

University of California Agriculture and Natural Resources

UC Cooperative Extension

*Making a Difference
for California*



Selection and Handling of Propagation Material

Methods, Strategies and
Problems

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San Joaquin County**

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Vegetative Propagation

- ✦ Maintain True to Type Varieties
- ✦ Use Resistant Rootstock
- ✦ Crop Quality Management

Maintain Varieties and Market Demands



Grape Species

Scion	“fruiting” variety	V. vinifera	European
Rootstock	resistant hybrid (pure)	Vitis hybrid (pure)	American
Own Root	“domestic” (tame) root	V. vinifera	French hybrid

Vineyard Development

Soil/Climate Resources

✦ Selection

- ✦ Rootstock
- ✦ Clone
- ✦ Spacing
- ✦ Trellis type

Goal

✦ Establishment

✦ Replacement

◆ Maximizing quality

◆ Market Shift

Techniques

✦ Grafting

✦ Budding

✦ Other



Scion wood collection

Precautions to Minimize Problems

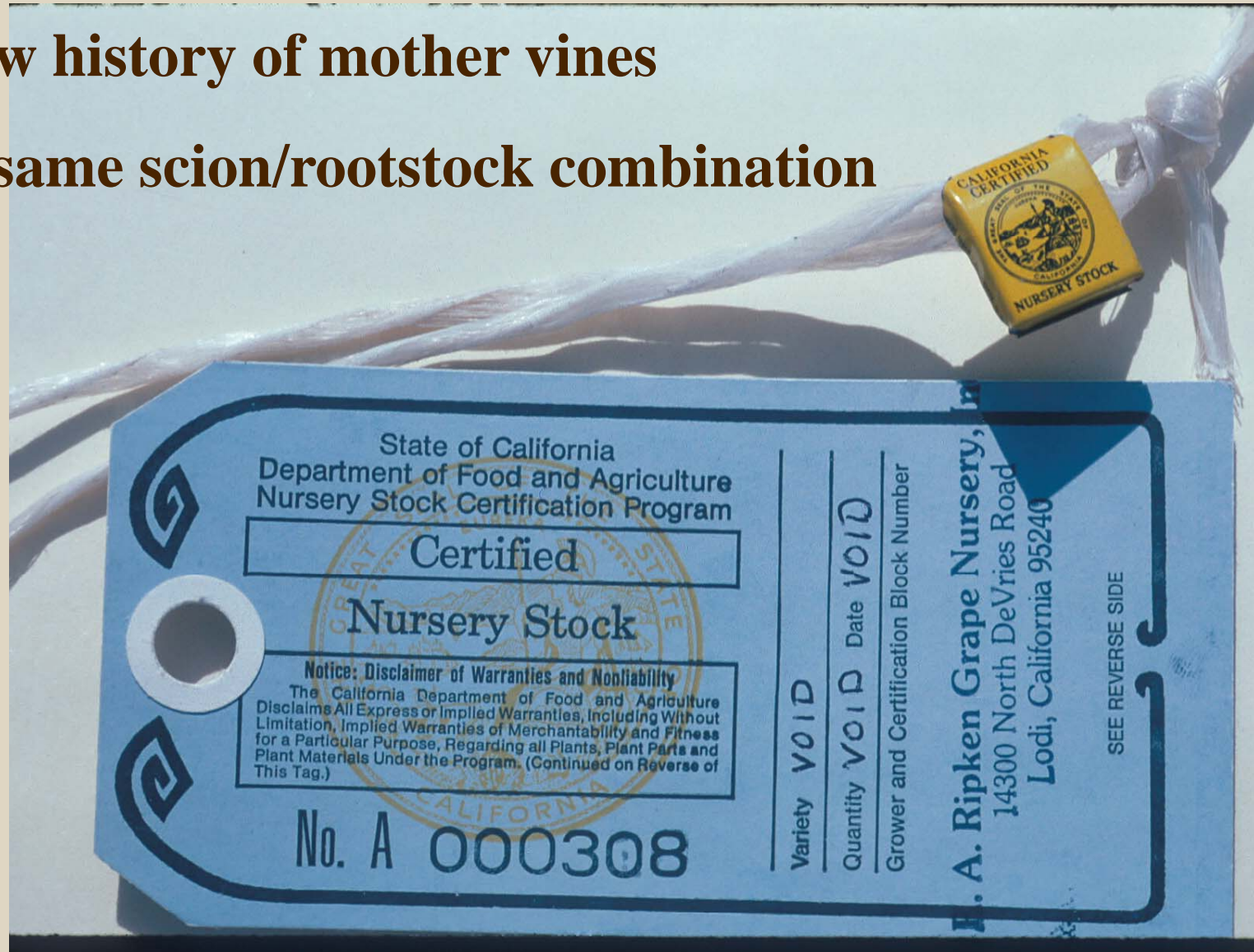
- ✦ Certified wood
- ✦ Know history of source
- ✦ Observe the field source
- ✦ Obtain wood yourself or verify
- ✦ Minimize combination variance
- ✦ Preliminary propagation test if possible
- ✦ Use skilled labor



