



# Off The Wall Orchard

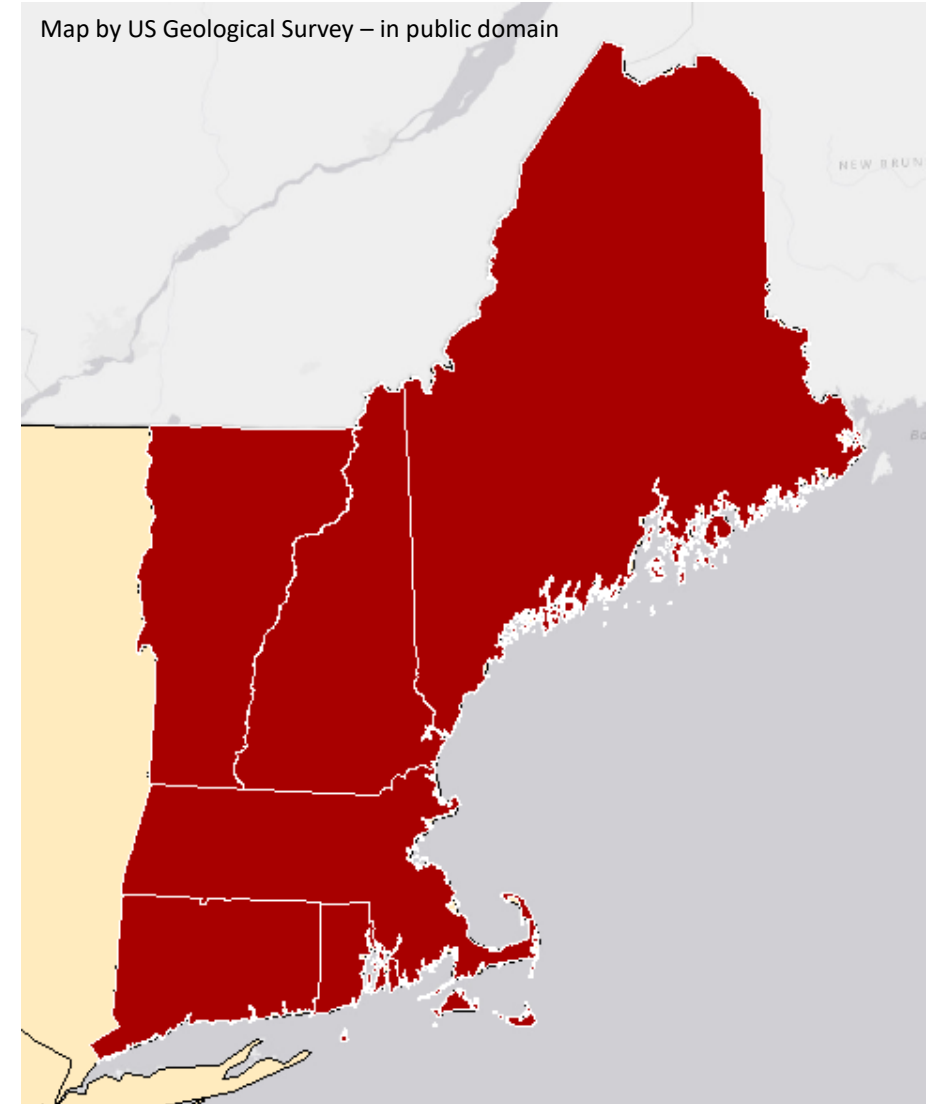
**An Organic Fruit Farm**

Ron Christie

80 W Parish Road, Concord NH 03303

# What Make Us Different

- We are one of the few organic orchards in the Northeast growing apples, peaches and sweet cherries
- Our orchard is designed to be “organic farmer friendly”
- All of our trees grow on a trellis covered with greenhouse plastic and surrounded by insect netting

