Growing Quality Grapes in Oregon

- Steve Renquist
- Horticulture Department

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Introduction

- The Horticulture Extension agent in Douglas County
- Work with wine grape growers in the Umpqua Valley AVA
- Worked with grapes in many countries
- Studied viticulture at Cal Poly S.L.O

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Topics to be covered

- Site Selection
- Structure/Phenology
- Varieties/Rootstocks
- Planting Systems
- Training/Trellis
- Pruning
- Water use
- Pest/Disease

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Site Selection

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Site selection

- Climate
  - Get weather data if possible
  - Rainfall, high-low temps, wind speed, first and last expected frost dates.
  - Knowing heat units is important
  - Check with long time neighbors
- Know the sites mesoclimate
  - This will give you clues to whether your site is a little warmer or cooler than the region

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Site Selection- Climate

- Frosts
  - Spring frosts below 30f damage shoots
  - Temps of 28f can kill shoots and flowers
  - Dormant wood can be killed at 0 to -10f
  - SE slope less frost than SW slope
  - Hill shading from the east more frost
  - Trees below a site may pool cold air

Site selection- Climate

- Rainfall
  - Knowing precip totals by month important
  - Spring rains needed for vine growth
  - Summer rain negative, fruit split, fungus
  - Fall rain very negative until grapes harvested, fruit split, bunch rots

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Site selection- Climate

Heat units

- Formula [(max + min daily temp)/2]-50f will give you daily heat units.
- accumulate them from April 1-Oct 31
- This total helps you select varieties
- Corvallis 2,200 Coos Bay 1,800
- Roseburg 2,600 Grants Pass 2,900
- Milton F. 3,000 Bend 2,400

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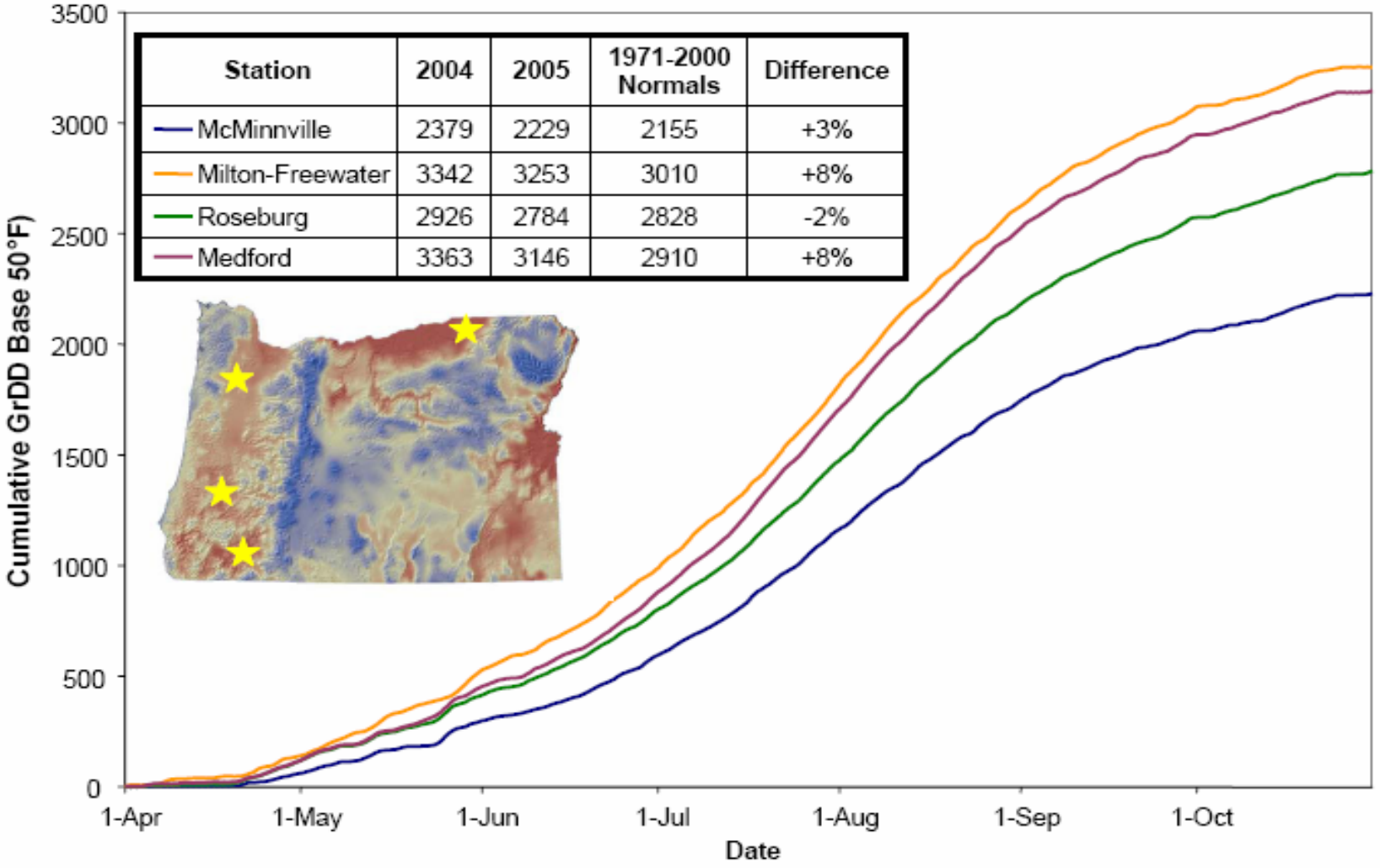
2005 Growing Season Cumulative Degree-Days

Station	2004	2005	1971-2000 Normals	Difference
McMinnville	2379	2229	2155	+3%
Milton-Freewater	3342	3253	3010	+8%
Roseburg	2926	2784	2828	-2%
Medford	3363	3146	2910	+8%



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Site Selection- Climate

- Wind
  - Persistent wind over 15mph a problem for cane breakage, heat accumulation, delayed maturation
  - Can use windbreaks
  - Orient trellis rows so fruiting wire on the windward side

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Site selection- Topography

- Aspect is the direction the slope faces, south is preferred for heat accumulation
- Elevation will impact frost and ripening, too low will frost, too high won't ripen, 500-800ft usually best in western Oreg.
- Slope is the percent grade. Above 30% difficult to work site.

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Site selection-Soils

- What to look for
- Good drainage
- Not too fertile
- Stay away from Serpentinic Soils, high in Magnesium, low Calcium they tie up the Potash
- pH in a 5.5-6.5 range
- 3-5 ft of soil depth

Site selection- Water

- Table grapes will need more water than wine grapes
- Young vines need at least 4-5 gals./wk in late June to September on well drained soils
- Mature vines are deep rooted, can tolerate drought

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Site selection-Miscellaneous

- Warn neighbors about using phenoxy type herbicides near your grape vines
- Deer will devour your vines, fence
- Birds, raccoons love grapes, net

