow Tubes







IOWA STATE UNIVERSITY  
University Extension

# Vineyard Training Systems



# Growth Habit

## Trailing / Drooping



Characteristic of  
American species

## Upright



Characteristic of *V. vinifera*  
& some French-Amer. hybrids



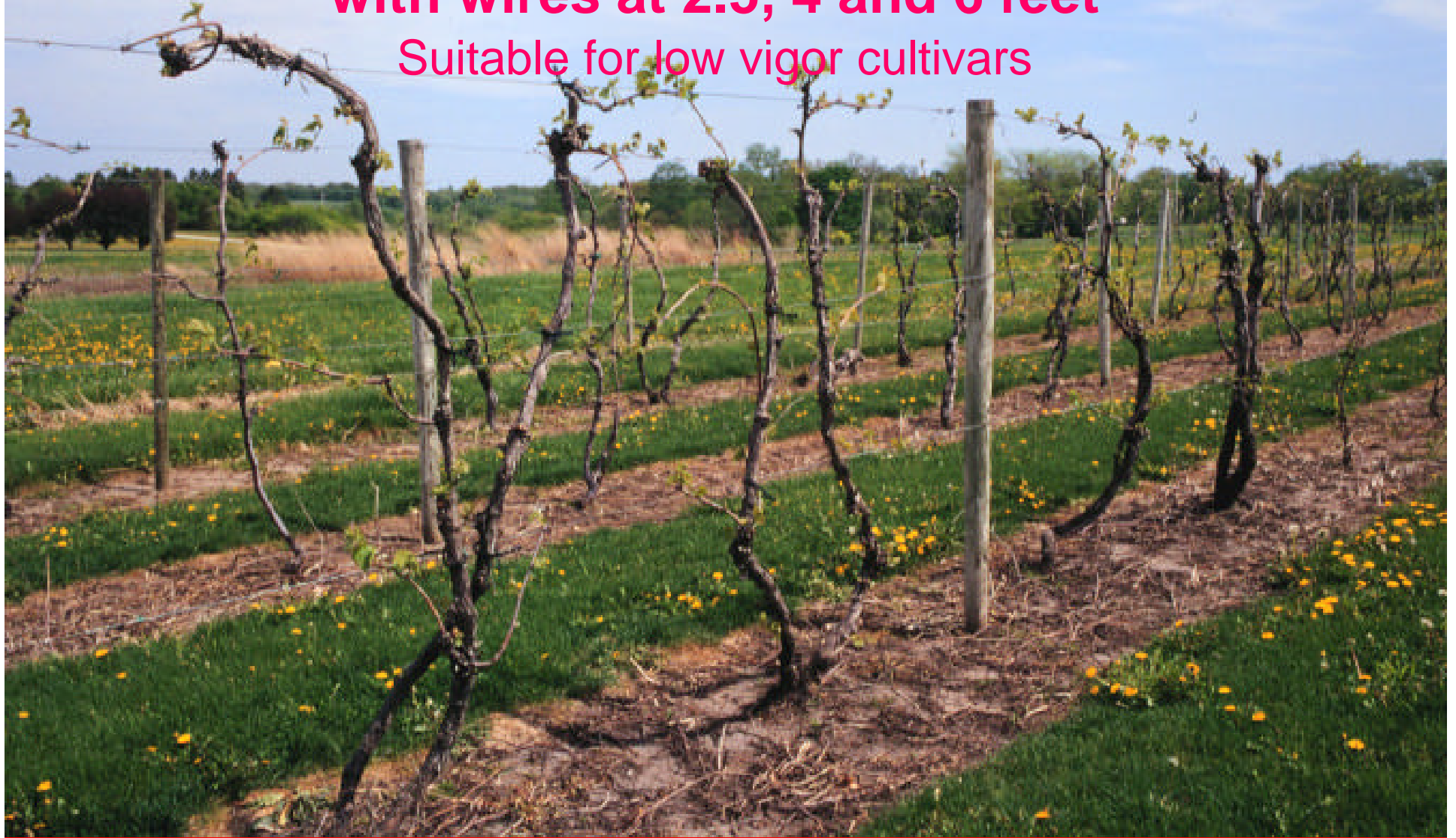
# Single Curtain Bi-lateral Cordon



# 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"





VSP





# Smart-Dyson





# Scott Henry

**Cordon**



# Cultivars Suited for Vertical Shoot Positioning

## Semi-upright:

Chambourcin

Chardonel

La Crosse

Prairie Star

Seyval Blanc

Traminette

