

*2012 ORCHARD & VINEYARD SHOW*

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# Progress in Sweet Cherry Production in NY

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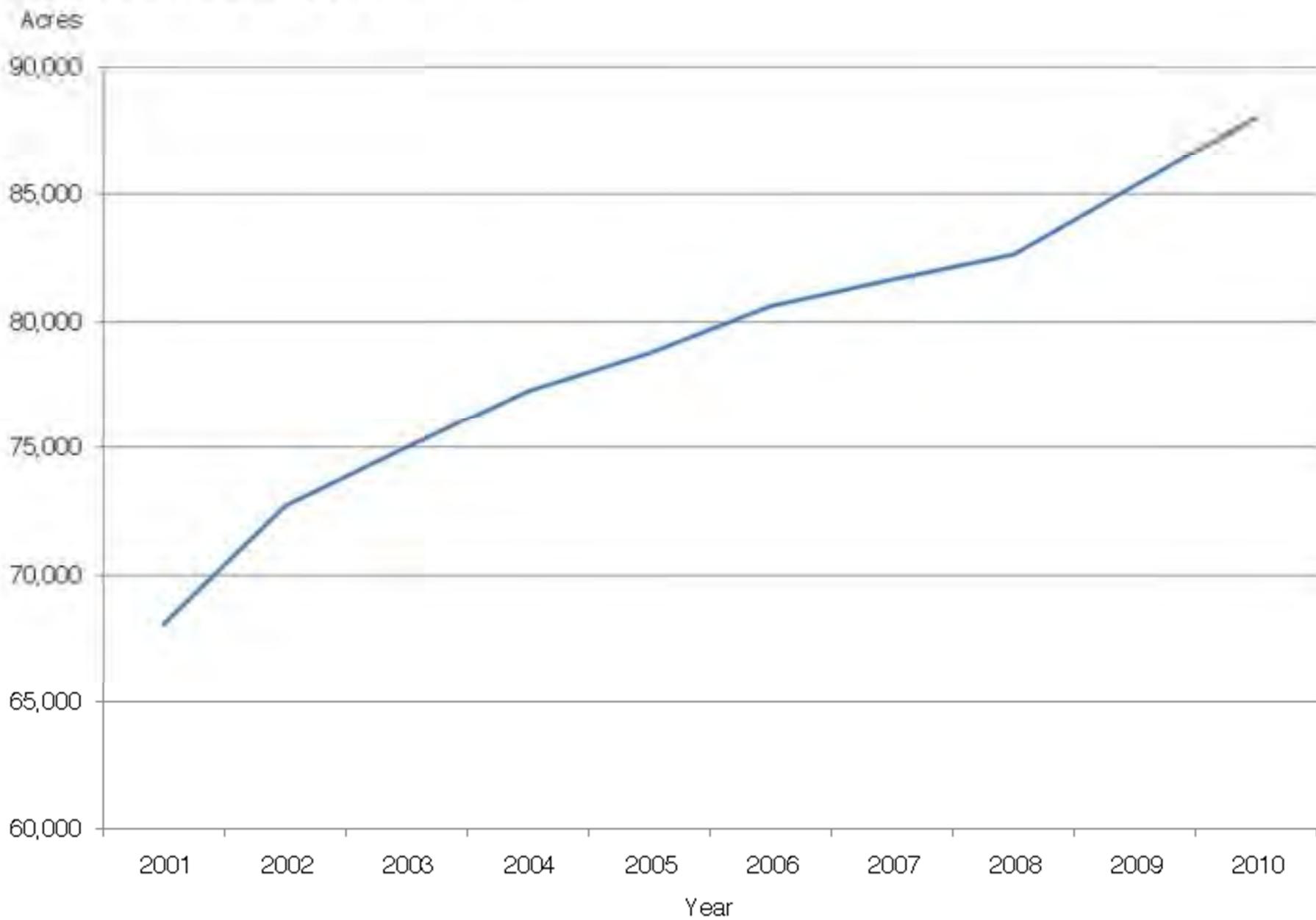
HVL and NYSAES

Highland and Geneva, NY

# Sweet Cherries



# Sweet Cherry Bearing Acreage United States, 2001-2010



**Table 4. SWEET CHERRIES: Number of farms and acres, by size, 2001 and 2006**

Size Group	2001				2006			
	Farms		Acres		Farms		Acres	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<i>(sweet cherry acres per farm)</i>								
<2	99	53	60	8	120	62	64	9
2-4.9	38	21	100	13	38	20	116	17
5-9.9	29	16	205	26	20	10	118	17
10-19.9	10	5	110	14	8	4	96	14
20+	9	5	309	39	8	4	296	43
<b>Total <sup>1/</sup></b>	<b>185</b>	<b>100</b>	<b>783</b>	<b>100</b>	<b>194</b>	<b>100</b>	<b>689</b>	<b>100</b>

<sup>1/</sup> Totals may not add due to rounding.

# NY Statistics - 2010

Sweet Cherries:

750 acres

1000 tons

Avg Price \$0.80

State Value of Utilized Production \$1.6M

Reported Yields ~ 1.6 tons/acre









# Growing Sweet Cherries

- Negatives
  - Climate
  - Birds
  - Perishability shelf life 7 days
  - Labor
- Positives
  - Market Demand – buy local
  - Research on Positive Benefits
    - Anti-inflammatory
    - Cancer
    - Alzheimer's
  - New Varieties
  - New Rootstocks
  - New Planting Systems

# NY Sweet Cherries

## Negatives

- Inconsistent yields – weather, secondary (or tertiary) crop.
- Very poor yields – 1.5 tons/acre
- Markets are all local - Farm Stand, Farmers markets, Upick, and local chains participating in buy local movement
- Very small industry – no synergism.
- There is very little experienced local help (consultants, extension specialists)



**Bacterial Canker**



Japanese Beetle

# Protect against Deer Browsing and Buck Rubbing



All Sweet Cherry Blocks in New York MUST be Fenced



# Growing Sweet Cherries

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# NY Sweet Cherries

## Positives

- The market seems unlimited! Growers never have enough cherries to sell – buy local
- Very, very profitable on good years particularly in Eastern NY
- There are new local varieties more suited to our humid climate.
- New integrated management methods which will successfully even out inconsistent production