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Structure and Phenology

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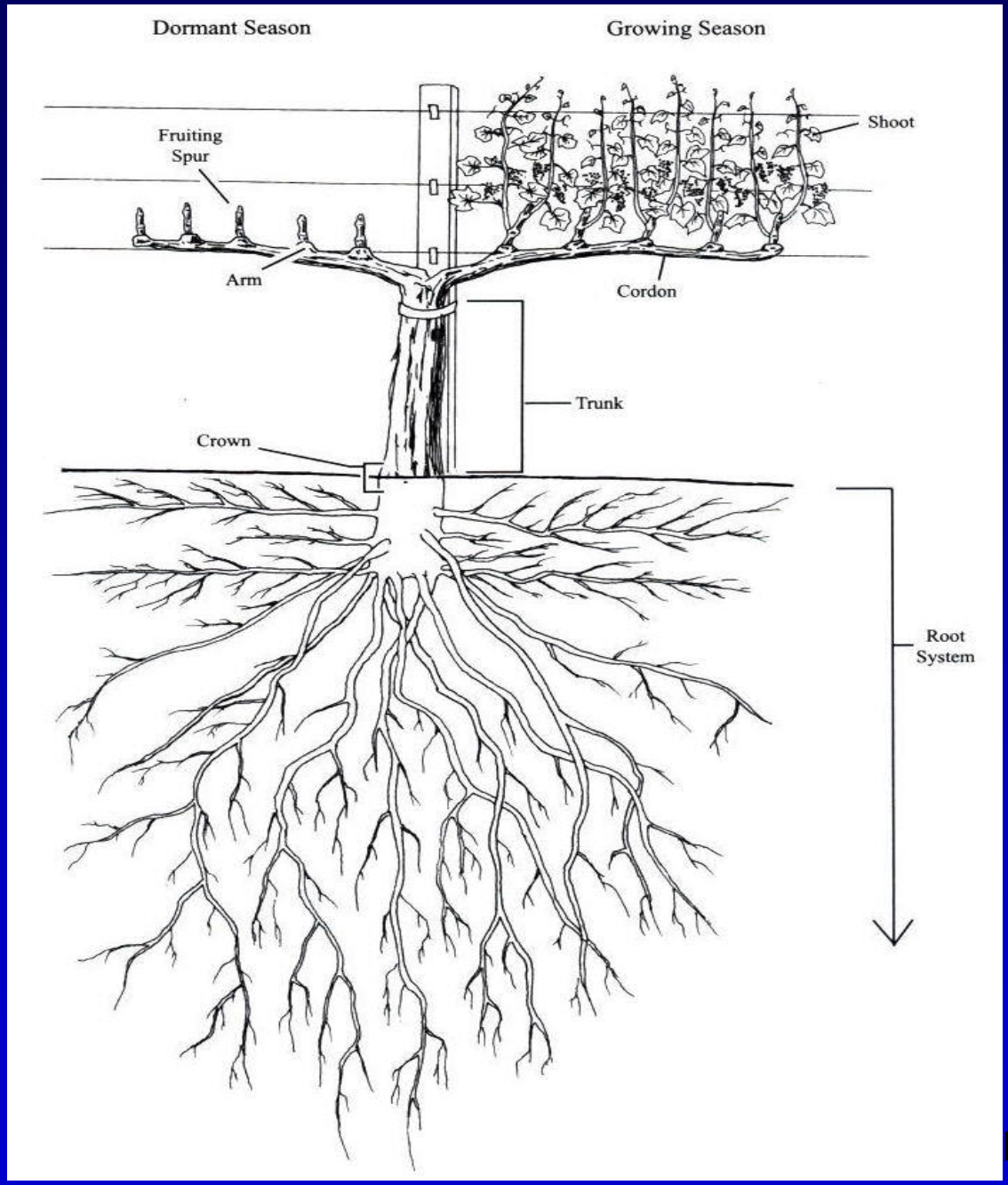

Grapevine Structure

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Vine phenology

- Bud break – April
- Bloom – June
- Veraison – August
- Maturation & Harvest – Sep/Oct

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Varieties and Rootstocks

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What varieties to plant

Depends on:

- Your intended use
- What varieties you like
- How much work do you want
- What will ripen before fall rains

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Wine Grape Varieties

- 1900-2400 gdu
- Pinot Noir
- Chardonnay
- White Riesling
- Pinot Gris
- Gewurtztraminer
- Muller-Thurgau

- 2400-3000 gdu
- Merlot
- Cabernet franc
- Cabernet sauv.
- Syrah
- Viognier
- Malbec
- Tempranillo

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Table Grape Varieties

- *Red*
- Canadice-A
- Flame Seedless-E
- Suffolk red-A
- Vanessa-A
- *Black*
- Concord-A
- Fredonia-A
- Schuyler-H
- Thomcord
- *White/Yellow*
- Himrod-H
- Interlaken-H
- Lakemont-H
- Perlette-E
- Marquis-E
- Niagara-A
- Seneca-H

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Rootstocks

- With Phylloxera in Oregon it's a good idea to use American origin rootstock
- Most widely used with wine grapes:
- 3309c, SO4, 101-14, 44-53
- Schwartzmann is new but looks good
- Table grapes-look for American origin or hybrid

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Planting, Trellis Systems, Training

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Planting young vines

- If planted early in Feb-March can be a dormant grafted or self rooted cutting
- Green growing vines any time after frost and before June 15
- Grafted vine put union 4” above soil
- Go through the vineyard and remove suckers, especially if grafted vine

Planting systems

- Spacing
- Table grapes between rows 8-9 ft, in the rows 6 ft European, 8 ft American

- Wine grapes between rows 8-9 ft, in the rows 6-7 ft

Trellising

- Vertical trellis
  - Guyot (VSP)
- Lyre
  - Vertical but spread
- Scott Henry
  - Vertical and hanging

Trellis systems

Vertical Trellis

Lyre trellis

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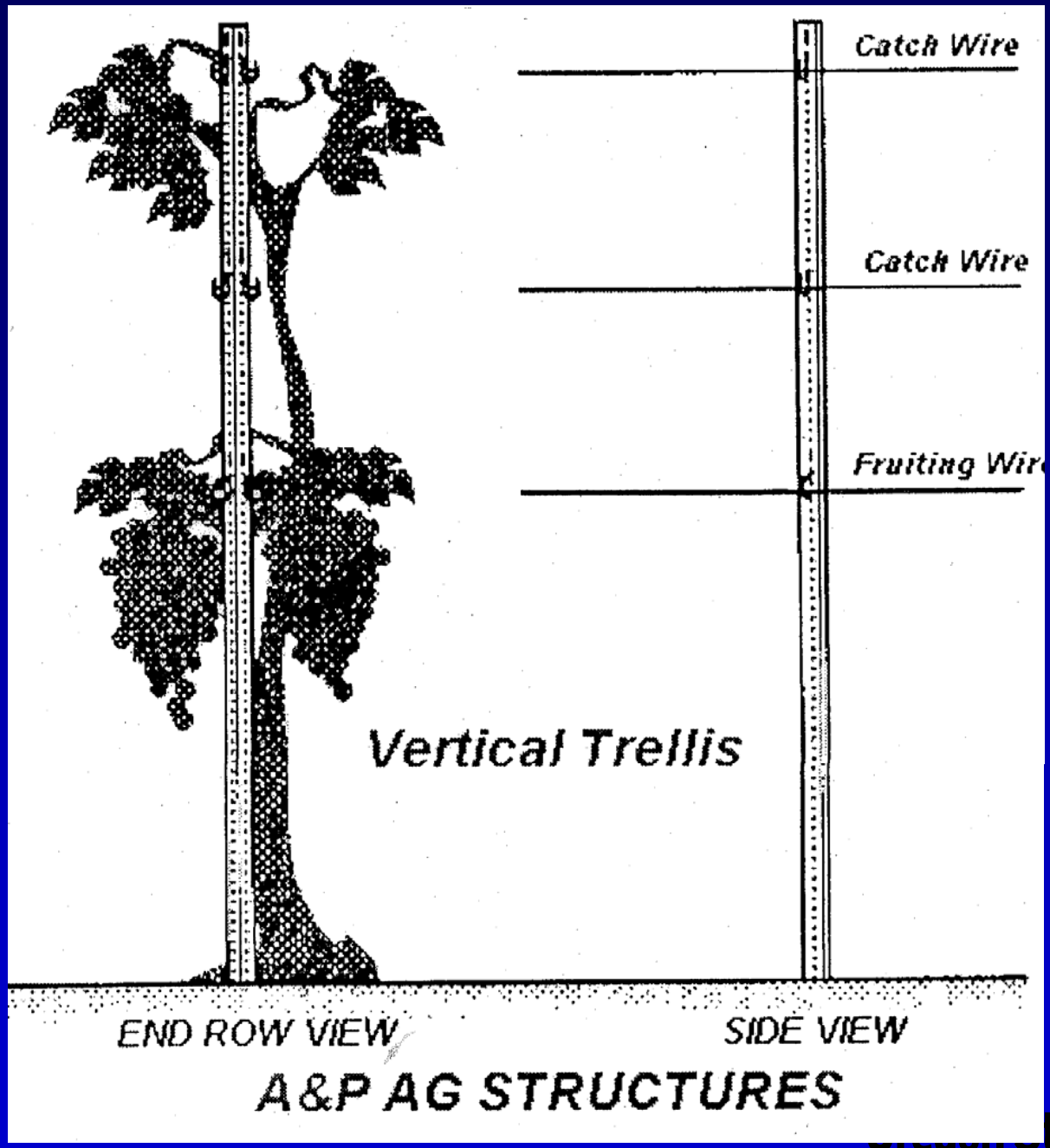