Use virus tested material or

Know history of mother vines

Use same scion/rootstock combination





Field Selections

Health Status

Source

Site History

Rootstock

Track Record

Fieldbudded Zinfandel/Freedom

Virus Infected

Healthy





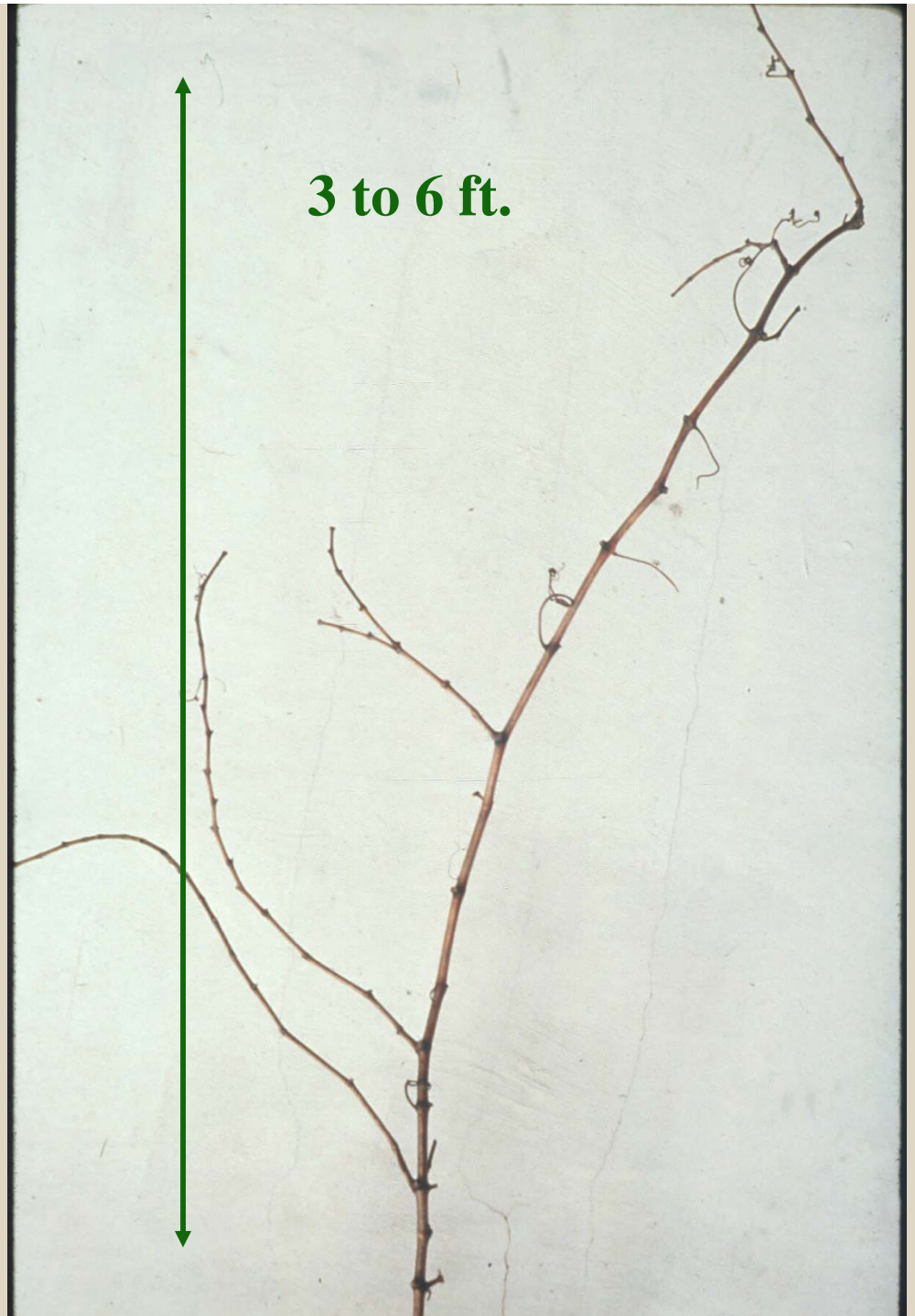
**Appropriately Selected
Scion Wood**

Moderate Internodes

Moderate Diameter

Well Lignified

Good Internal Structure



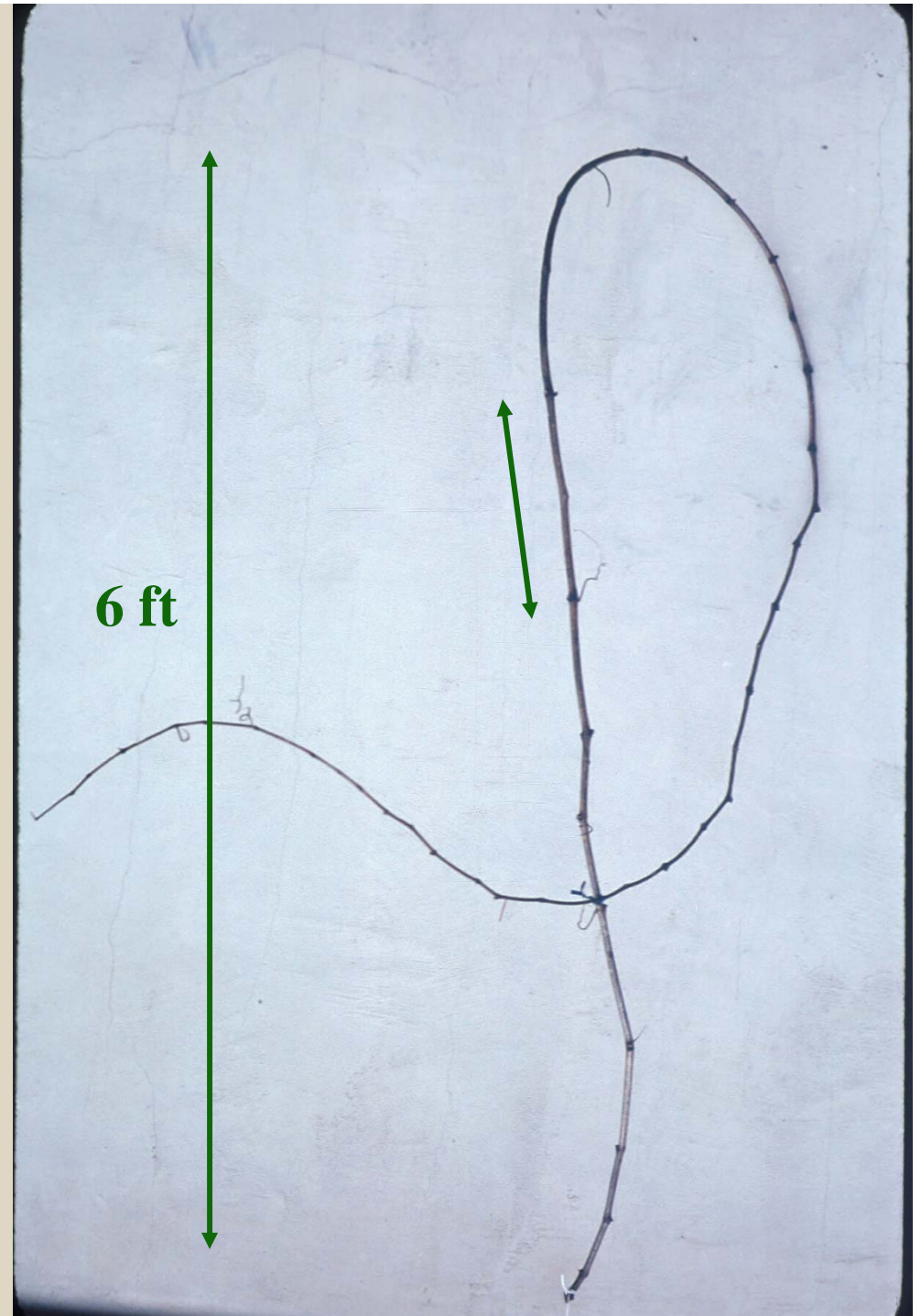
Poor Selection Wood

Excessive Internode Spacing