## Upright:

Chelois

St. Vincent

Vignoles

# 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  $\pm$



# 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







IOWA STATE UNIVERSITY  
University Extension



# Grape Diseases



Black rot



Anthracnose



Downy mildew

Powdery mildew



Phomopsis



Bunch rot



# Grape Insects



8-spotted forester moth



Grape rootworm beetle



Asian Ladybird beetle



Hornworm



Grasshopper



Japanese beetle



Grape Phylloxera



Leafrollers



Bees



Grape berry moth



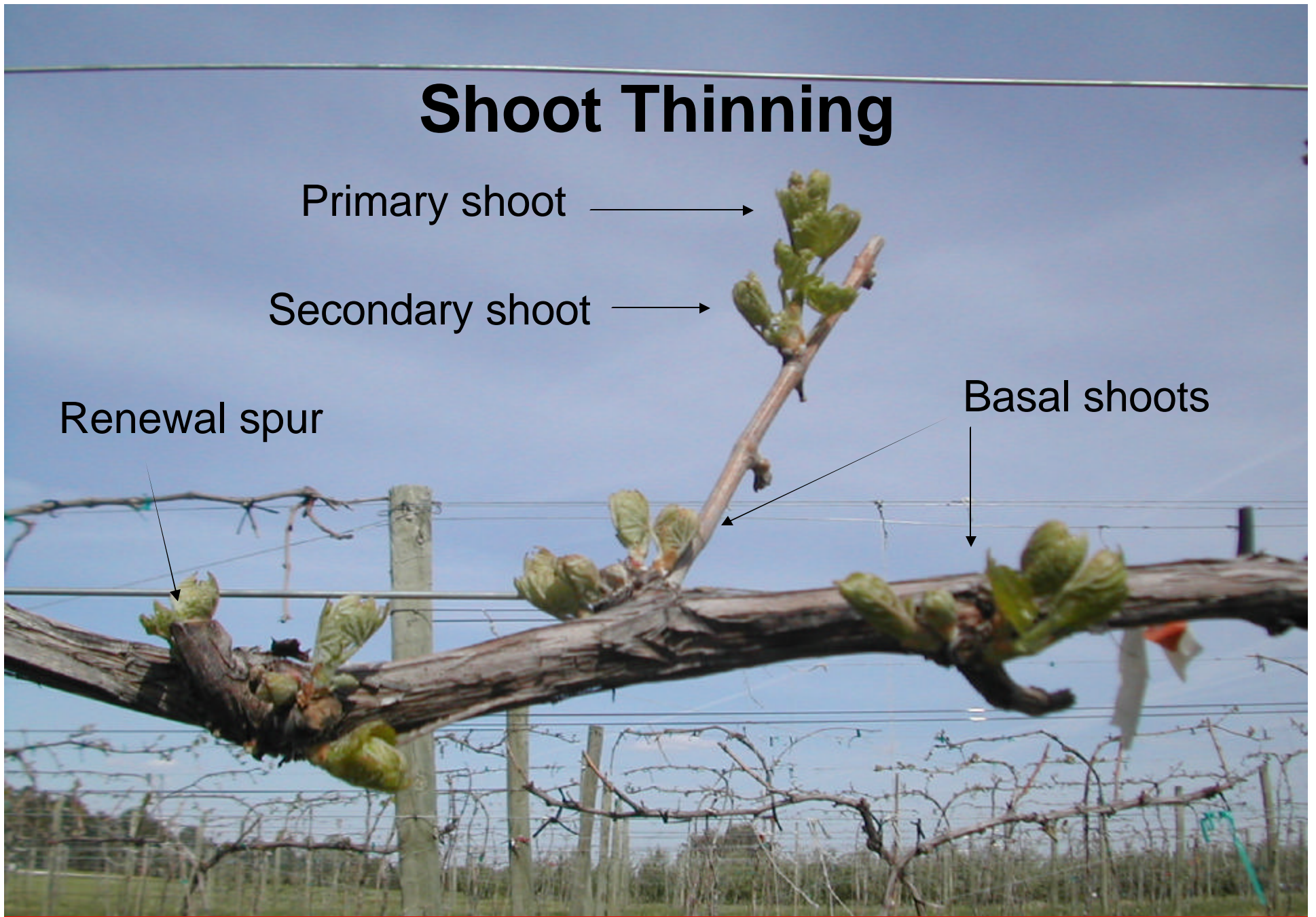
