



VINEYARD LAYOUT FOR MECHANIZATION

STEPHEN GAMET

UNL RESEARCH TECHNICIAN



MECHANIZATION VERSES HAND LABOR

Hand versus Mechanization

Land – Site Selection

Design

Row Length

Type of Trellis

Cordon Height

Trellis Materials

Size of the Vineyard



SITE SELECTION

As with any vineyard site selection you will want

Good water drainage

Good air drainage

Slope 5 to 10 Degrees

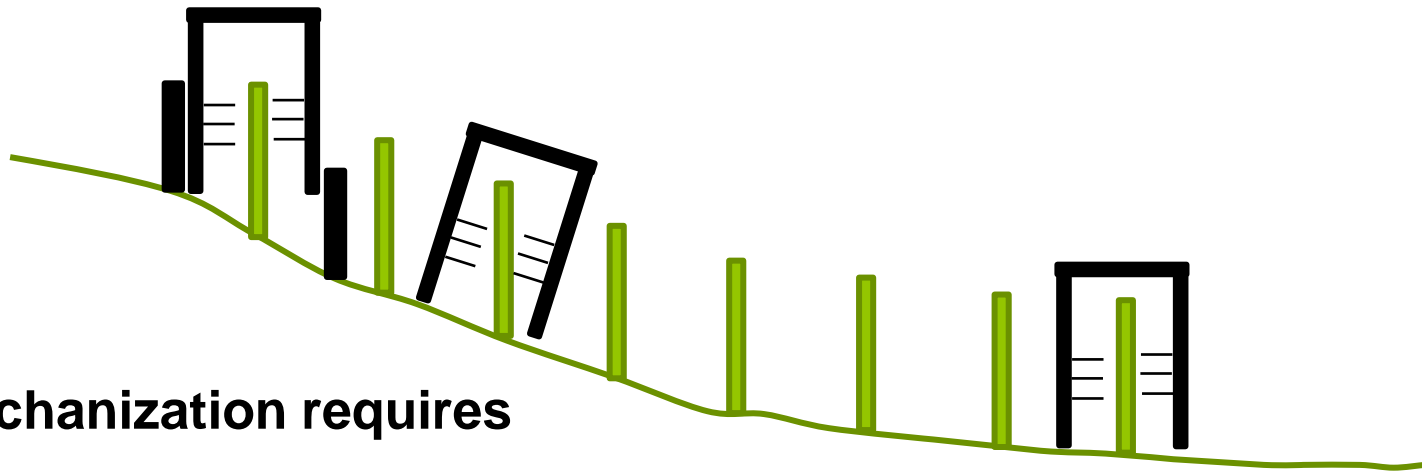
Uniformed soil type

Cover crop



SITE SELECTION

If you are working with a slope the training system needs to be higher.



Mechanization requires
less slope than hand labor.

SITE SELECTION



DESIGN

Rows

Length

Longer is better for mechanization

Broken Row

Straight

Help minimize vine injury

Row spacing uniformity

**Maximize efficiency by allowing use of
dual-row implements**

Adequate room for equipment



DESIGN



DESIGN



DESIGN



DESIGN

Vine Spacing

Uniform vine spacing

**Mechanized operations
be sensitive to irregular
vine spacing**

**Lead to fluctuations in
leaf-area-to-crop-weight
ratios and variable
maturation at harvest**



DESIGN

Headlands

Adequate area

**Need enough area to turn
around equipment**

**Minimize time spent turning
equipment and aligning implements at the
start of each row**

Low grade

Don't want to be tipping over equipment



DESIGN

Vineyard Size

Uniformed row length

Uniform row spacing

Break the row

Work in blocks

One cultivar per block



TRELLISING

The simpler the system the better
and more efficient

The most conducive to
full mechanization



Single cordon

Cordon-trained

High Bilateral cordon

**Midwire cordon with vertical shoot
positioning (VSP)**

Smart-Dyson

Ballerina

Geneva Double Curtain (GDC)?