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Trellis- Lyre

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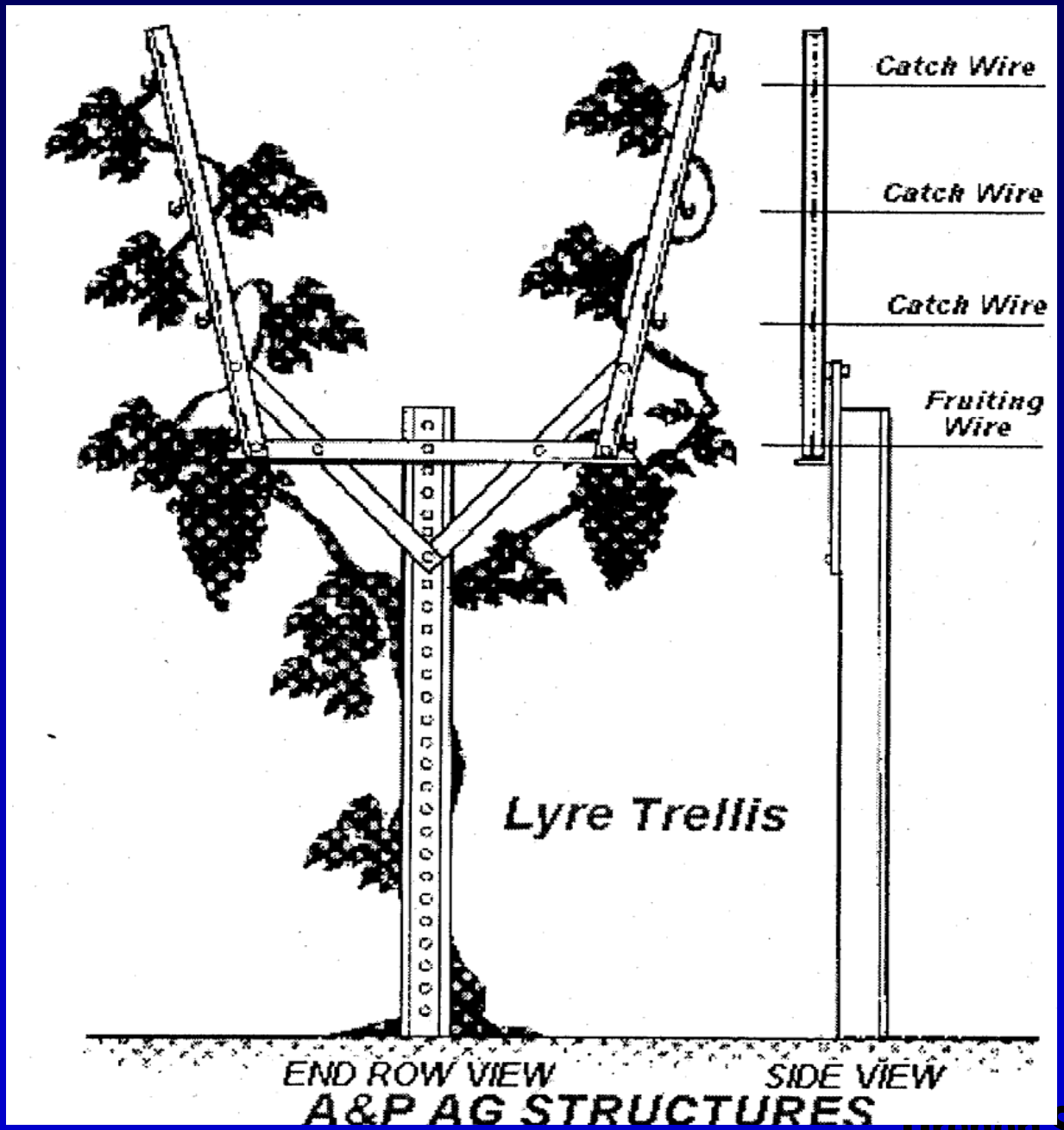

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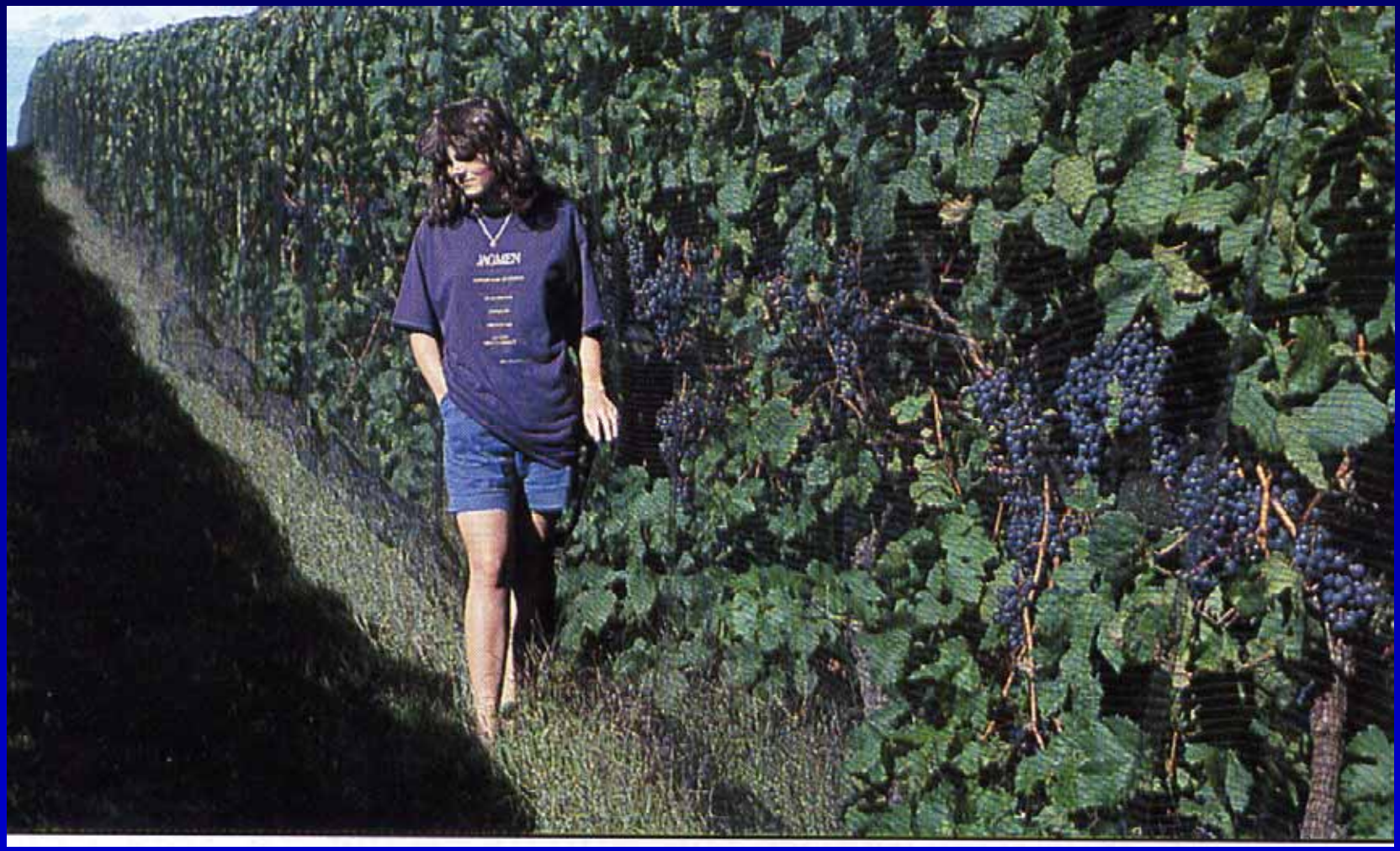
Trellis- Scott Henry