Large to Small Diameter

Poorly Matured

Pithy or Spongy Structure



Excessive Vigor and Shade



Consideration of Method

✦ Cost

✦ Convenience

✦ Tradition

✦ Location

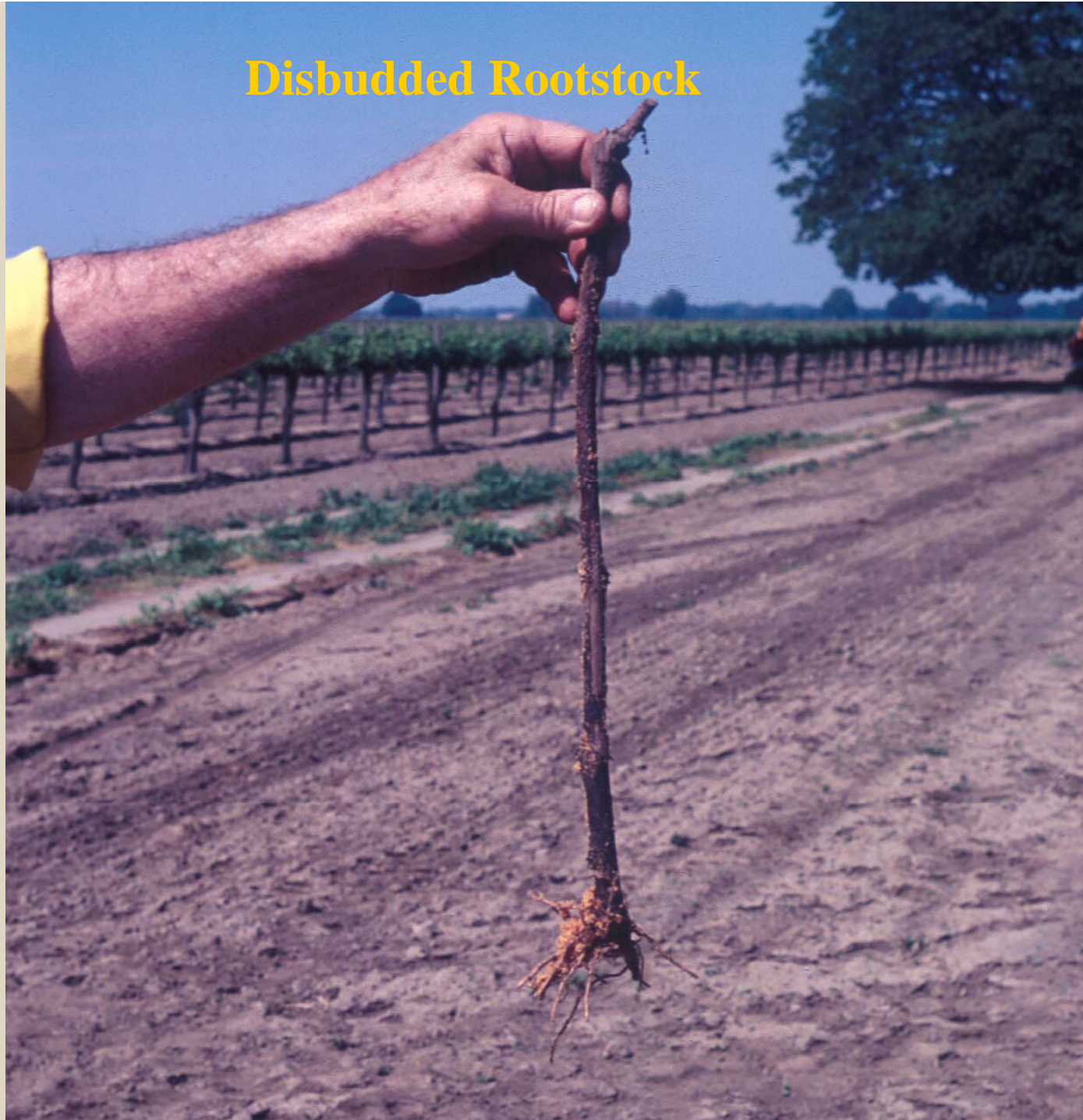
✦ Climate

✦ Available Skilled Labor

Field (Fall) Budding

A small section of bark with one bud from a desired variety is inserted on to a rootstock.

Disbudded Rootstock



**Year 1
Spring**



Year 1 Fall

Chip bud



Chip budding

Fall or Late winter/Early spring

Fall budding



Fall = Sufficient lignification (hardening) of canes from Mid-August to Late September









Year 2 Spring

Moment of Truth

Year 2 Spring



Benchgrafts

- Dormant
- Potted
 - green growing
 - dormant

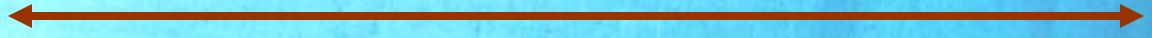
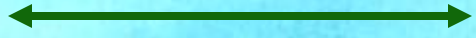


Late Fall Winter



3-4"

12-14"













Green Growing Benchgraft

- Selection
- Planting
- Care









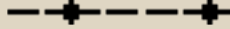


Young Vine Decline (Esca)