# So We Decided to work with Cherries !

- Increasing importance of alternate crops – Sweet Cherries a logical alternative!
- Interested Growers – New Royal, Bortchert, Red Jacket
- Dwarfing rootstocks now available
- Need to protect against birds
- Need to protect against cracking
- Leadership and Moral Support From MSU – Nugent, Lang, Flore

# The Best Quality Cherries

- Gibberellic Acid
- Harvest at optimum maturity
- Hydro cooling
- Refrigeration at < 39 degrees F
- MAP (Lifespan L-204 20# bags)

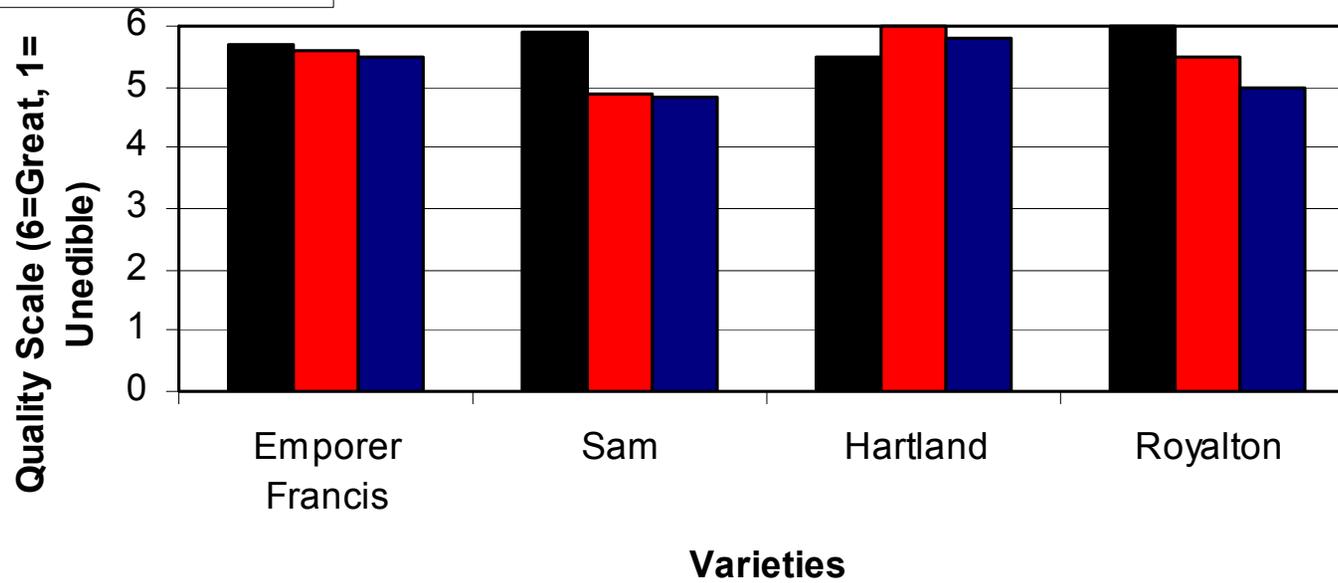
# MAP Bags - LifeSpan

- 8% oxygen
- 8% CO<sub>2</sub>
- 95% humidity
  
- Published optimum storage conditions @32oF
  - 3-10% O<sub>2</sub>
  - 10-15% CO<sub>2</sub>
  - 90-95% humidity

Kalhke, Wargo, Zakour

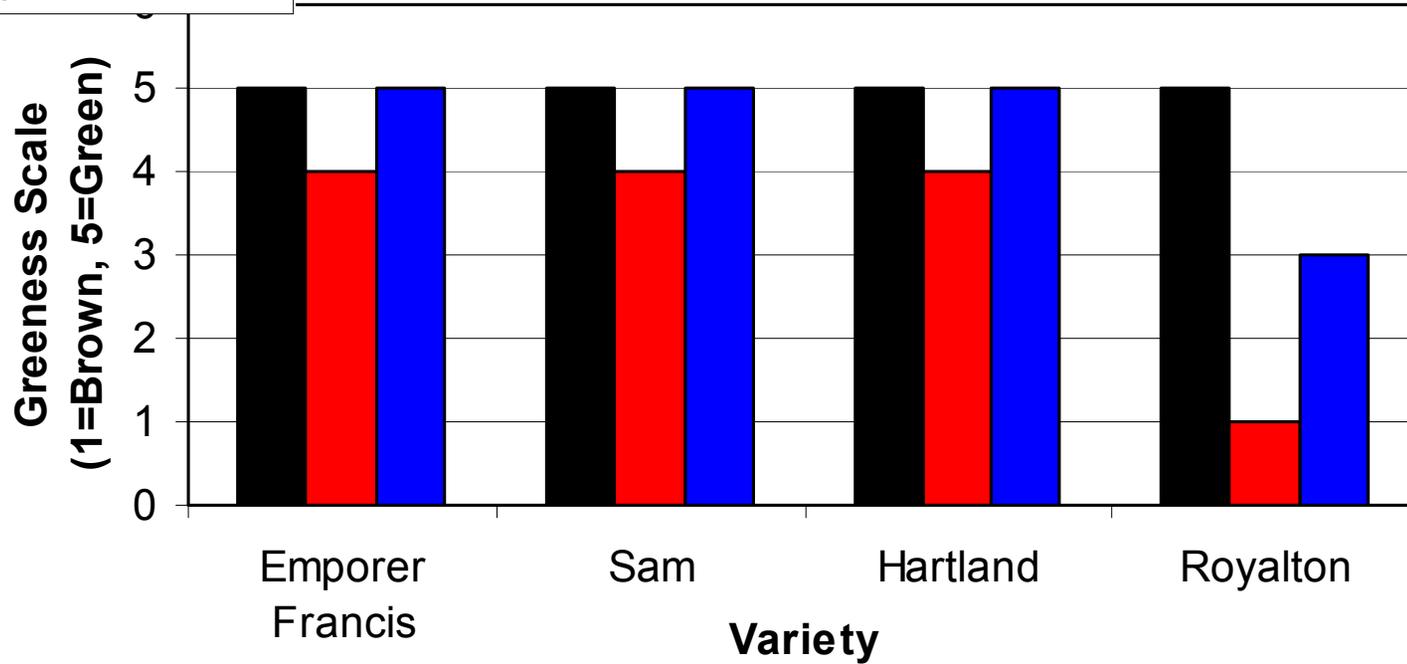
## Eating Quality

- Fresh
- 30 days Cold Storage
- 30 days CS +MAP



## Stem Color Retention

- Fresh
- 30 days Cold Storage
- 30 days CS +MAP





Fruit Size

# Fruit Size

- LA/FS 200sq cm leaves for largest fruit
- Each leaf is approximately 33 sq cm
- 5-6 leaves per fruit
- Cluster with 5 fruit should have 30 leaves