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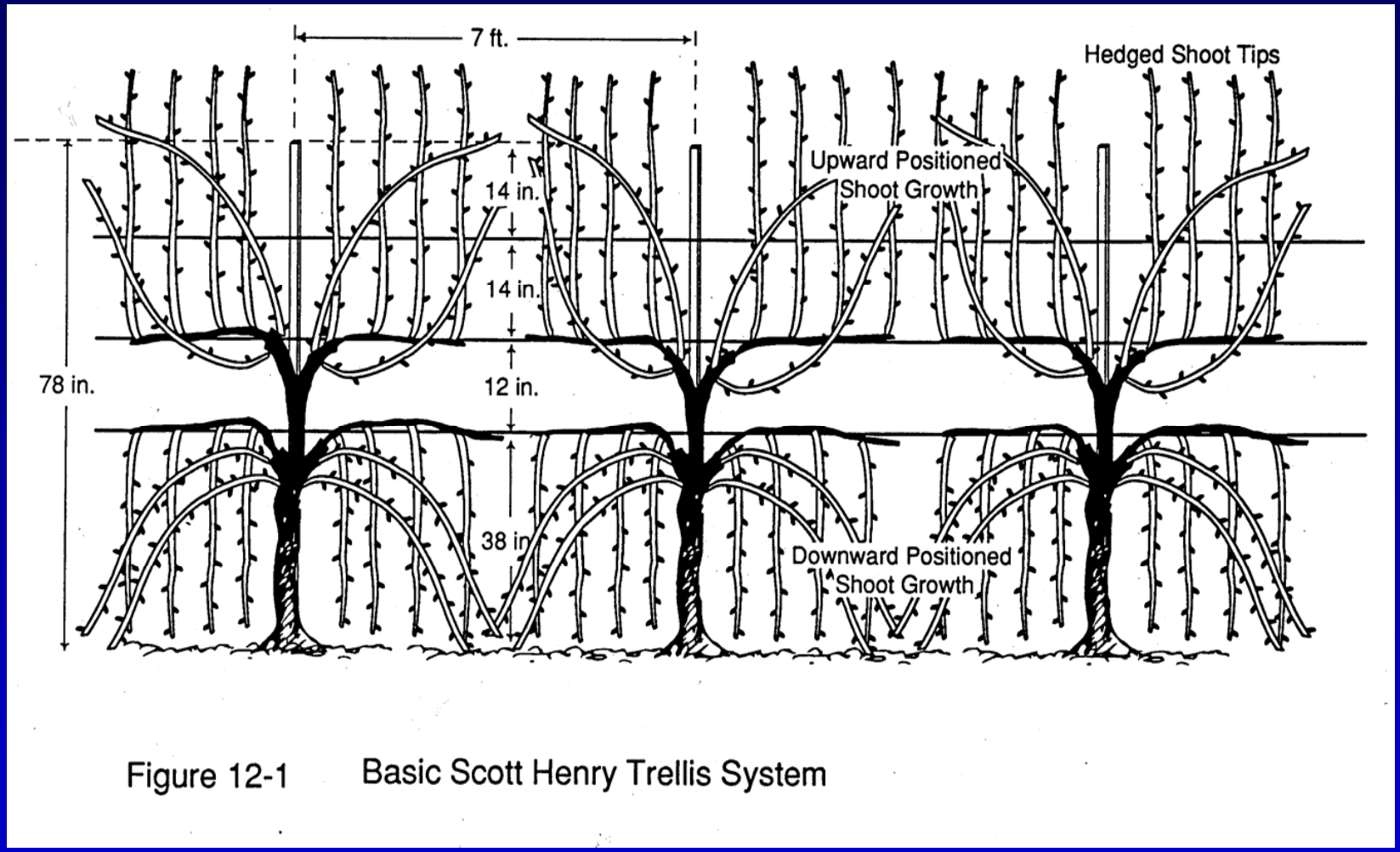

Figure 12-1 Basic Scott Henry Trellis System

Training systems- Guyot

- Simple system to develop
- Single trunk, head trained for cane pruning
- Best for narrow row systems (6-7’)
- Easy to prune and harvest
- For long internode varieties this system is too limiting.
- Trunk 24-26 inches tall

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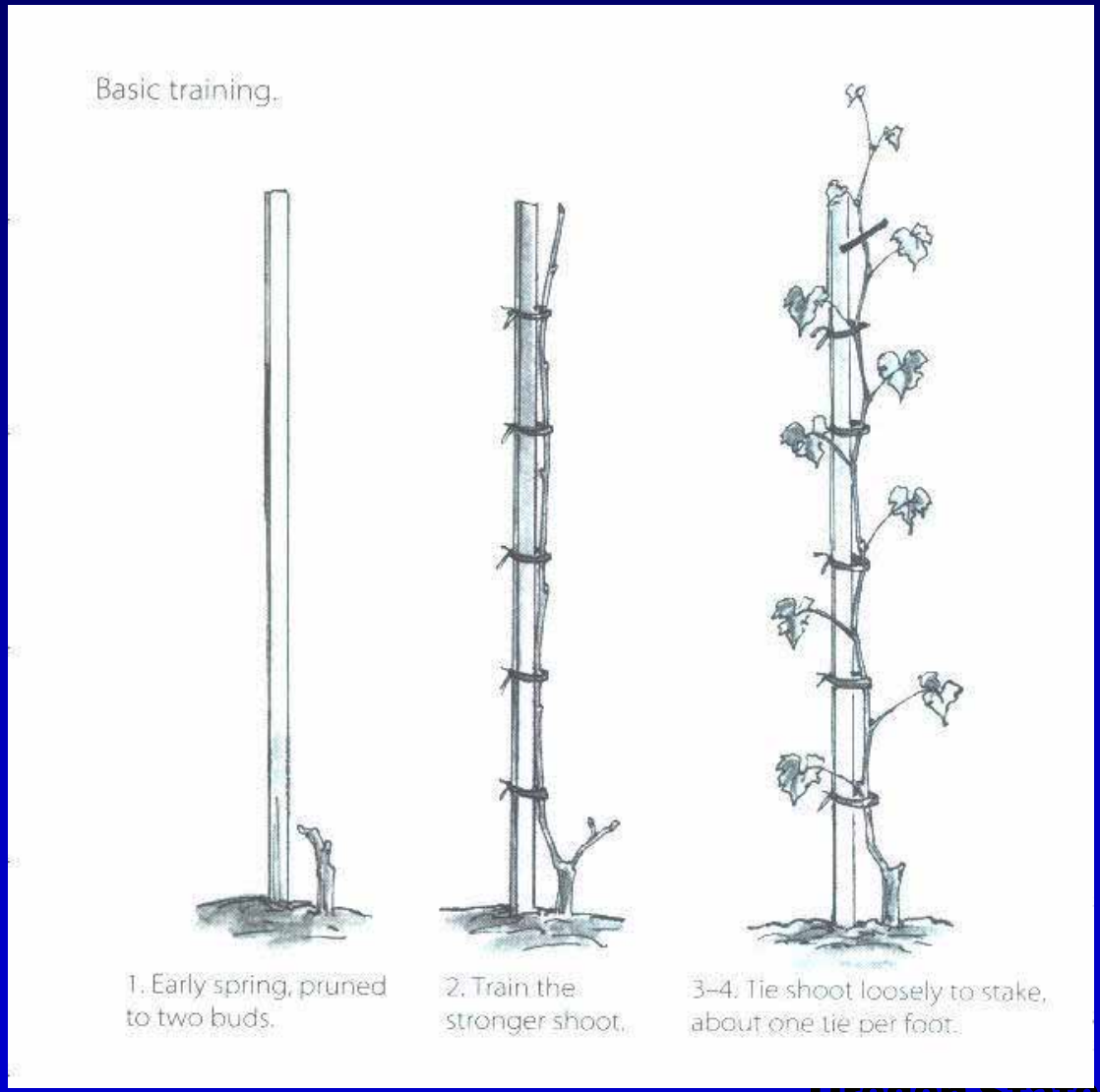
Training Second year



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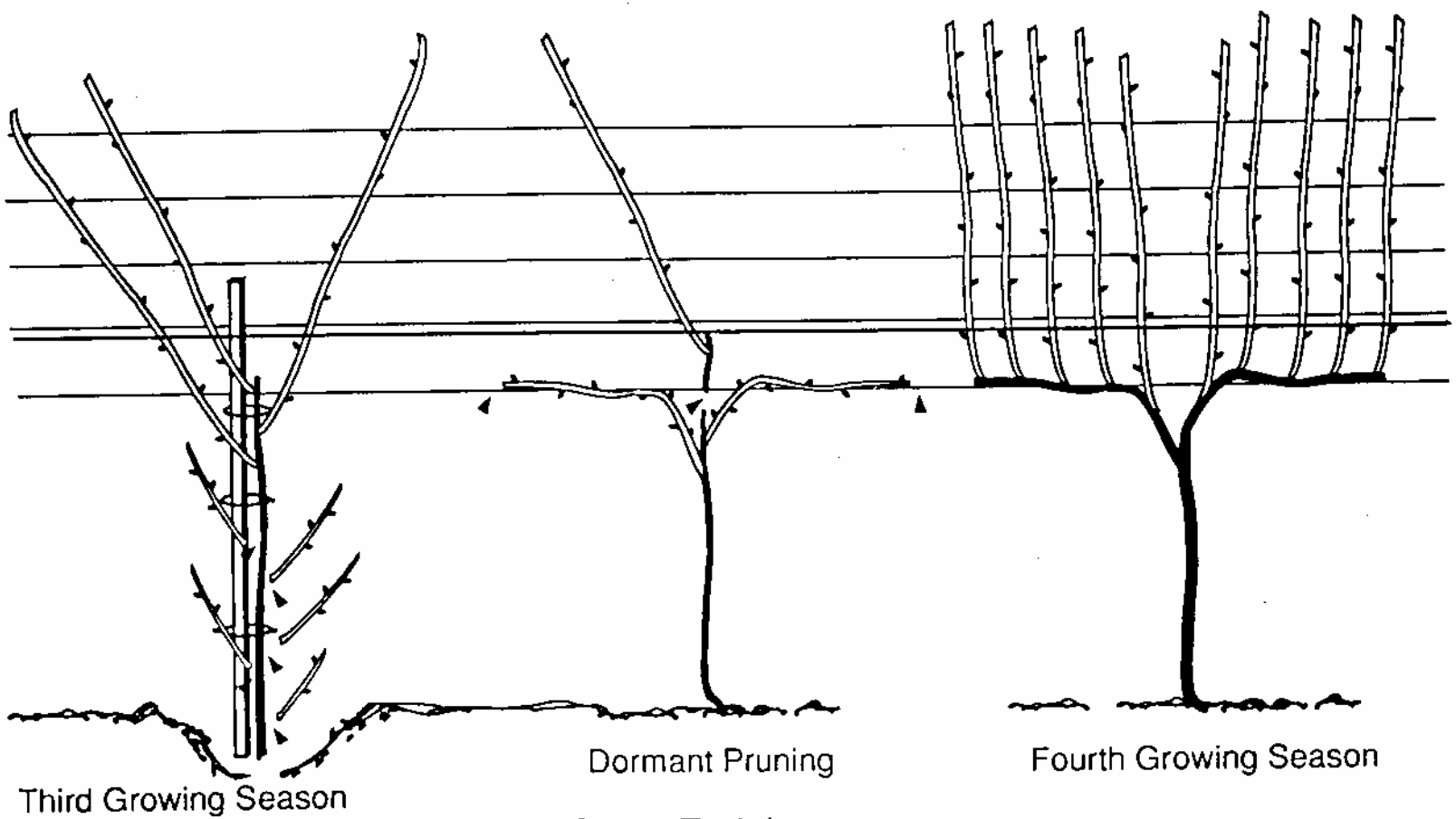