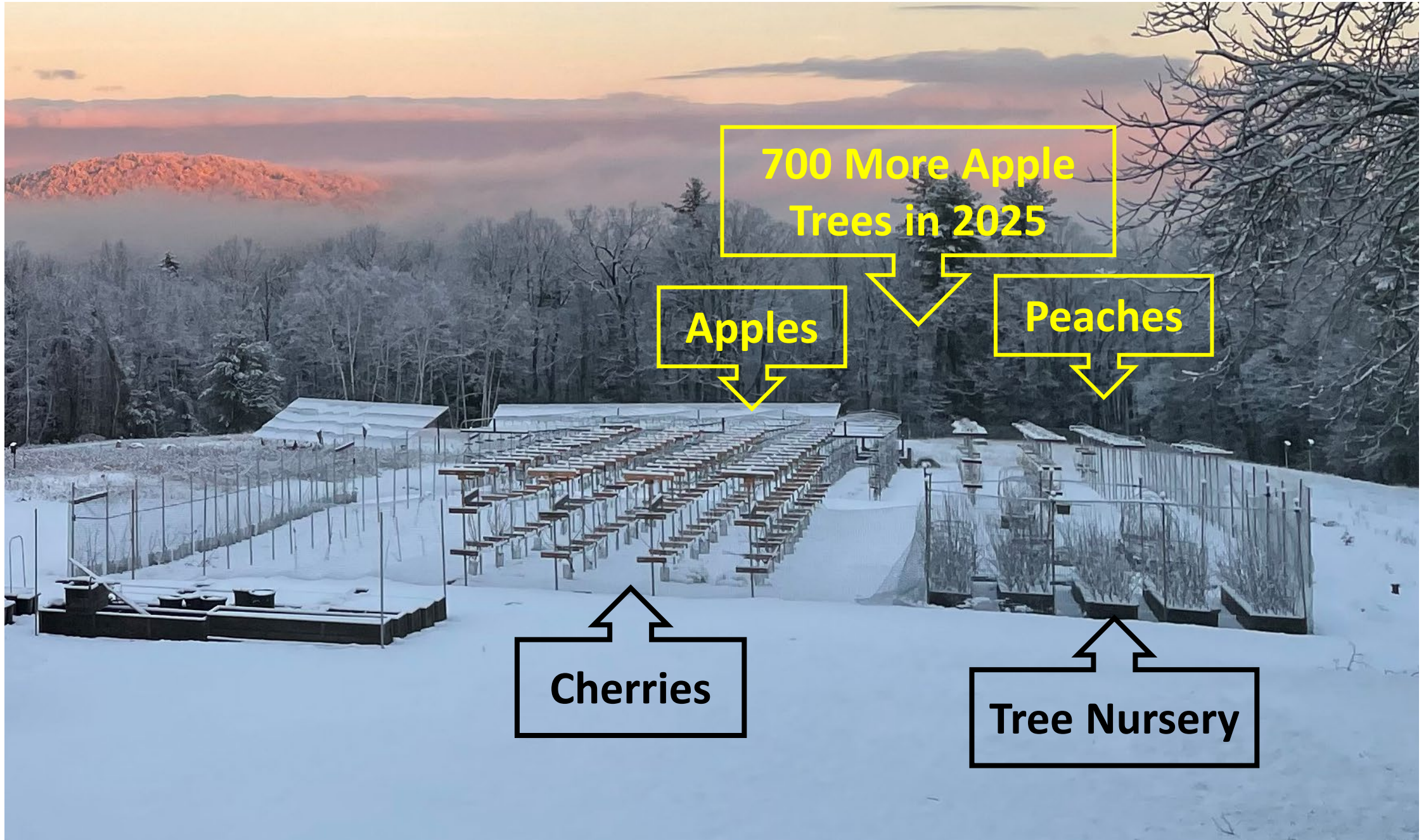


**This is what we looked  
like in the fall of 2019**



**This is us in 2024**





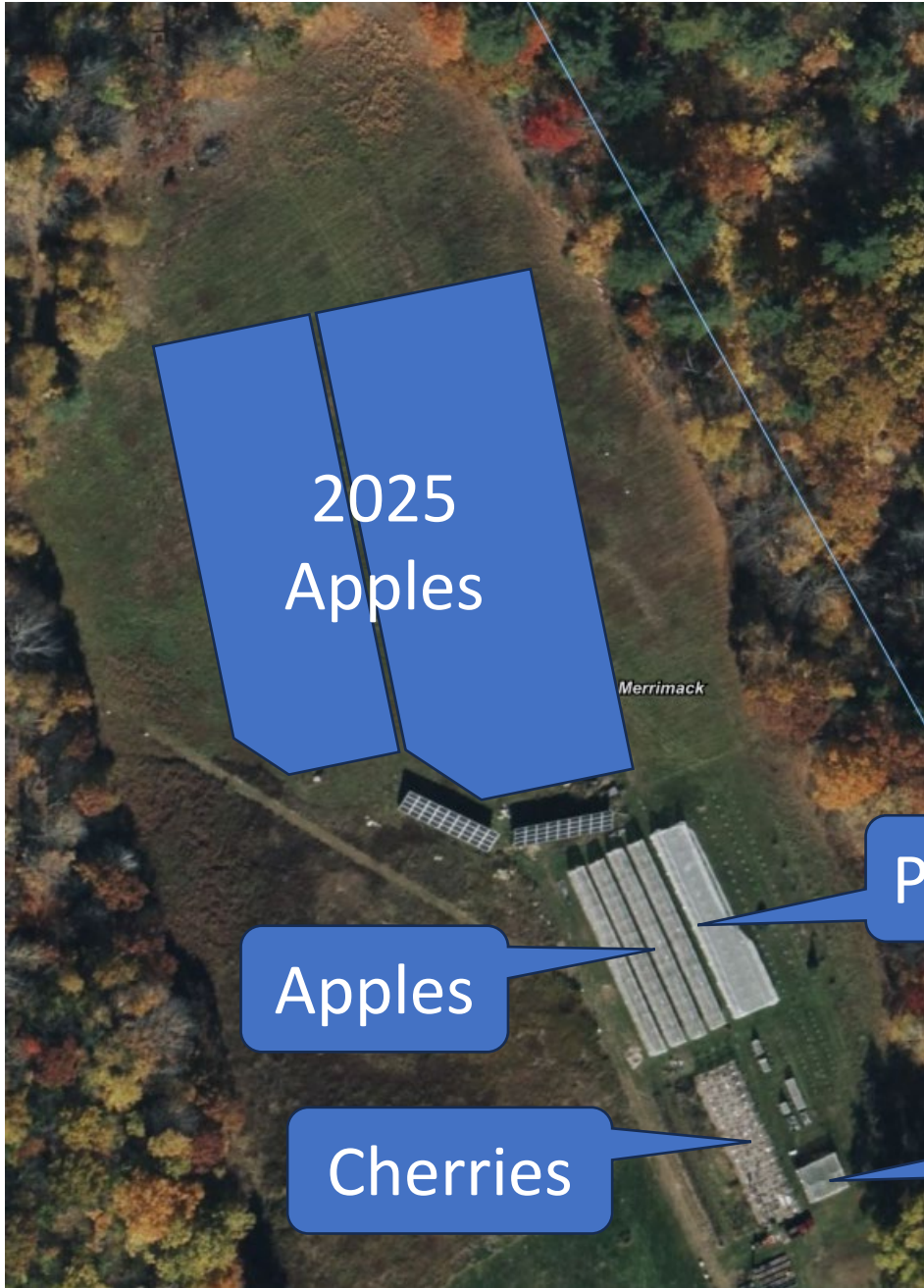
700 More Apple  
Trees in 2025

Apples

Peaches

Cherries

Tree Nursery



2025  
Apples

Merrimack

Apples

Cherries

Peaches

Nursery

A photograph of a long, covered walkway in an orchard. The walkway is covered with a white plastic sheet supported by a wooden frame. On either side of the walkway are rows of young apple trees. The trees in the foreground are in full bloom, covered in white flowers. The sky is blue with some light clouds.

Spring Bloom

# 2024 Apples

A photograph of a long, covered walkway in an orchard, similar to the one in the first image. The trees in this image are not in bloom but are heavily laden with green apples. The walkway is covered with a white plastic sheet supported by a wooden frame. The sky is blue with some light clouds.

Bare Wall of  
Crimson Crisp Trees

Goldrush Apples  
Near Harvest Time

# 2024 Peaches





# Growing Fruit in New England

- New England is a hard place to grow quality fruit, even with conventional methods
- It is wet, humid and buggy
- Organic pesticides and fungicides are largely ineffective against the onslaught of pests, bacteria and fungi found here
- Growing **organic** fruit in New England has been mostly filled with disappointment



Photo of Apple Scab by Alan Eaton, former UNH Extension Entomology & IPM State Specialist, Emeritus

# High Quality Organic Fruit! Nothing Else Will Do

Apples, peaches and sweet cherries – all fruit love to eat.

Whole Foods recent organic fruit prices

- Apples, \$4 a pound
- Peaches, \$6 a pound
- Cherries, gazillion \$ a pound

Nice prices for just three apples, three peaches or a handful of cherries.



# How Not to Grow High Quality Organic Fruit



It is just too difficult to do with orchard designs of the past.

Big trees in open spaces! Very romantic, but a killer if you want quality organic fruit.

So, we reworked the entire design of our fruit orchard to make it “organic grower friendly”.