Lang

# Effects of Pruning Fruit Size and Yield

- Minimal Pruning 8.6g
- Stub Pruning 9.3g
- Spur Thinning (extinction) 10.0g

Reginato

# Variety Selection

## Bob Andersen

- Large and Black
- Crack Resistance
- Productivity and Winter Hardiness
  
- Suggestions
  - Black Pearl – NY8139
  - Radiance Pearl – NY7679
  - Burgundy Pearl – NY 38L
  - Ebony Pearl – NY32
  - Regina
  - Hedelfingen
  - Hudson
  - Sweetheart

# Advantages and Disadvantages of High Density Systems

- Early bearing
- High yield
- Easy to pick
- Picking cost reduction
- Tree efficiency
- High establishment cost
- High level of management
- High level of knowledge
- Cover against hail and rain
- Short lifespan ?
- Improved Fruit Quality ?
- Early breakeven ?

# How to choose the training system ?

## Environment

- Soil (Structure, texture, fertility, ecc.)
- Weather (temperature, Humidity, light, ecc.)

## Technical subjects

- Soil management
- Pruning
- Irrigation and nutrition
- Level of knowledge of the grower

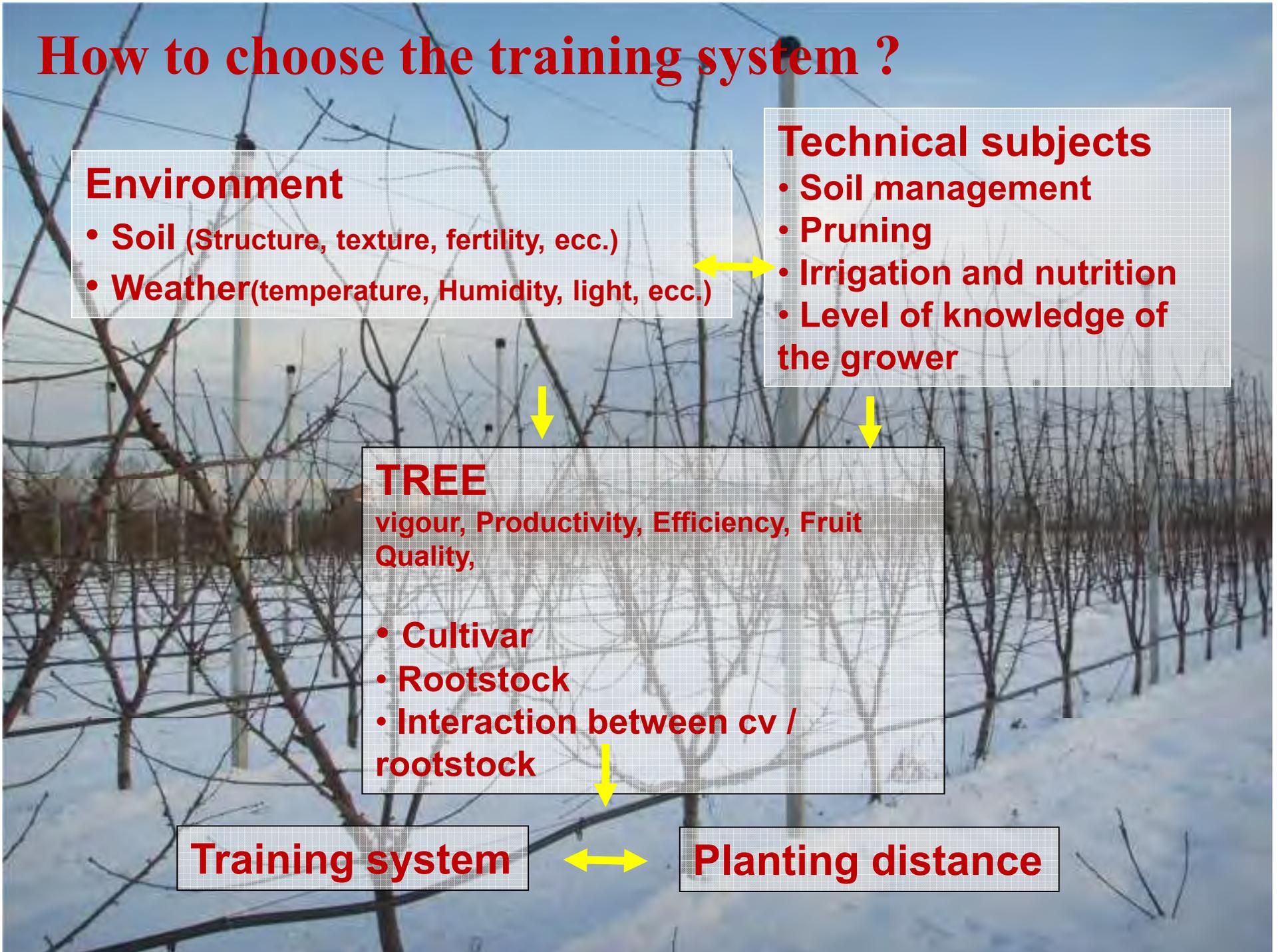
## TREE

vigour, Productivity, Efficiency, Fruit Quality,

- Cultivar
- Rootstock
- Interaction between cv / rootstock

Training system

Planting distance



# Sweet Cherry Planting Systems Trial

- Established 3 acre Trial in May 1999 at the NYSAES
- Central Leader, Vogel Slender Spindle, Zahn Vertical Axis, Spanish Bush, Marchant Slant Trellis, V-Trellis
- Gisela 5, Gisela 6
- Hedelfingen, Sweetheart, Lapin
- Followed up in 2003 in Geneva

# Methods

- We followed only the basic “recipes” we could find and modified each according to our experiences and perceived NY conditions. Mostly from Lynn Long – The Dalles Oregon.
- Rejected the “Steep Leader System” WA
- The result is a combination of SAH, TLR, and RLA’s thinking.