Tissue Culture & Micro-propagation





Rapid Increase

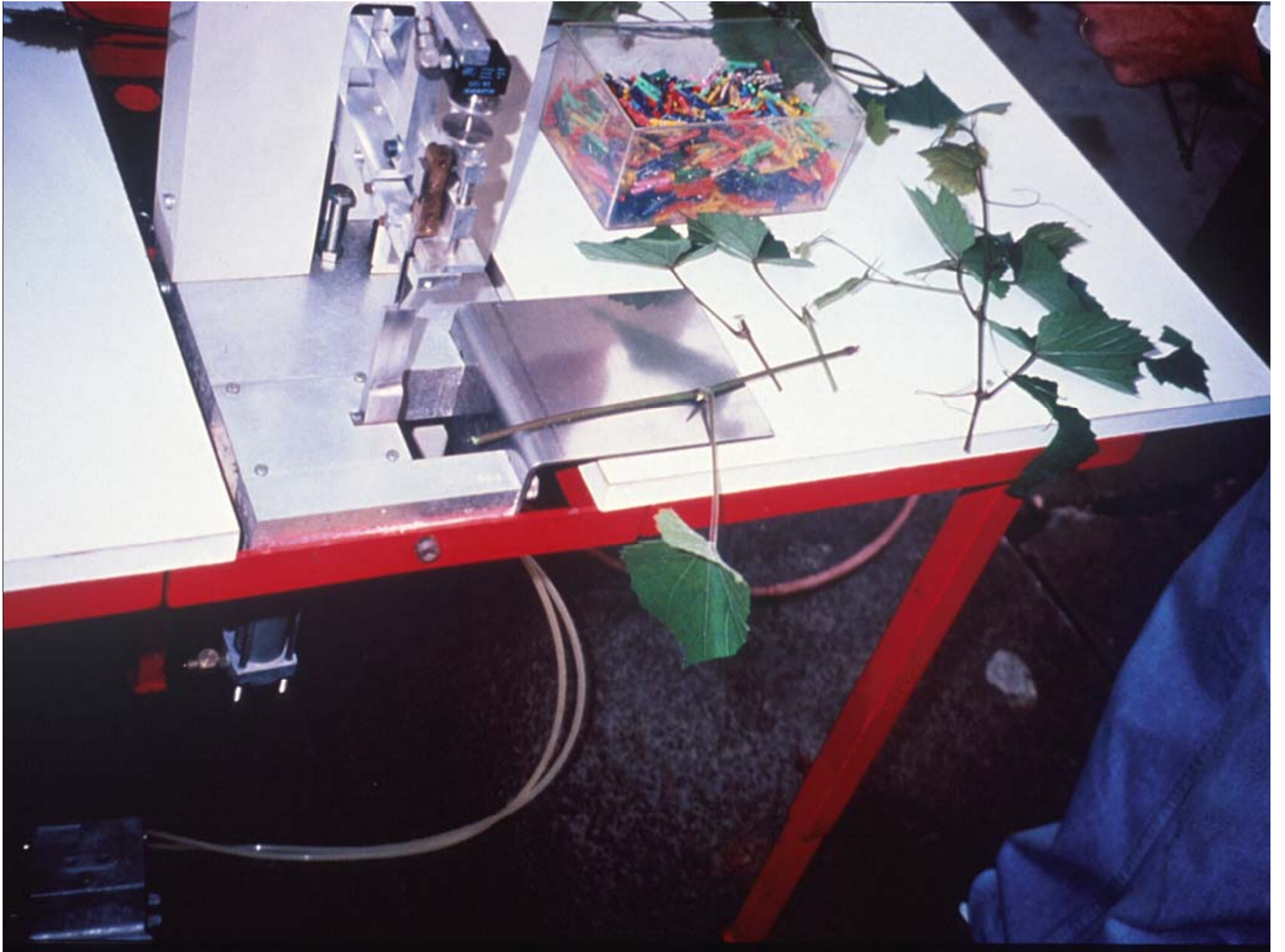
Disease free selections

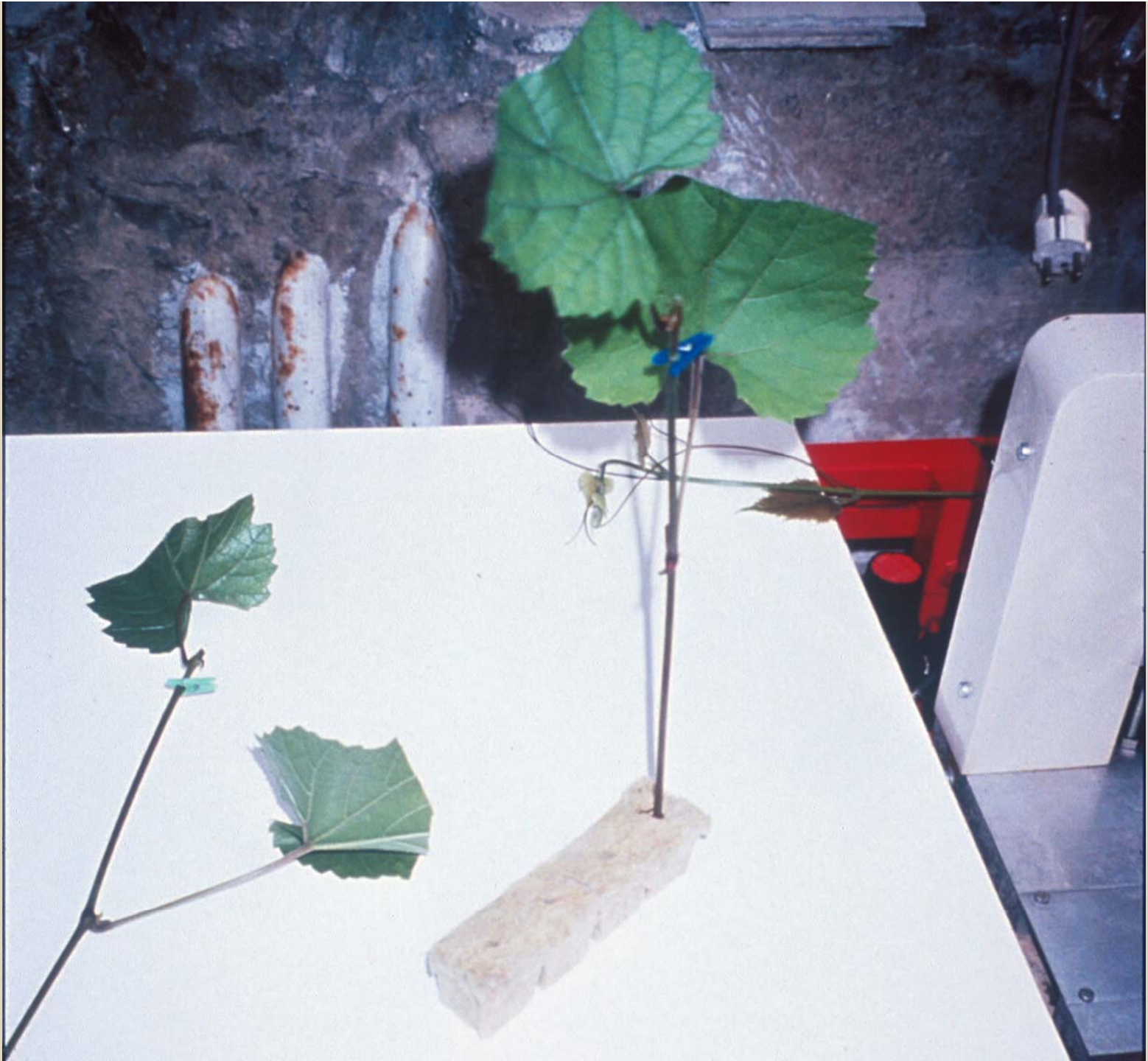
Varieties



Rootstocks





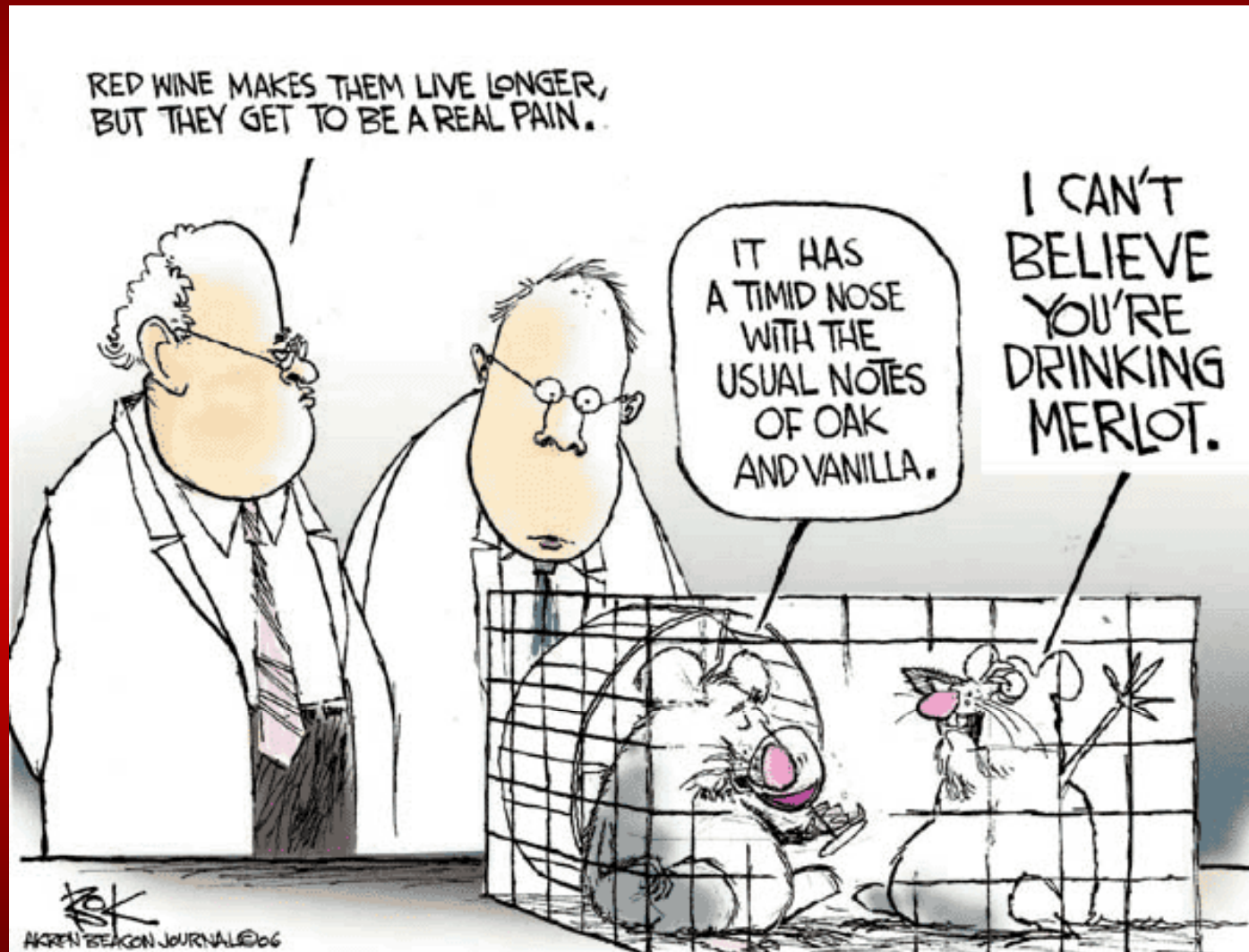




Grafting/Budding “Topworking”

- Market Demand
- Diversify for flexibility
- Reduce number of varieties
- Replace with a grower friendly variety
- x **Not to avoid virus**
- x **Severe wounding in process**

Market Demand



Grafting

Mature vines are “top worked” by inserting scion wood (short 2-bud section of dormant cane from desired variety) on a fully established vine.