# Orchard Design Inspiration

## Fruiting Walls, Multiple Leaders & Narrow Rows

Franco Micheli & Alberto  
Dorigoni from the Edmund Mach  
Foundation, Trento Italy



# Orchard Design – Fruiting Wall



Trees not more  
than 12" wide

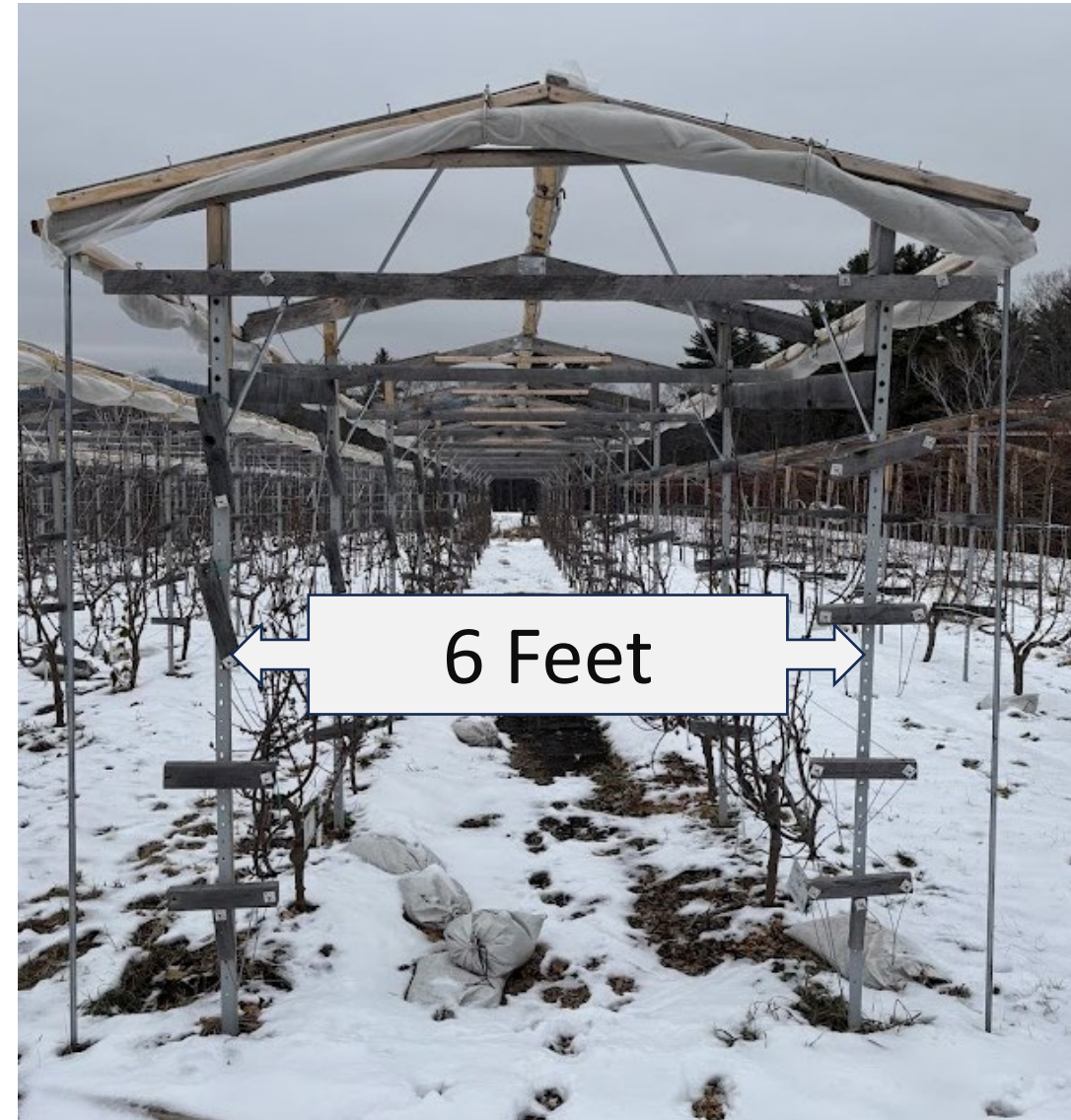
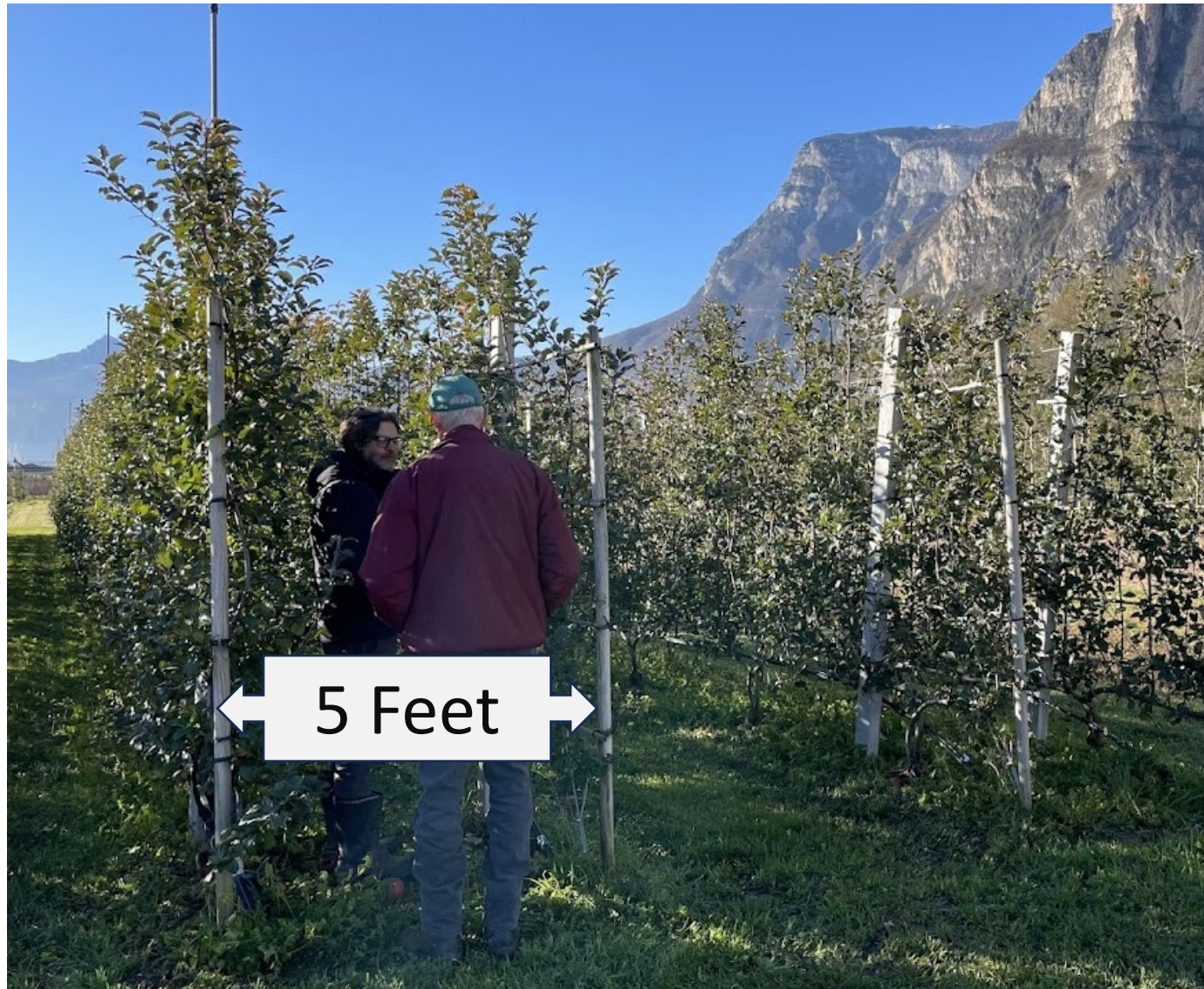