# Sweet Cherry Planting Systems Trial

- Coordinated NC140 Trial – 2010 - Lang
  - Crist Farms
    - Super Spindle Axe – short pruned
    - Tall Spindle
    - Upright Fruiting Offshoots -
    - Kym Green Bush – Spanish Bush Modification
    - Gi 5, Gi 6, Gi 3



# Rootstock Characteristics

- Gisela<sup>®</sup> 5 and Gisela<sup>®</sup> 6 :
  - Complex hybrid (*Prunus cerasus* x *Prunus canescens*)
  - No suckers
  - Tolerant of *Monilia laxa* and *Pseudomonas syringae*
  - Gisela<sup>®</sup> 5 is 50% the size of mazzard
  - Gisela<sup>®</sup> 5 does best on very fertile soil
  - Very high yield efficiency
  - Very Early bearing
  - Induces wide crotch angle in the new shoots

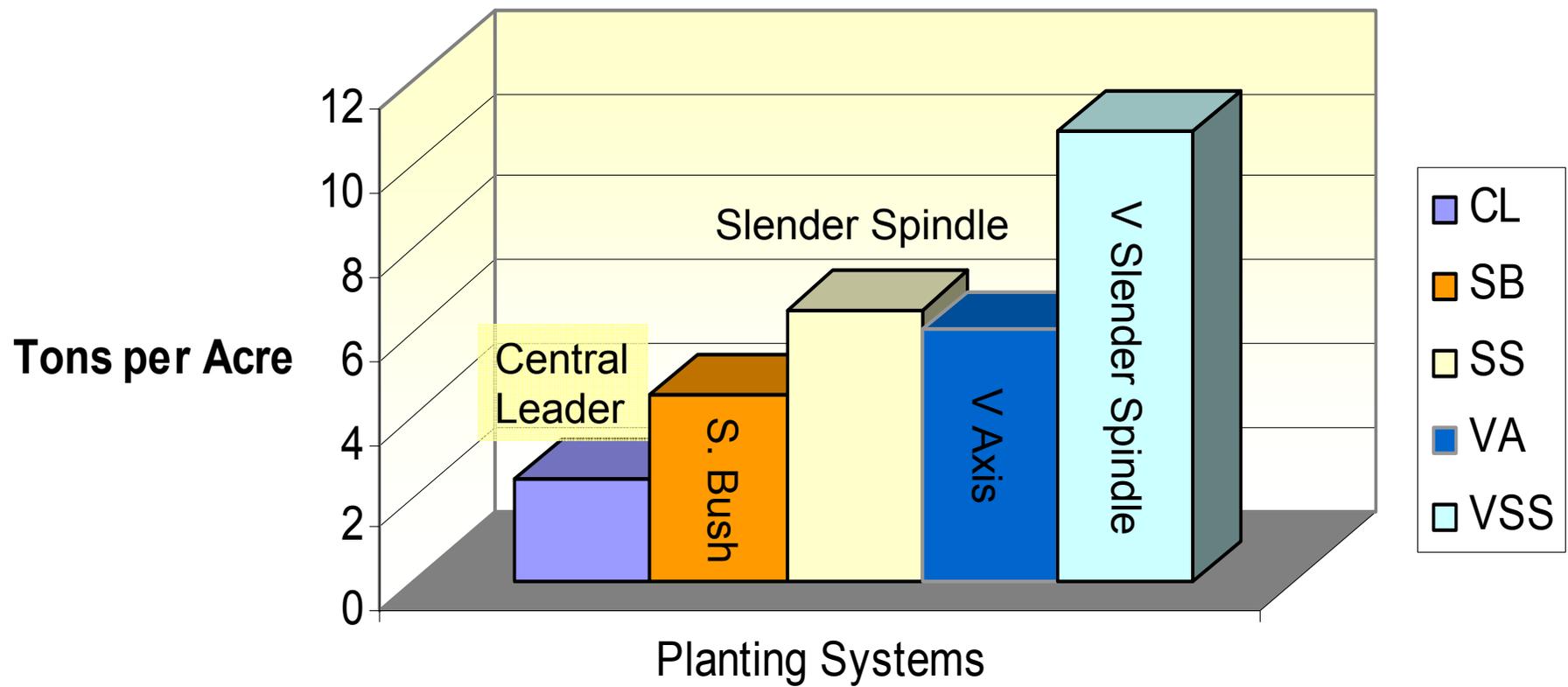
# Planting Sweet Cherries

- Gisela stocks (Gi. 5, 6, 12)
- Mazzard and Mahleb are too large a tree to cover! Needed precocity for size control and profitability.
- Rootstock shank 4-6 inches above ground
- Paint trunks white with cheap latex paint especially on the south side of the tree.