TRELLISING

Cultivar

Growth

Bearing habit

Anticipated vine size

Crop load

Soil type



TRELLISING

Limit the number of trellis systems as much as possible

Cost effective

Fewer implement adjustments or changes

Reduce the amount of equipment maintenance



AGRONOMY AND HORTICULTURE

Institute of Agriculture and Natural Resources



University Of Nebraska Viticulture Program

viticulture.unl.edu/

TRELLISING

Materials

Line-Post

Wooden versus Metal

Spacing

Longer rows closer spacing

Wire

Larger-diameter high-tensile wire

Tensioned adequately



TRELLISING

End Post Construction

H-Brace System

Single Diagonal Post

Post diameter

Post height

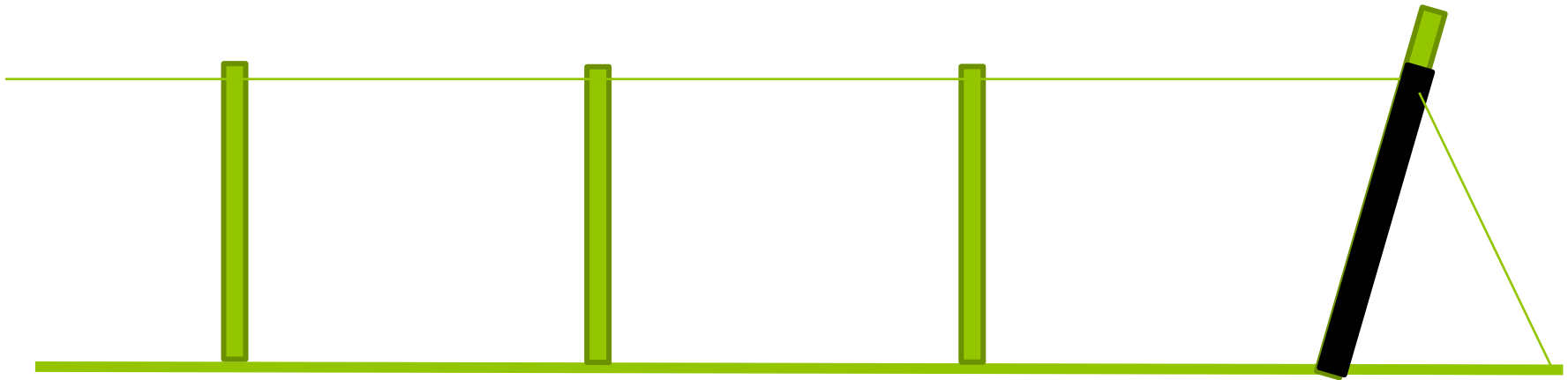
Deadman or screw in anchor



TRELLISING

End post height

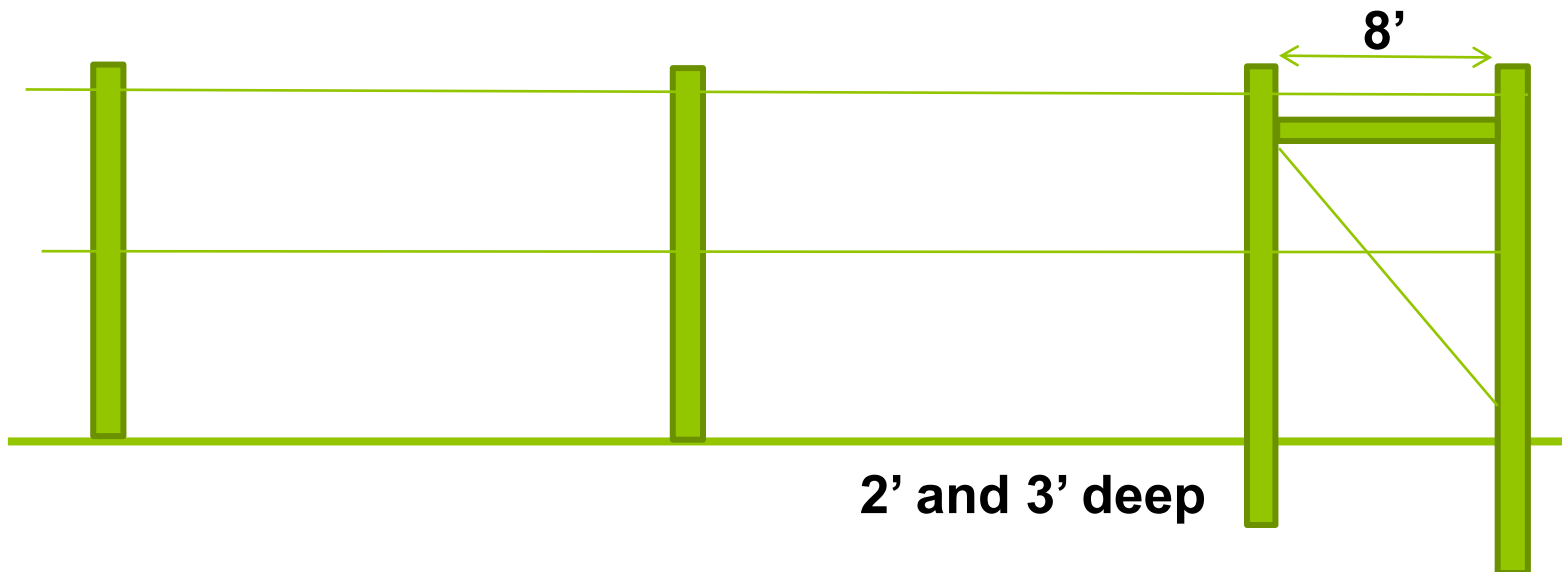
Wire attachment



TRELLISING

Trellis 6' tall

VSP at least 36" from the ground



IRRIGATION

Position drip irrigation tubes and supporting wires at heights where they will not interfere with harvester “catch plates” or working components of other implements.

Position irrigation riser tubes directly in line with the vine row and in locations where implement impact is improbable to minimize damage by harvesters, pruners and other implements.

Use flexible tubing for irrigation risers to avoid damage or simplify repairs from accidental equipment impact.

Position sprinkler heads where injury from equipment impact is unlikely.



**PAUL READ, PROFESSOR OF HORTICULTURE
STEPHEN GAMET, VITICULTURE TECHNICIAN
BEN LOSEKE, LAB TECHNICIAN & PHD STUDENT
CHRISTINA BAVOUGIA, PHD GRADUATE**