# Orchard Design – Multiple Leaders

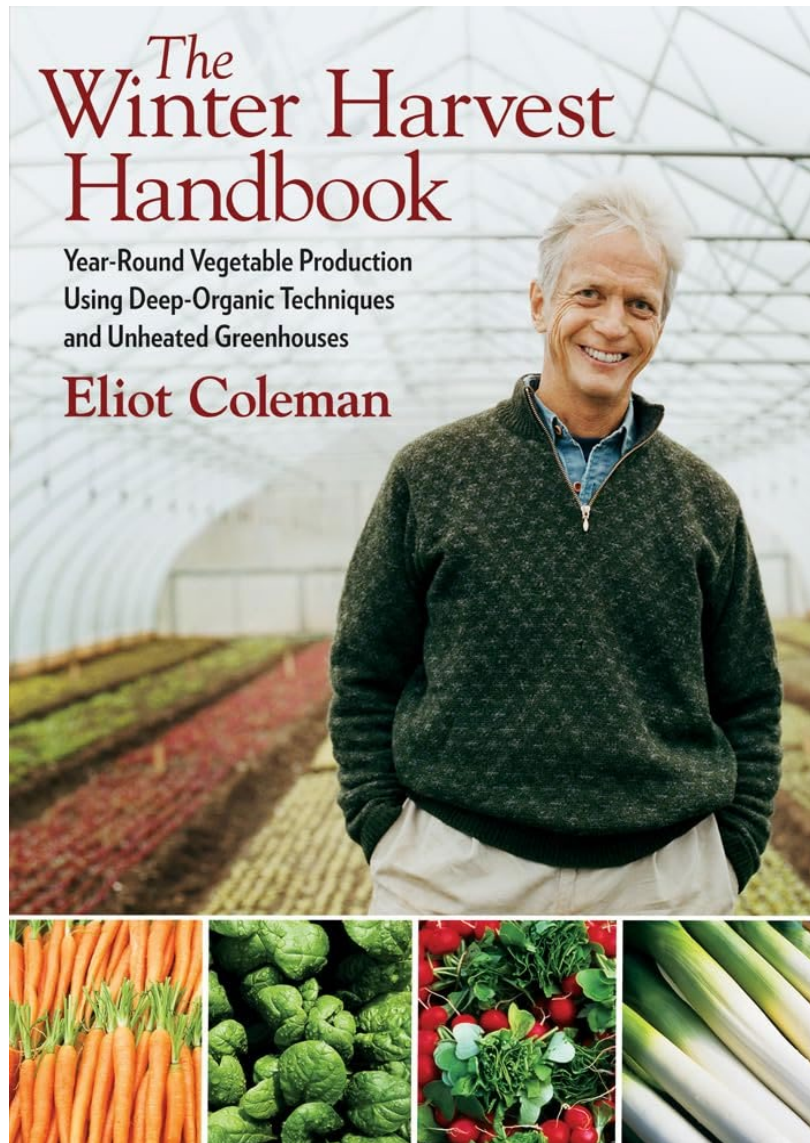


22 Leaders on this tree!

# Orchard Design – Narrow Rows



# Orchard Design Inspiration





# Orchard Design – Cover Your Stuff



# Benefits of a Fruiting Wall

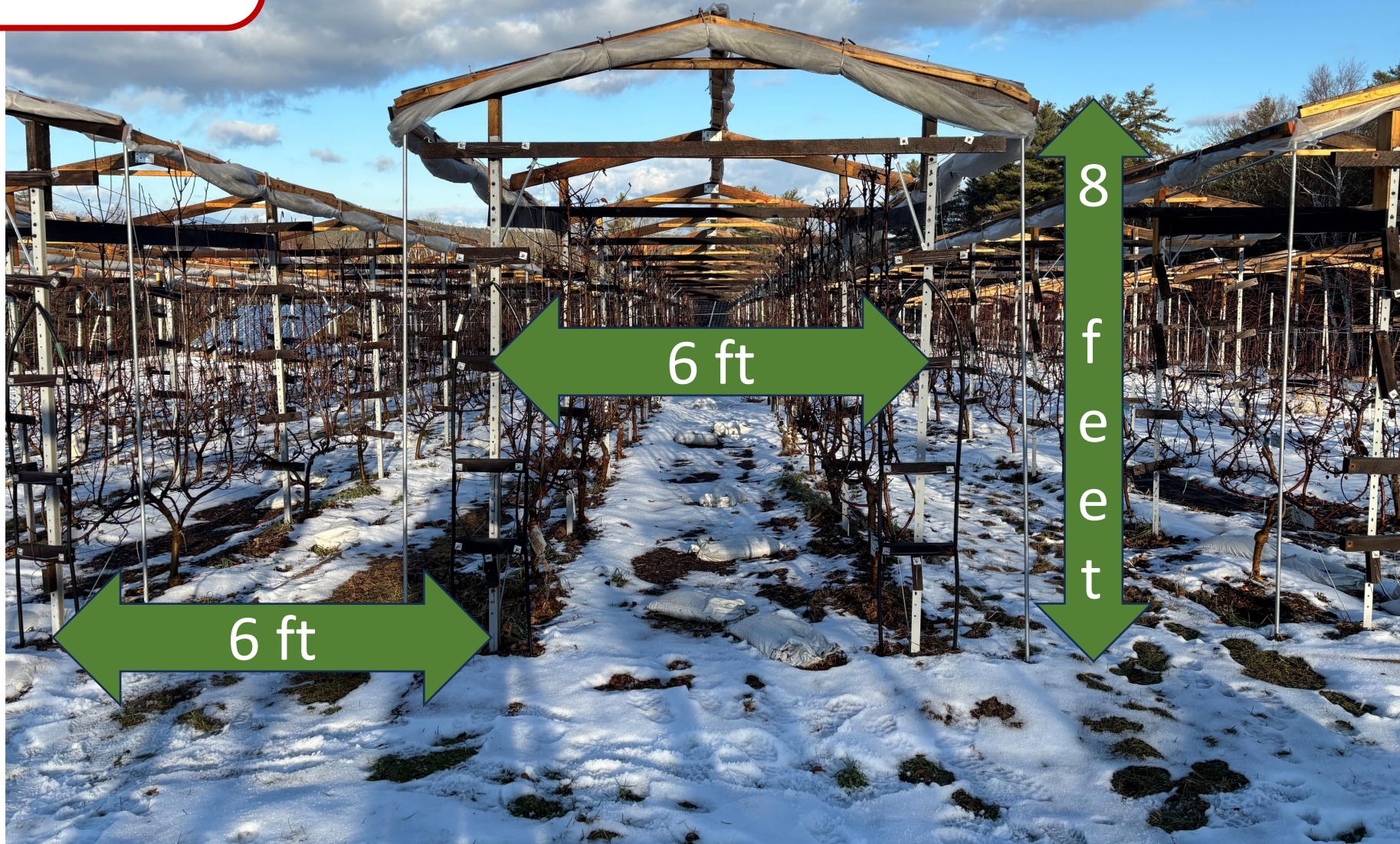
- Sun penetration and air flow improve significantly
- Fruit quality approaches 100%
- Reduced disease pressure because trees dry out faster
- A flat, open canopy reduces insect pest hiding spots
- Spray applications more thoroughly cover the tree
- Tree pruning is simplified: if it sticks out it gets cut off
- Mechanical pruning and harvesting becomes much more feasible
- Rows can be planted much closer