Figure 11-30 Guyot Training

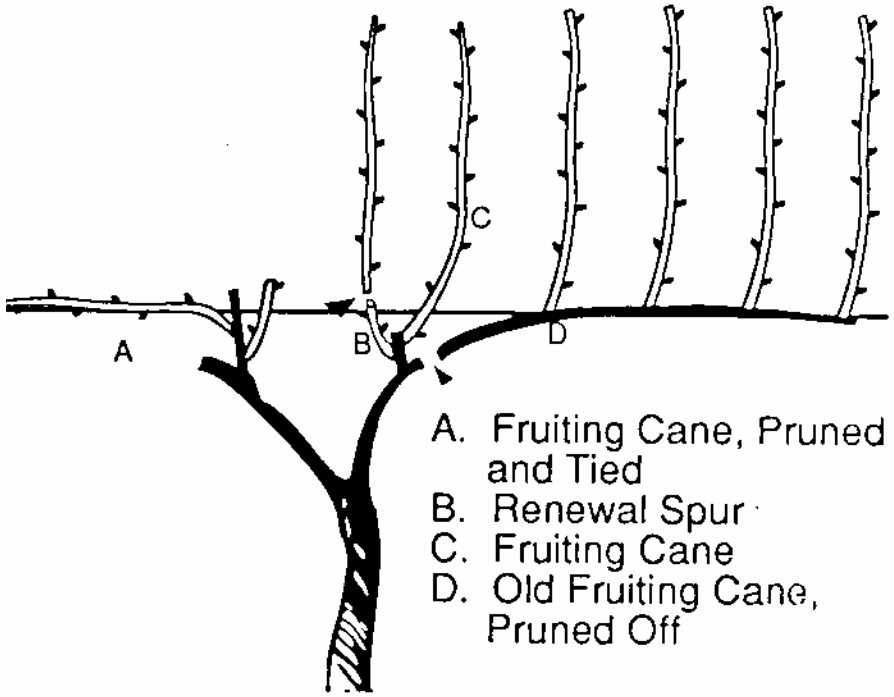

Figure 11–31 Guyot Training Renewal Spurs

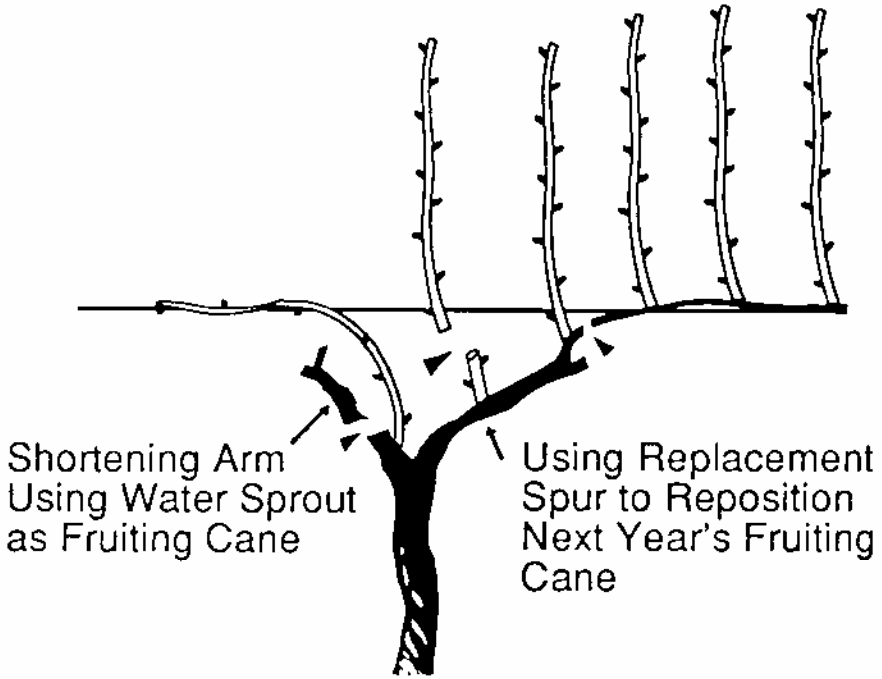

Figure 11–32 Guyot Training Replacement Spurs

Training systems- Cordon

- More involved than the Guyot
- Requires more time to develop arms
- Will allow you to leave more fruit buds
- Allows you to use a wider row space
- Keep spurs on the upper side of the arm
- Shoots arise from the same level
- Not good for varieties with fruitless buds
- Spurs-smaller clusters in cool climates
- Trunks 24-26 inches tall