Types of Grafting

- **Cleft**
- **Whip**
- **Bark**
- **Saw Kerf**
- **Side**



Cleft Grafting









Saw Kerf or notch graft



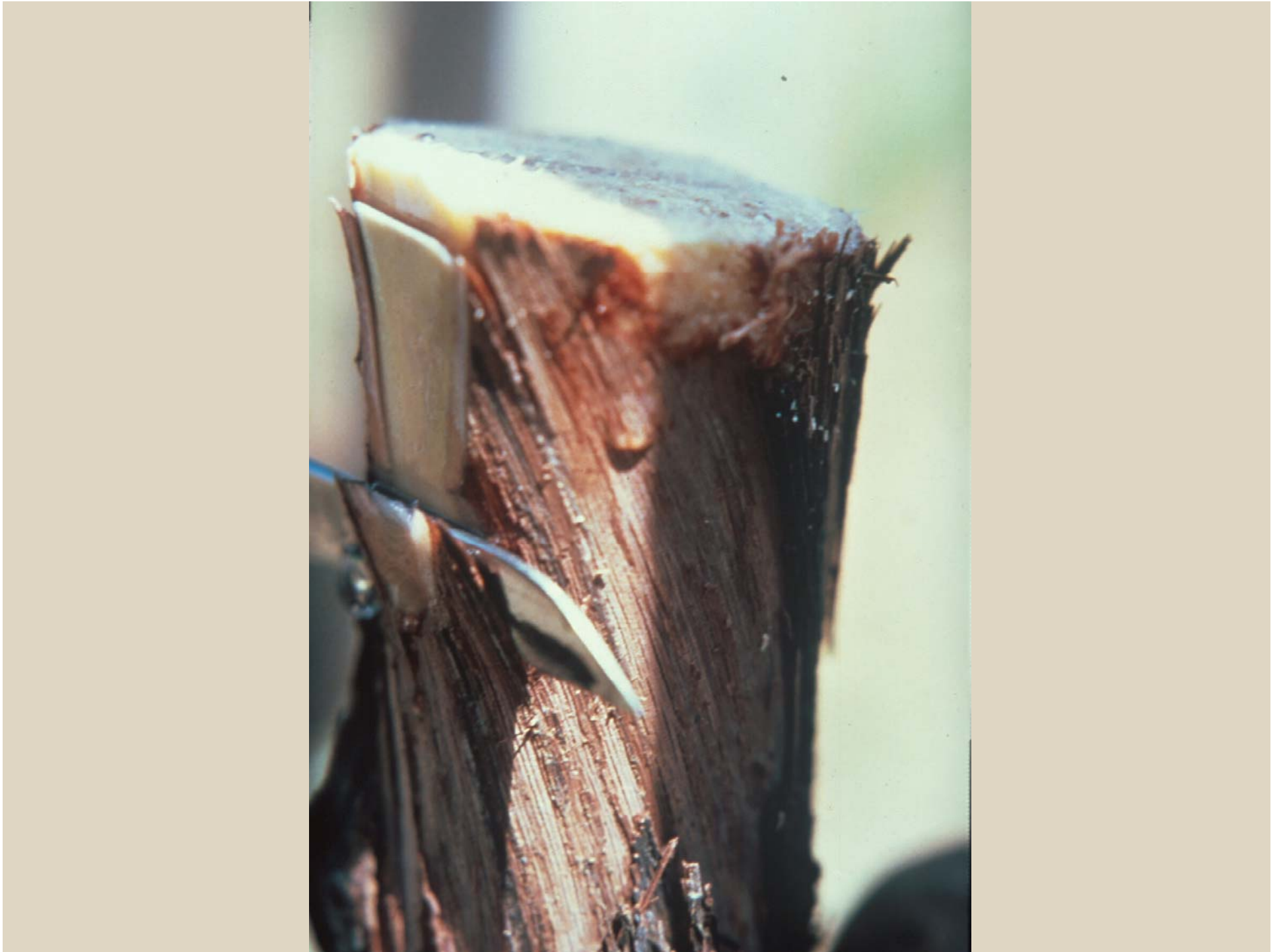


Side notch graft

Side Whip Graft

Modified Whip Graft















Budding

A small section of bark with one bud from a desired variety is inserted on a rootstock.

Late spring to early summer

1 ¼ to 1 ½ inches

(3 to 4 cm)



“T” budding shields

**Late Spring budding
Backup for grafting misses**

Chip bud

1/2 to 3/4"





**Bark should “slip”
Mid May to Late June**

“T” cut



“Inverted T” cut





Propagation

Problems

Crown gall





Young Vine Decline (Esca)