# Tree Spacing and Density for 5 Sweet Cherry Planting Systems

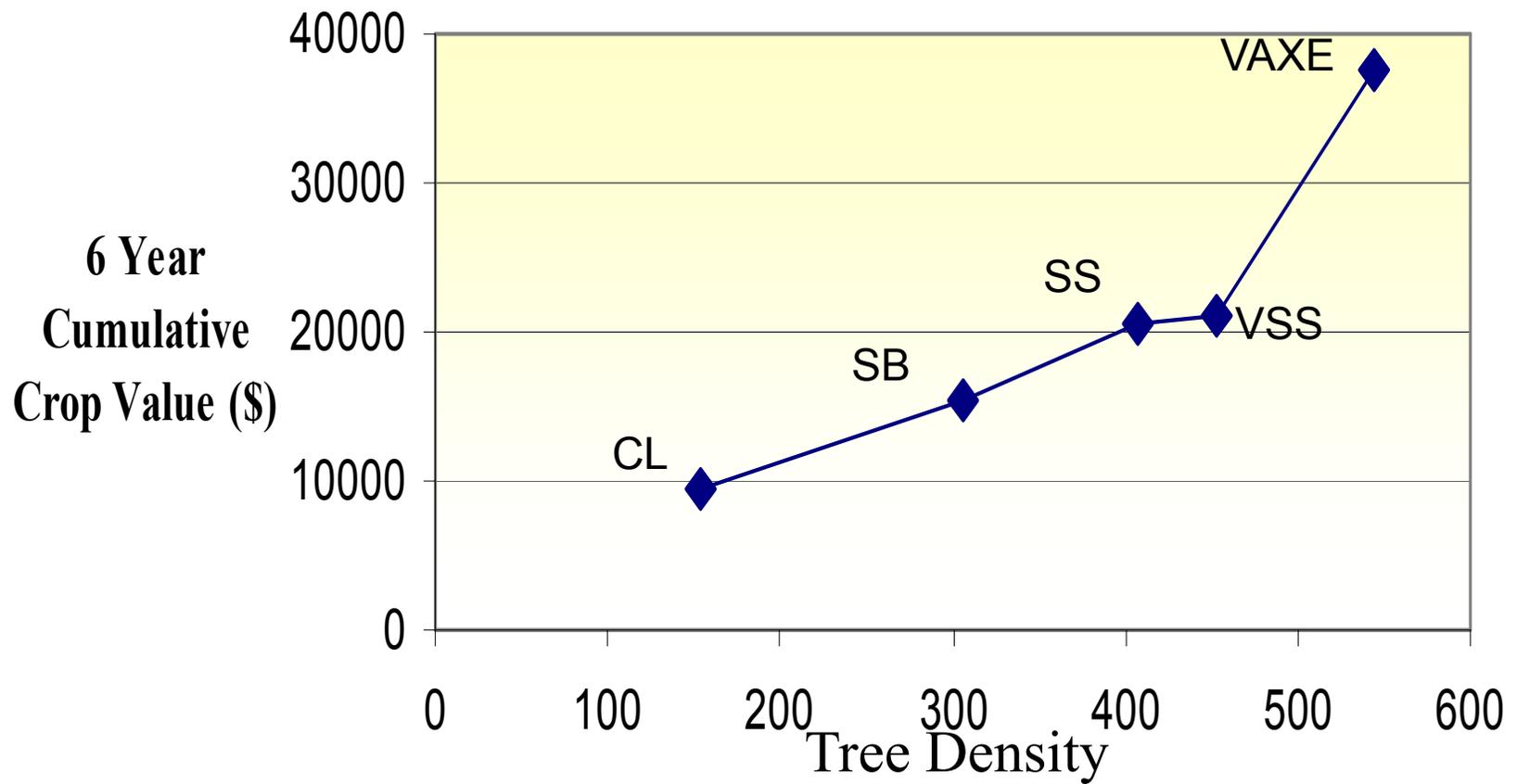
<b>Planting Systems</b>	<b>Trees/Acre</b>	<b>Tree Spacing</b>
<b>Modified Central Leader</b>	<b>153</b>	<b>16 X 20</b>
<b>Spanish Bush</b>	<b>306</b>	<b>10 X 16</b>
<b>Slender Spindle</b>	<b>408</b>	<b>8 X 15</b>
<b>V-Slender Spindle</b>	<b>453</b>	<b>6 X 18</b>
<b>Vertical Axis</b>	<b>544</b>	<b>6 X 15</b>