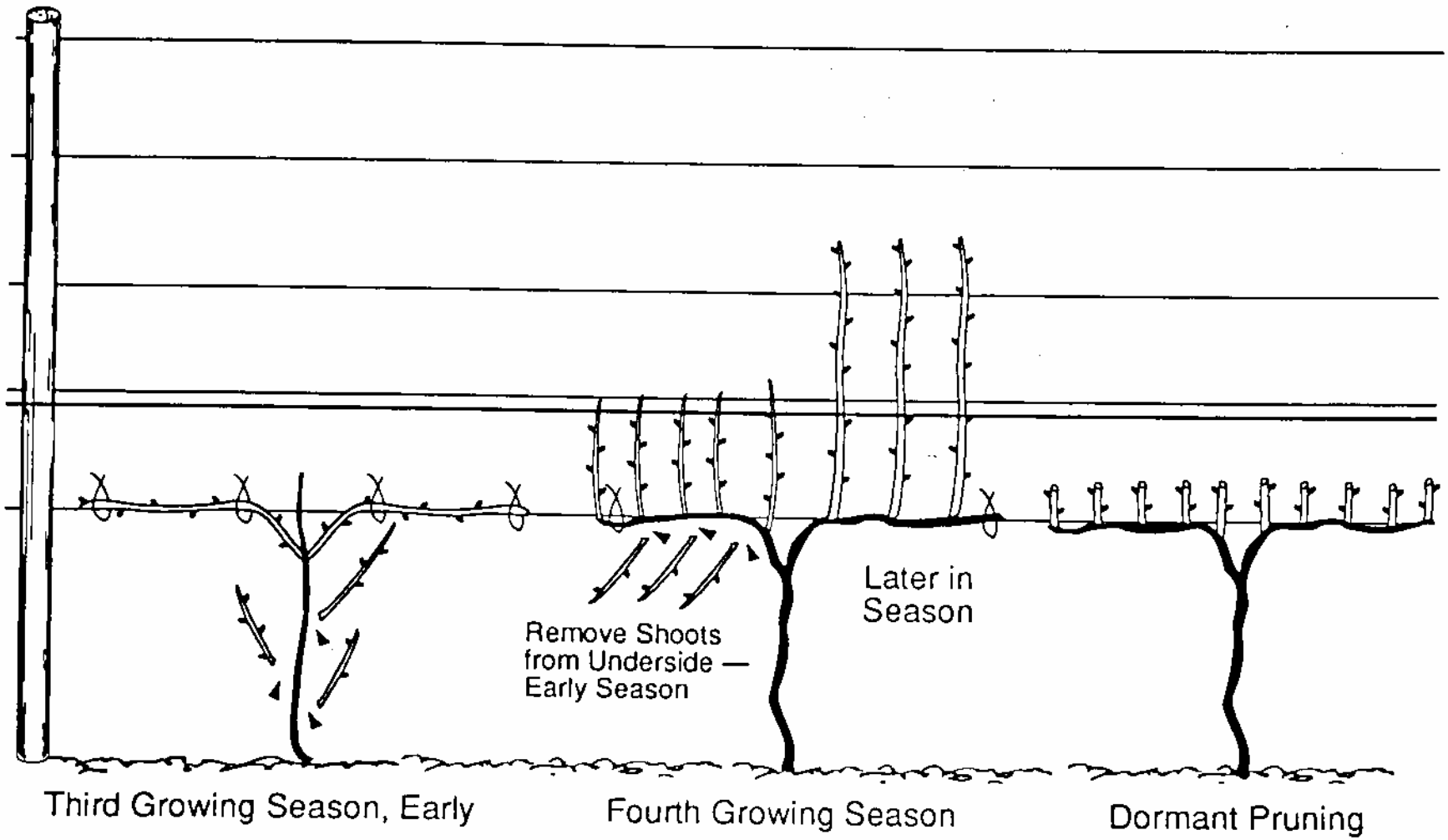

Figure 11–34 Cordon Training

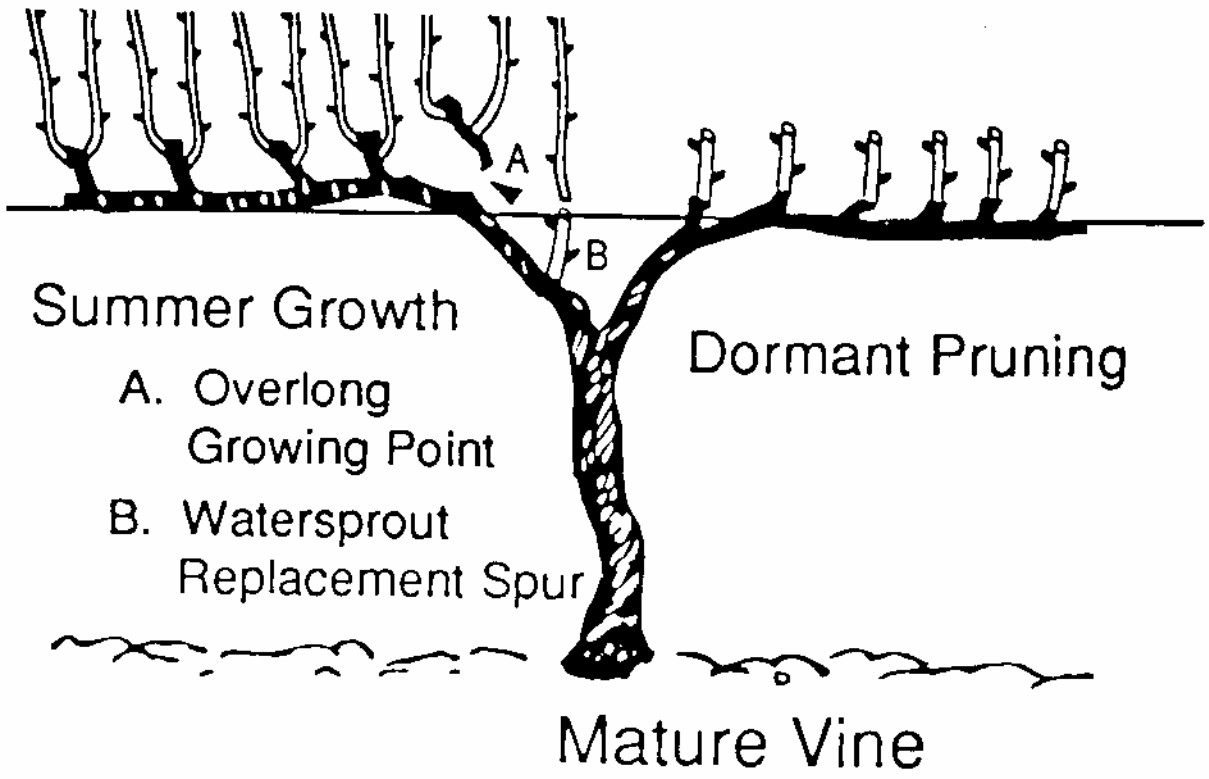

Figure 11–35 Cordon Training

Training systems- Open Lyre

- Most time intensive system
- System spreads buds out
- Works well for upright growers
- Need to watch over cropping
- 32 inch high trunk

Pruning

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Without Pruning, Grapevines Grow!

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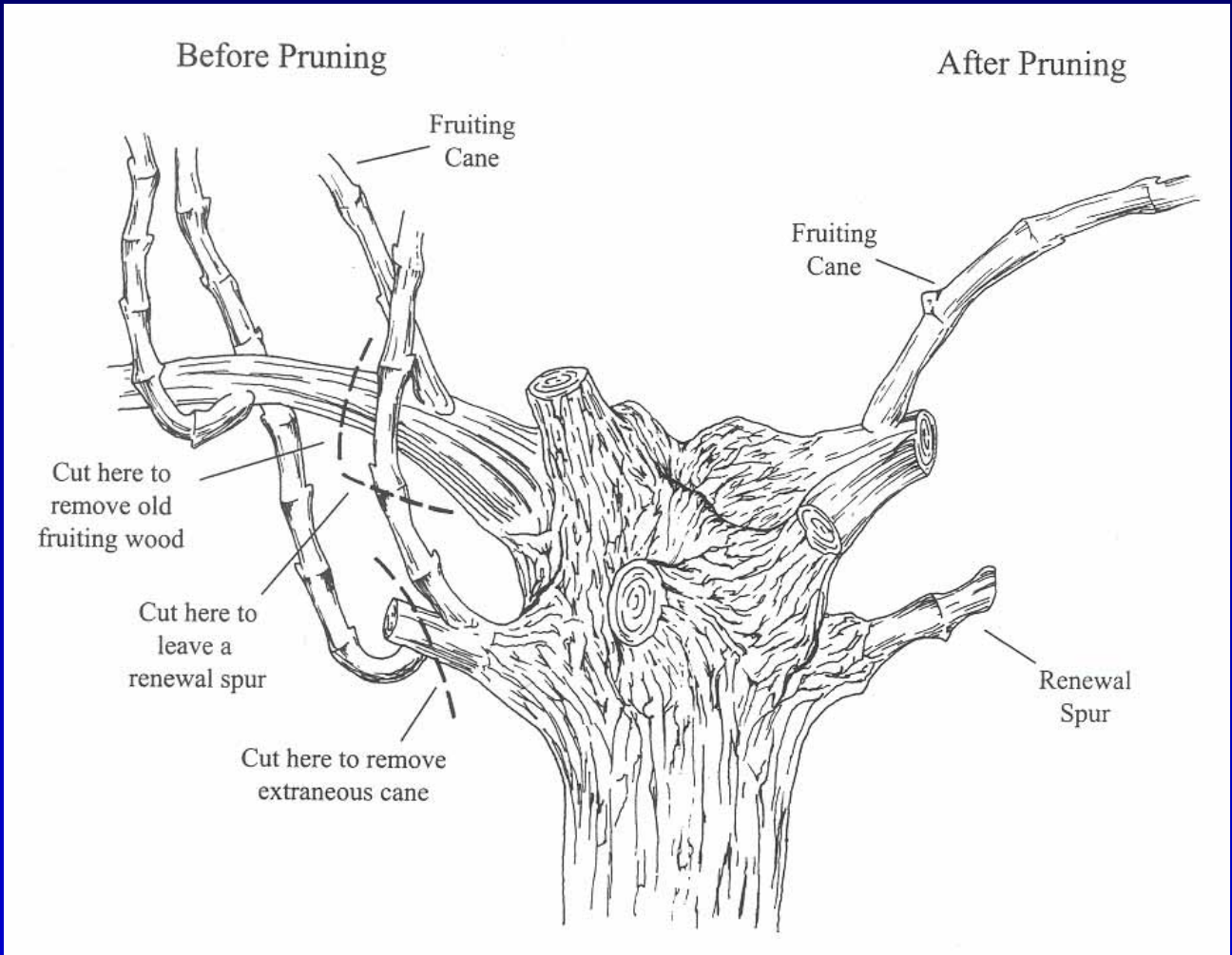
Cane Pruning Grape Vines