# Shoot Thinning

Primary shoot →

Secondary shoot →

Renewal spur

Basal shoots

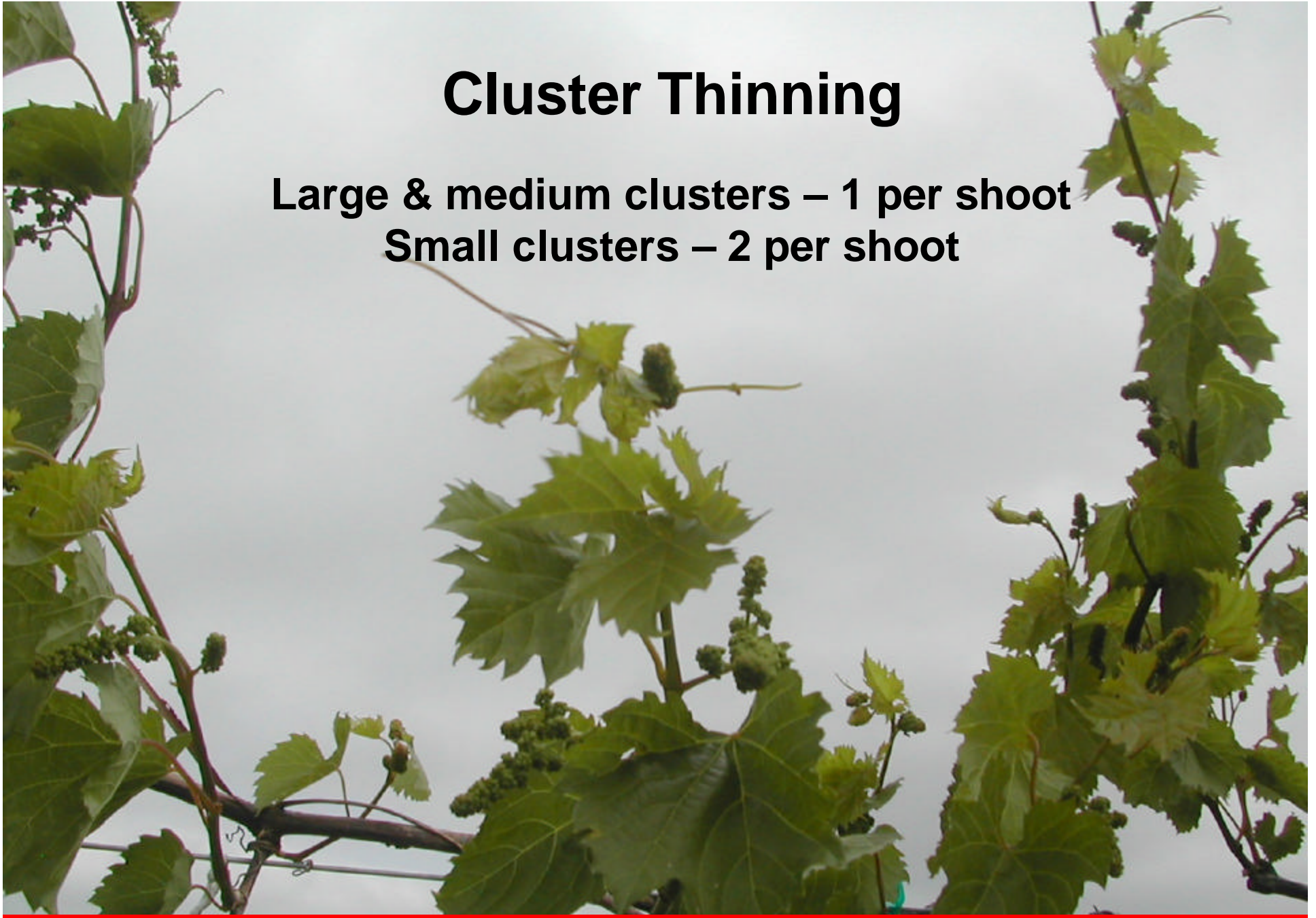




# Cluster Thinning

**Large & medium clusters – 1 per shoot**

**Small clusters – 2 per shoot**





# Shoot Positioning





# Shoot Positioning







IOWA STATE UNIVERSITY  
University Extension



# Wildlife Control



## Birds

- Sound
  - Cannons
  - Distress
  - Predator
- Reflectors
- **Netting**

## Raccoons

- **Exclusion**
- Habitat reduction
- Trapping, etc.

# Bird Netting







IOWA STATE UNIVERSITY  
Horticulture





IOWA STATE UNIVERSITY  
University Extension