The benefits of a fruiting wall greatly outweigh any negatives

# Benefits of Multi-leader Trees

- One tree replaces two or more trees, reducing costs
- More leaders reduce tree height creating a pedestrian orchard just 8 feet tall
- Tree renewal becomes easier: take out the largest leader
- Crop load is managed with precision: 20 fruit per leader
- Labor inputs are greater in the first few years and significantly lower after establishment
- Harvesting is fast, easy and ladder free. My speed is 200 lbs./hour

# Apple Trellis Layout



**Greenhouse  
Film**



**Rolled up  
for winter**



**60 Gram  
Netting**





# Estimating Apple Yields

Apples grow on spurs/branches near the leader

Thin to 20 apples per leader, and increase or decrease the number of apples per leader depending on the size of the fruit

Leaders are spaced six inches apart, so a 104 ft. row contains 208 leaders

In theory, a tunnel should produce 2600 pounds of apples once the trees are fully filled in

# Peaches Under Cover



# The Tree Ripened Peach



I love peaches and my wife says a juicy, tree ripened organic peach is almost better than... many things.

We planted peach trees three years ago with a plan to protect them like our apples.



# Peach Culture is Different

We started by finding research for the kind of system we wanted to build

- Professor Greg Lang's research from Michigan State University on tree structure and the employment of multi-leader trees with peaches
- Professor Jim Schupp's research from Penn State University on peach tree spacing for tree size control

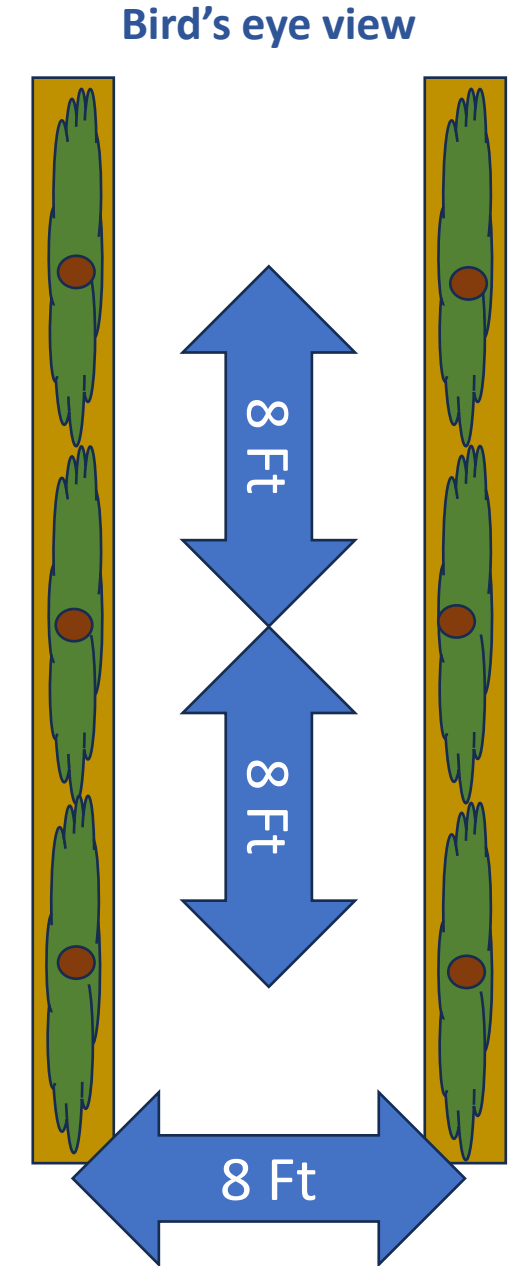


# Peach Rootstock and Vigor Control

Vigor control is a dominant issue because there is no commercial dwarfing peach rootstock available today. Our peach trees are on Lovel non-dwarfing rootstock.