## Cumulative Yield - Sweet Cherries



*Robinson et al. 2005*

# Cumulative Profit (\$) - Sweet Cherries



**Mod. Central Leader  
Tehranivee/Mahaleb  
16' x 20'  
(136 Tr/Ac)**

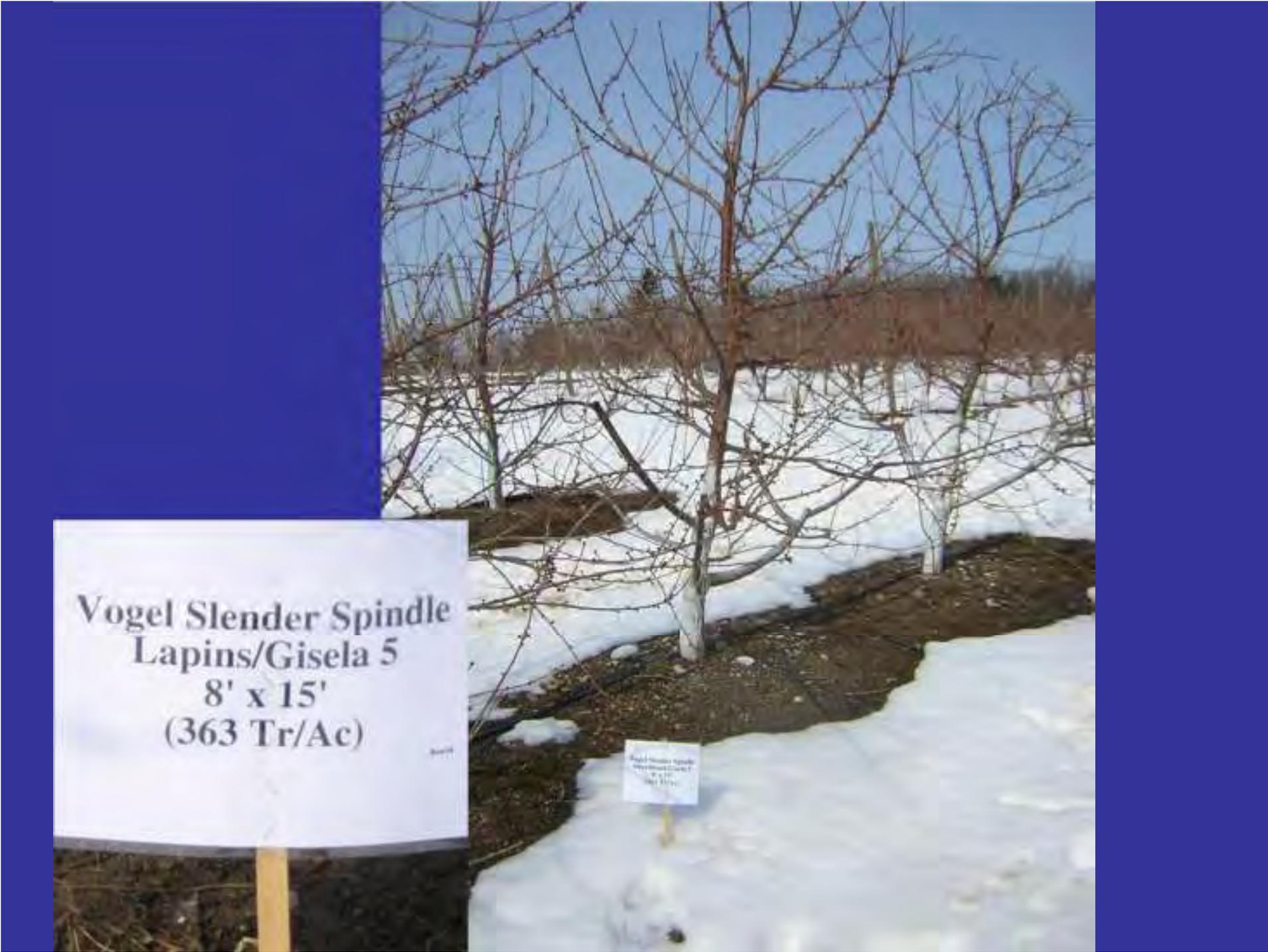


# Systems

- CL
  - Headed annually
  - Branches spread when possible
  - Uprights removed
- Problems
- Branches too upright dominated tree, attempts at spreading resulted in canker formation , vigorous regrowth.



**Spanish Bush**  
**8' X 18'**  
**303 Trees/Acre**

A photograph of a bare tree in a snowy field. The tree is the central focus, with its thin branches reaching out against a clear blue sky. The ground is covered in snow, with patches of dark soil visible around the base of the tree. In the foreground, a white sign is attached to a wooden stake. The sign contains text identifying the tree's variety and spacing. Another smaller sign is visible in the background, partially obscured by the snow.

**Vogel Slender Spindle**  
**Lapins/Gisela 5**  
**8' x 15'**  
**(363 Tr/Ac)**

# System

- Vogel
  - Mini central leader with main scaffolds spread by hanging clothespins on branch ends and moving them out to the end weekly through growth
  - Bud removal in the second leaf

**V-Slender Spindle  
Sweetheart/Gisela 5  
6' x 18'  
(403 Tr/Ac)**



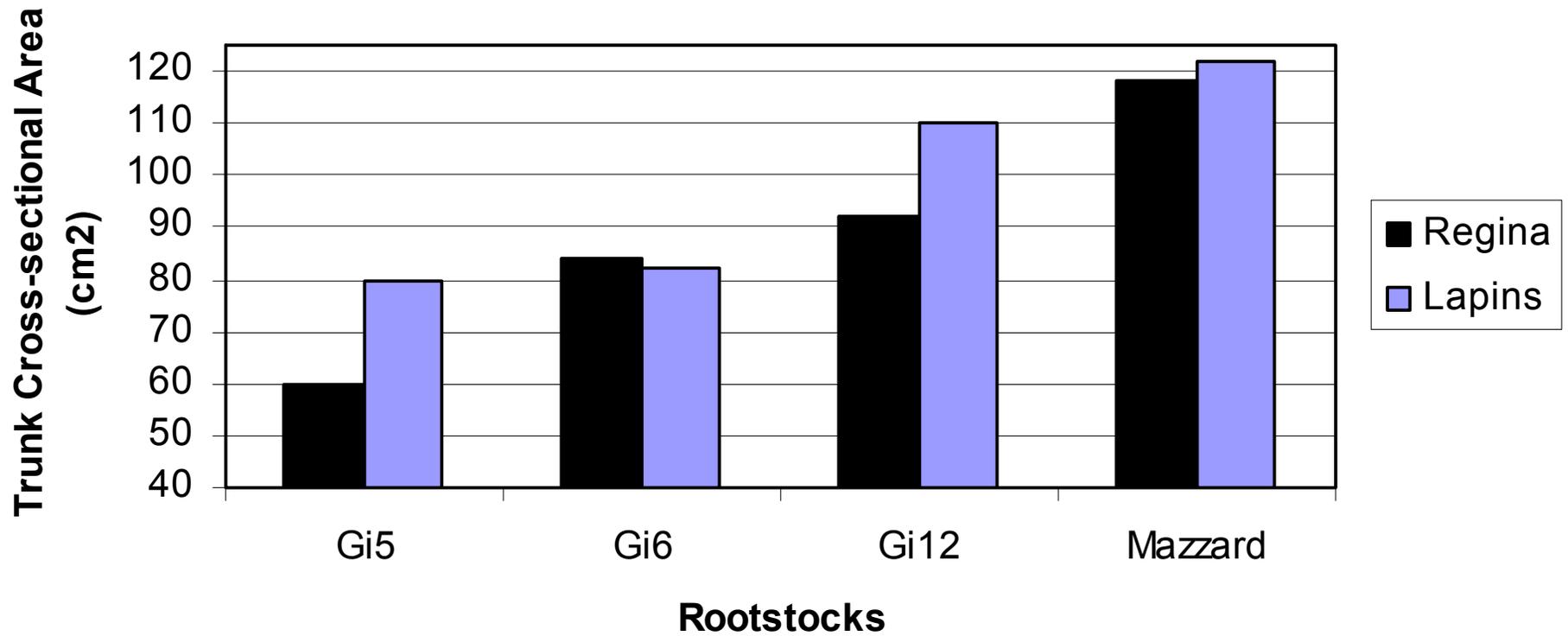
# System

- Vee
  - Planted on an angle but strong upright growth forced us to trellis them.
  - Turned them into a Y shape with a single trunk
  - Canker has not been as big a problem as expected.