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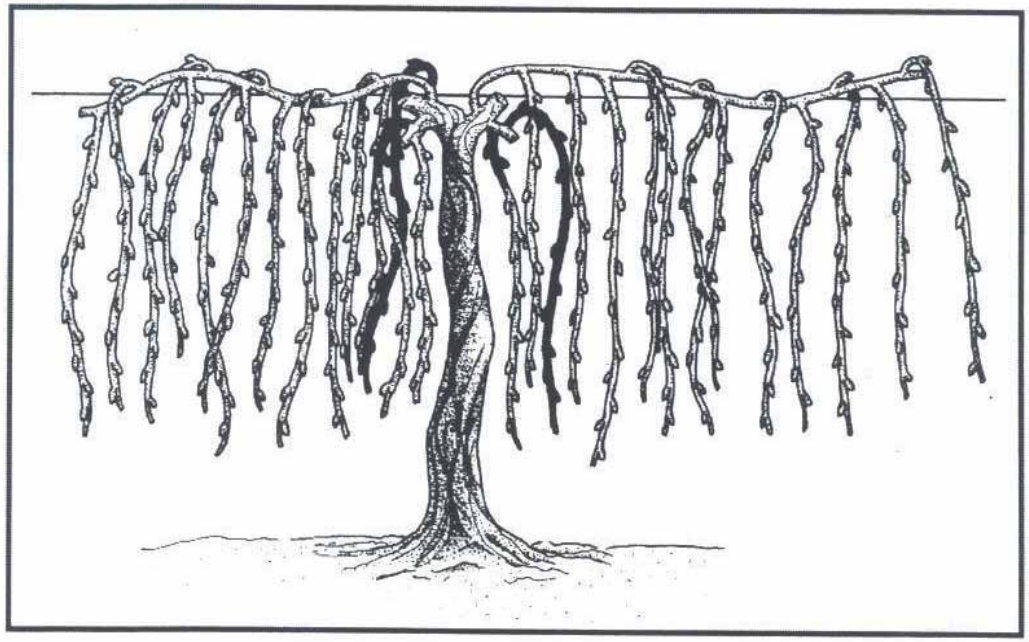

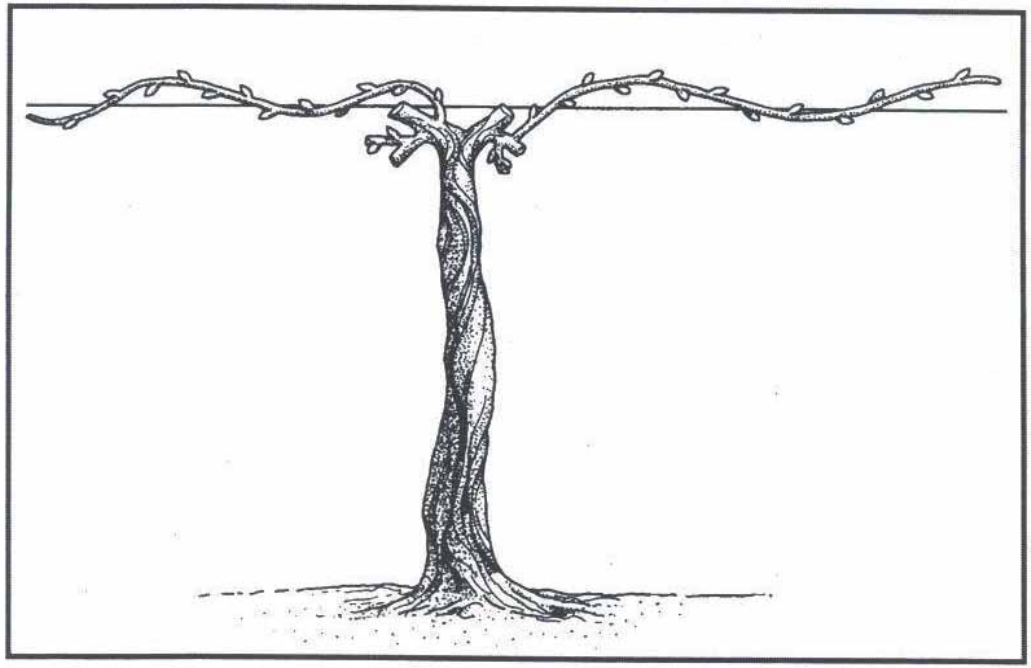

Cane Pruning

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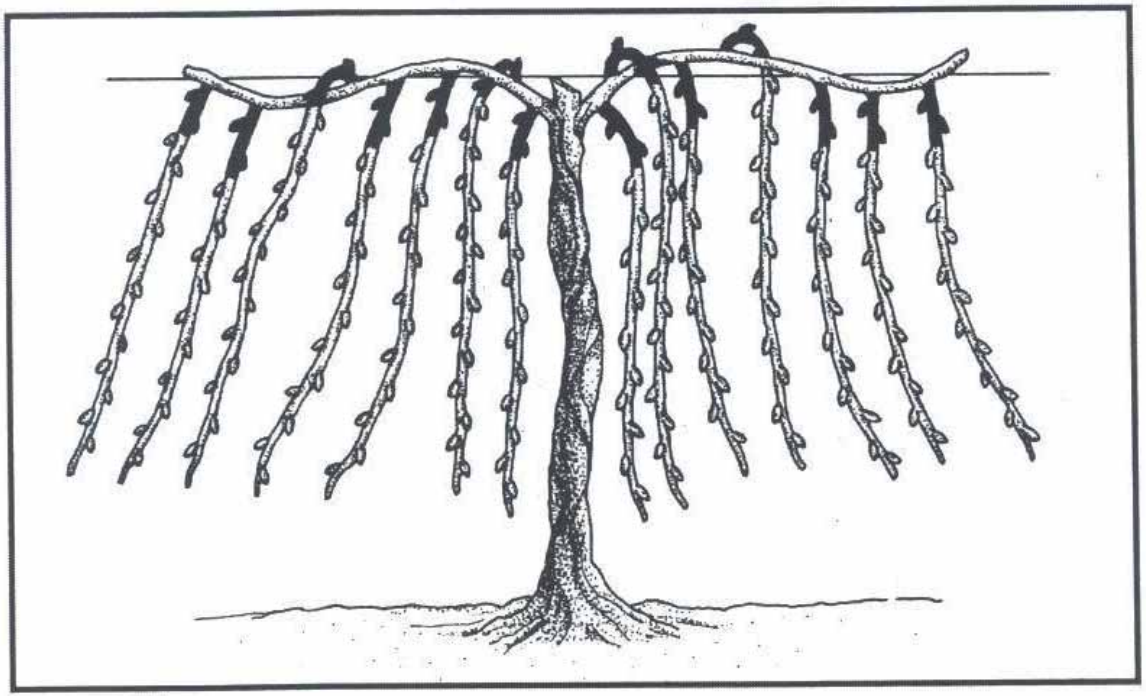

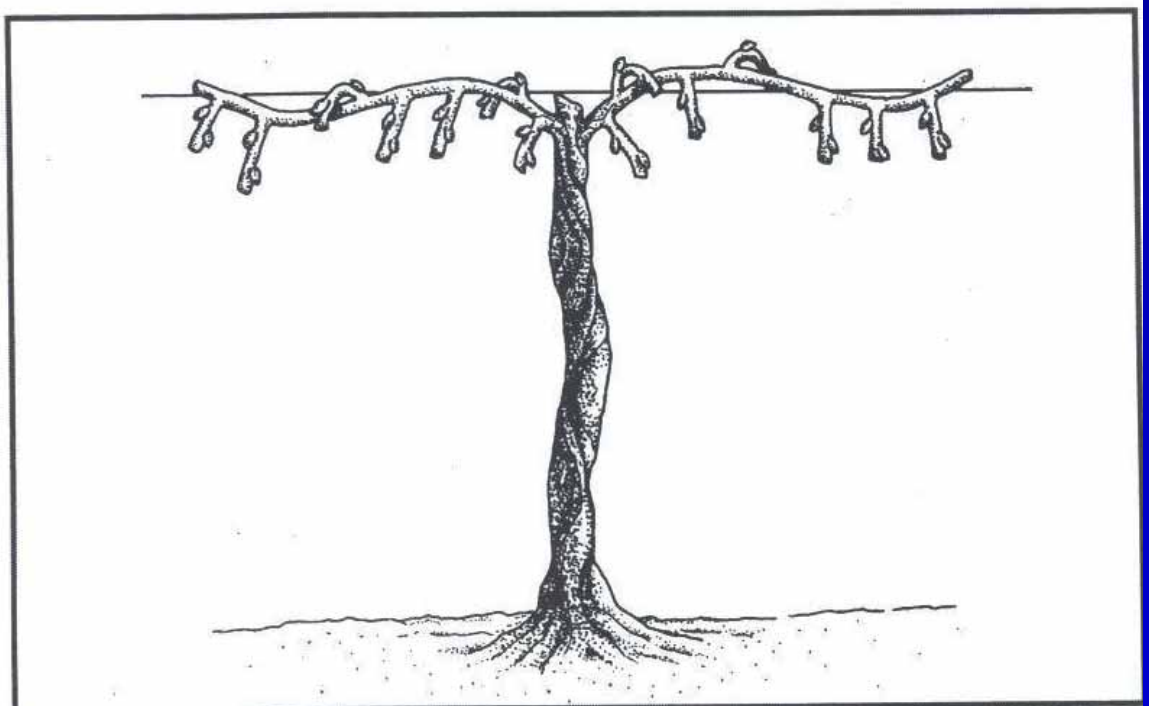

Spur Pruning

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Water Use

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Water use

- For young vines planted in spring
- Give them 2 gals each 3 times a wk for the first warm/dry month (May or June)
- As the vine gets older water just once a week 4-5 gals/vine
- Stop watering in Sept. to harden vines