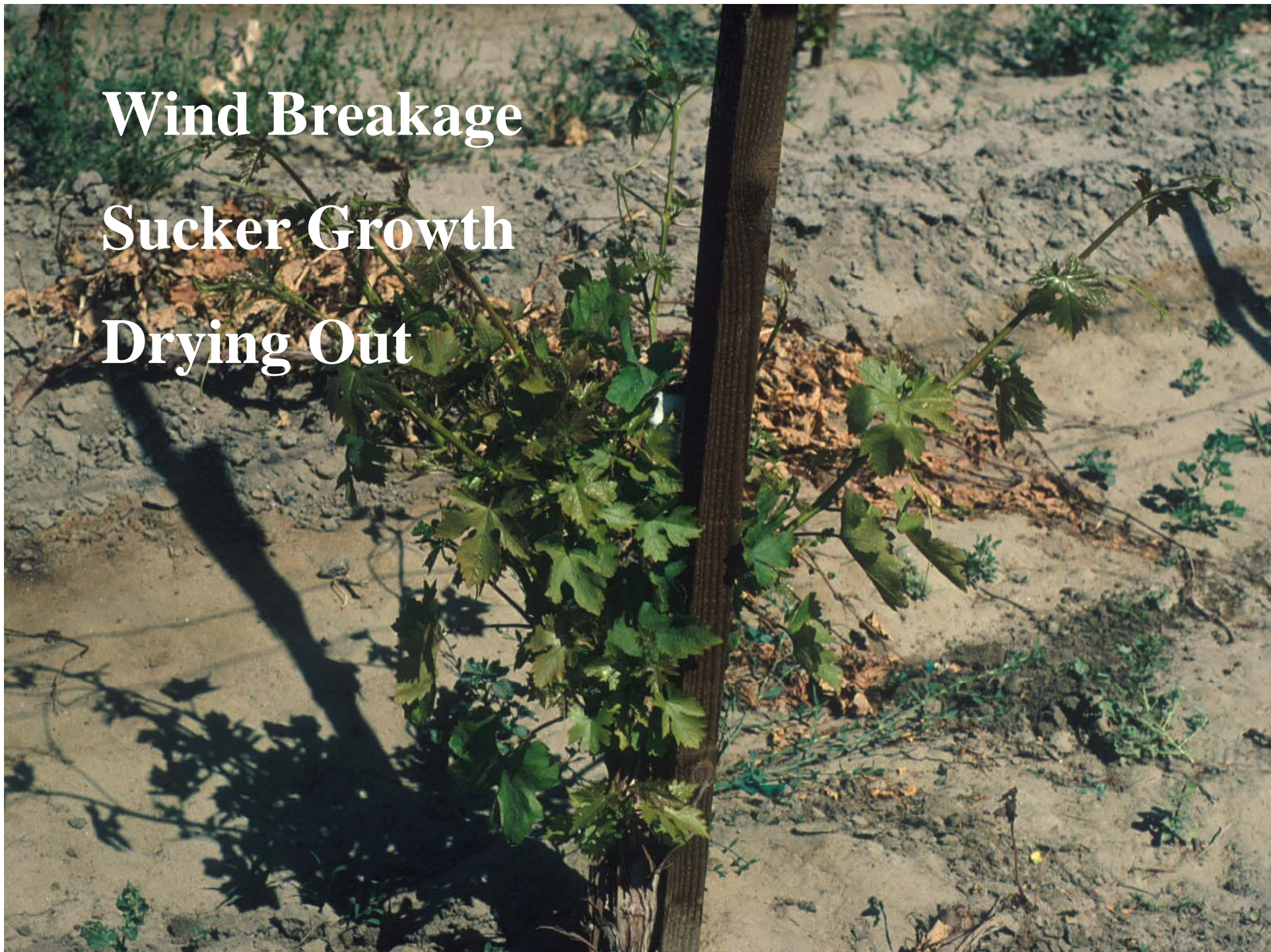


**Weak union from regular “T”
bud cut with poor callus
growth**

Wind Breakage

Sucker Growth

Drying Out





GLRaV

In-Arch Grafting



Interplant







Rootstock Grafting



Vine Establishment by Cuttings

- Making cuttings
- Storage/Rooting
- Planting
- Care

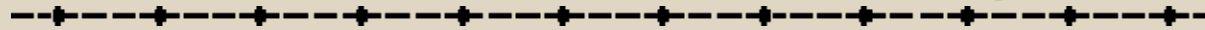


Asking a lot



Layers

+ **Re-establishes Missing Vines**



- **Soil Pest Problems**





Summary Considerations

-
- ✦ Use Certified Wood
 - Or Use Same Scion/Rootstock Combination
 - ✦ Know History of Source
 - ✦ Observe the Field of Source Wood
 - ✦ Obtain the Wood Yourself
 - ✦ Confirm Budder's Track Record
 - ✦ Provide Post Propagation Care
 - ✦ Don't Assume What You Don't Know



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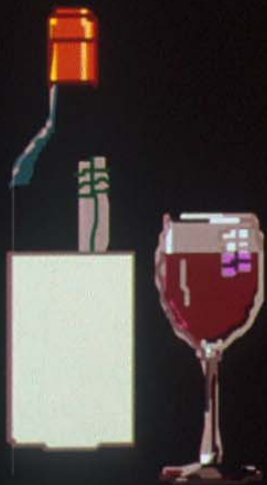
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www.cesanjoaquin.ucdavis.edu



Land of the Free, Home of the Brave

*I'd rather have
a bottle in front of me,
than a frontal lobotomy*



Groucho Marx



*Wine nourishes, refreshes and
cheers...wine is the foremost of all
medicines; wherever wine is lacking,
medicines become necessary.*

The Talmud

Here's to Water, water divine—

it dewes the grapes

and gives us wine.

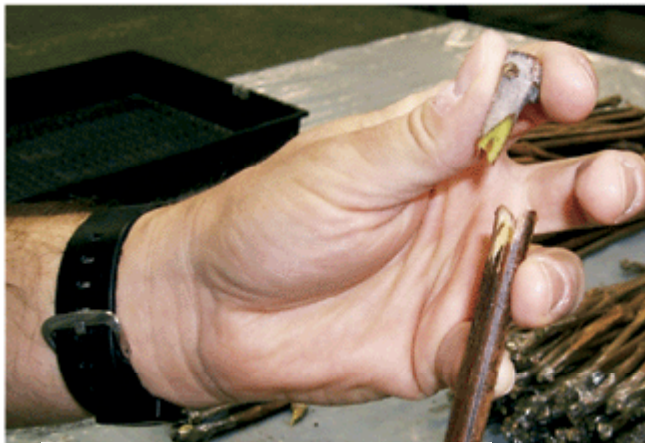


Omar Khayyam

“The cultivation of the earth
is the most important labor of man.
Unstable is the future of the country
which has lost its taste for agriculture.

If there is one lesson of history
that is unmistakable, it is that
national strength lies very near the soil.”

Daniel Webster



Mat
vine
befc

a crucial step in
re V-cut scion and

A green-grafted vine with desired root
development for planting in a vineyard.





Young Vine Decline (Esca)