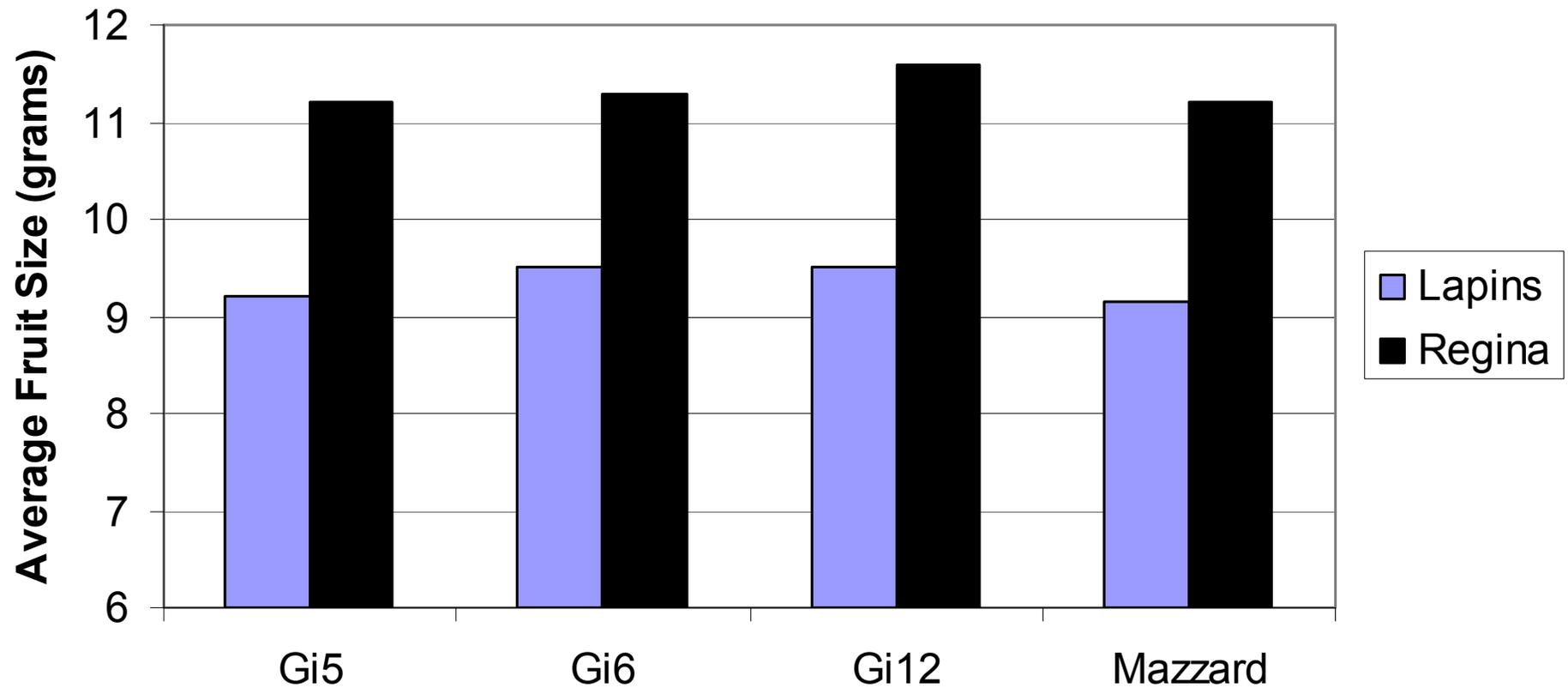
**Zahn  
6'X18'  
403 Trees/Acre  
Vertical Axis**