Water use

- For old vines
- Bud break to bloom plant needs 2-3 inches of water (May-early June)
- Bloom to veraison plant needs 8-10 inches of water (June-early August)
- Veraison to harvest, plant would like another 8 inches but most wine grape growers will limit unless extreme heat

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When is Water Needed by the Vine?

Budbreak to bloom < 5%
Bloom to fruit set 15%
Fruit set to veraison 60%
Veraison to harvest 20%
Harvest to leaf fall < 5%

How much water do grapes need?
1-1.5 acre ft per year

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Water Use
Willamette Valley Grapes

	Evap. Trans.	Net irrigation
April	1.65 in.	.28 in.
May	2.72 in.	1.89 in.
June	3.54 in.	3.19 in.
July	4.37 in.	4.37 in.
Aug	3.62 in.	3.62 in.
Sep	2.72 in.	2.56 in.
Oct	1.38 in.	.79 in.
Total	20.00 in.	16.70 in.

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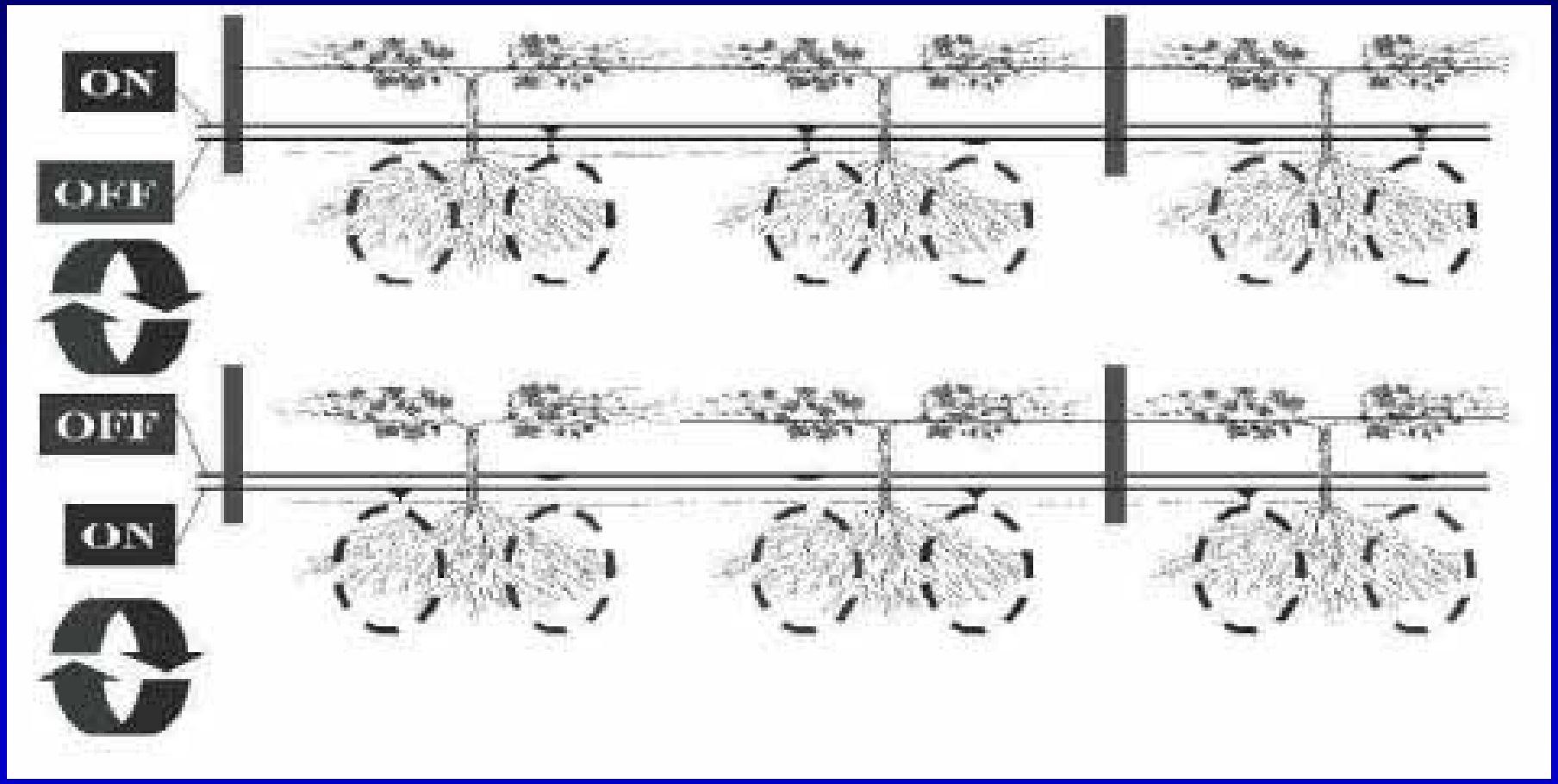
Partial Root Zone Drying



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Partial Root Zone Drying

- Soil water deficit over space
- Water applied throughout the season
- No plant water deficit
- Maintains berry size and yield

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Regulated Deficit Irrigation

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Regulated Deficit Irrigation

- Regulated deficit irrigation: cutting water use at specific times (10-50% of ET)
- Soil water deficit over time
- Done after fruit set to start of veraison
- Restricts shoot growth
- Reduces berry size and yield
- Improves color, brix, t/a (red grapes)
- Saves up to 30% of water use

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Water use for frost protection

- In Oregon you may have frost events after bud break
- 2-3 of those frost events will be cold enough to use protection
- Using overhead sprinklers, need to run system on average 3-4 hrs. with each occurrence, 1-2 inches water applied

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Pests and Disease

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Oregon Crop Losses in 2005

- Animals 3%
  - birds, elk, deer, voles, mites
- Diseases 2%
  - Powdery mildew, Botrytis
- Weather 5%
  - Hail, rain

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Table Grape Varieties

- *Red*
- Canadice-A
- Flame Seedless-E
- Suffolk red-A
- Vanessa-A
- *Black*
- Concord-A
- Fredonia-A
- Schuyler-H
- *White/Yellow*
- Himrod-H
- Interlaken-H
- Lakemont-H
- Perlette-E
- Marquis-E
- Niagara-A
- Seneca-H

Powdery Mildew

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Powdery Mildew

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Controlling Powdery Mildew

- Cultural controls
  - Prevent excess vigor
  - Control suckers
  - Summer prune (cane topping)
  - Leaf pulling
- Chemical controls
  - Begin early, 6” shoots
  - Sulfur, stylet oil, DMI or strobilurin

Vole Damage to Grapevines

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Vole Runs/Tunnels

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Controlling Voles

- Trapping (mouse or box traps)
- Predators (raptors, cats)
- Bait (d-con, zinc phosphide)
- Mowing

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Grape erineum mite

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Short Shoots Indicate Bud/Rust Mite

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Controlling mites

- Sulfur sprays to control Powdery mildew will also control erineum mite
- It is common to see mites on unsprayed grapevines, like Vitus labrusca
- Rust and bud mite now causing damage in the Willamette Valley

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Enjoy Grapes All Ways, Not Just "Sideways"

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Resources

- Growing Grapes in Your Home Garden, B. Strik, pub EC 1305
- Grape Cultivars for Your Home Garden,
- B. Strik, pub EC 1309
- The Grape Grower, L. Rombough ISBN 1-890132-82-9
- Oregon Viticulture, E. Hellman ISBN 0-87071-554-2

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