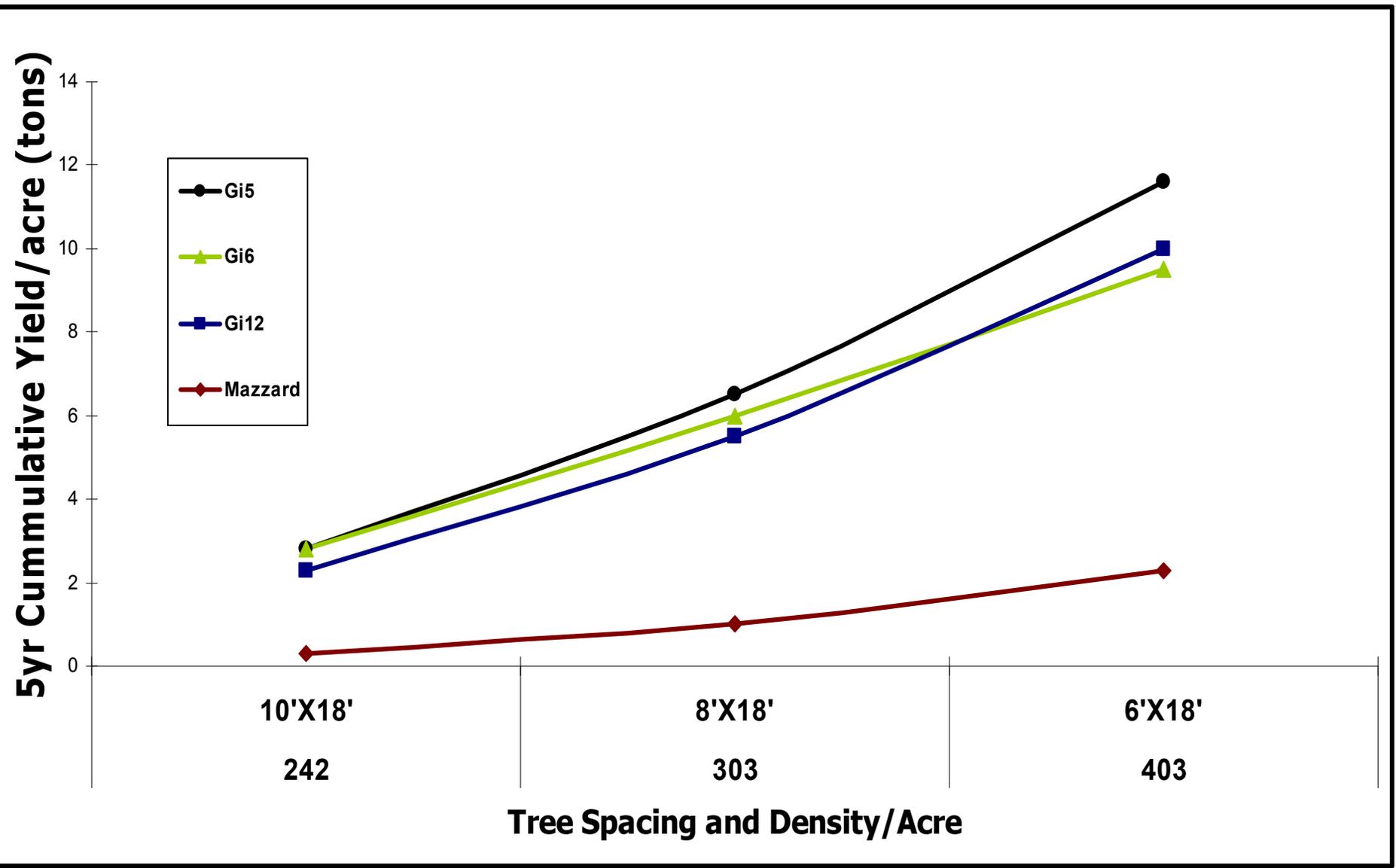


## Comparison of TCA's Rootstock and Variety



## Average Fruit Size Depends on Rootstock and Variety





# Bud Removal on 1 year old wood

- For early branch development
- At Bud Swell during dry period
- Do not head
- Preserve leader bud then remove all buds in top 8 inches of leader
- Then remove 2/3 buds on 1 year wood by removing 2 buds, leaving one bud, remove 2 buds, leave 1 bud, remove 2 etc.

# Scaffolds

- Remove all buds on top of limb
- Remove all buds on bottom of limb
- Rub them off!



Stefano Musachi

# Stubbing Back



# Beware of Bacterial Canker









# UFO – Upright Fruiting Offshoots

- 1<sup>st</sup> tried with Jim Bittner in 1996
- Made sense but too afraid of Bac Canker so didn't provide trellis and trees stood right back up again in 1<sup>st</sup> season
- NC140 trial we are using nylon wire – jury is still out.

2010









2011









# Drapeau Marchand



# KGB – Kym Green Bush

- Pedestrian System
- Large Fruit Size
- Severe Pruning















# Tall Spindle

- Wider spacings (6 ft)
- Permanent bottom tier
- Renewable top through stubbing and cutting back
- Similar to Zahn System







# Super Spindle Axe

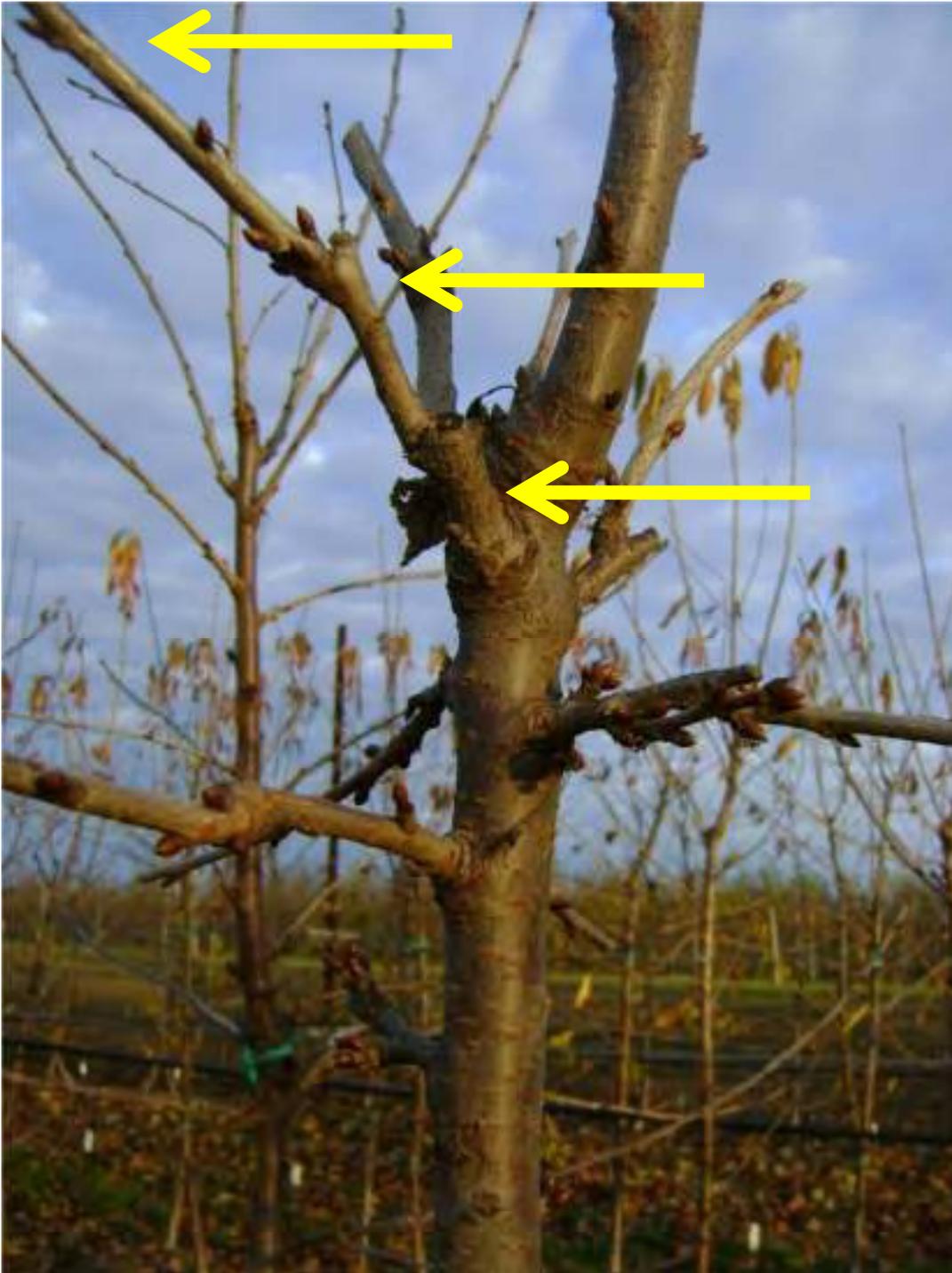
- Very High density – spacing 3 feet
- All branches cut back each year
- Fruiting at the base of 1 year wood, few spurs
- Large fruit
- Potential for partial mechanization (pruning)
- Fruiting wall?











These 'fruiting feathers' are cut back every year so as later to induce spring renewal via short winter pruning that leaves 2-3 vegetative buds, with length slightly decreasing from tree base to apex





Crop at base of 1 yr shoots







Covers against hail and rain  
Haygrove to be installed this year!

That about Covers it!

Thanks  
Questions?