Our row and tree spacing is based Jim Schupp's research – the closer trees are planted the more dwarfing they become.

The rows and trees are 8 feet apart. Rows are 120 feet long.



**Peach  
Trellis  
Layout**



10 ft - 8 in

8 ft

9  
f  
t

# Tunnel Costs

104 Foot Tunnel Construction Costs		
Materials & Supplies	\$	2,500
Labor (100 hours @ \$25)	\$	2,500
Total	\$	5,000
15 Year Amortized Costs	\$	334

Annual Inputs per Tunnel		
Materials & Supplies	\$	1,000
Labor (80 hours @ \$25)	\$	2,000
Total	\$	3,000

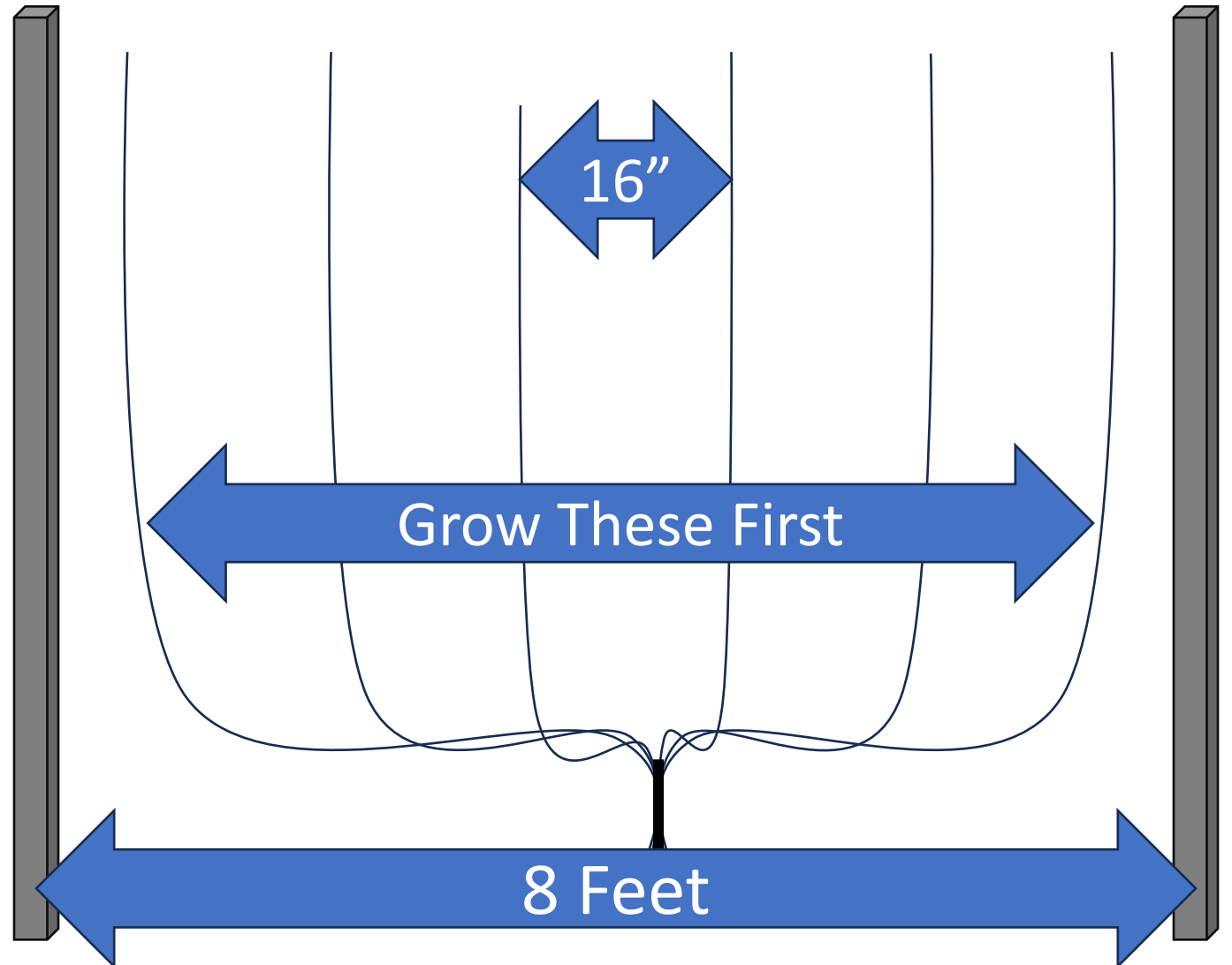
Total Annual Costs	\$	3,300
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# Peach Tree Structure

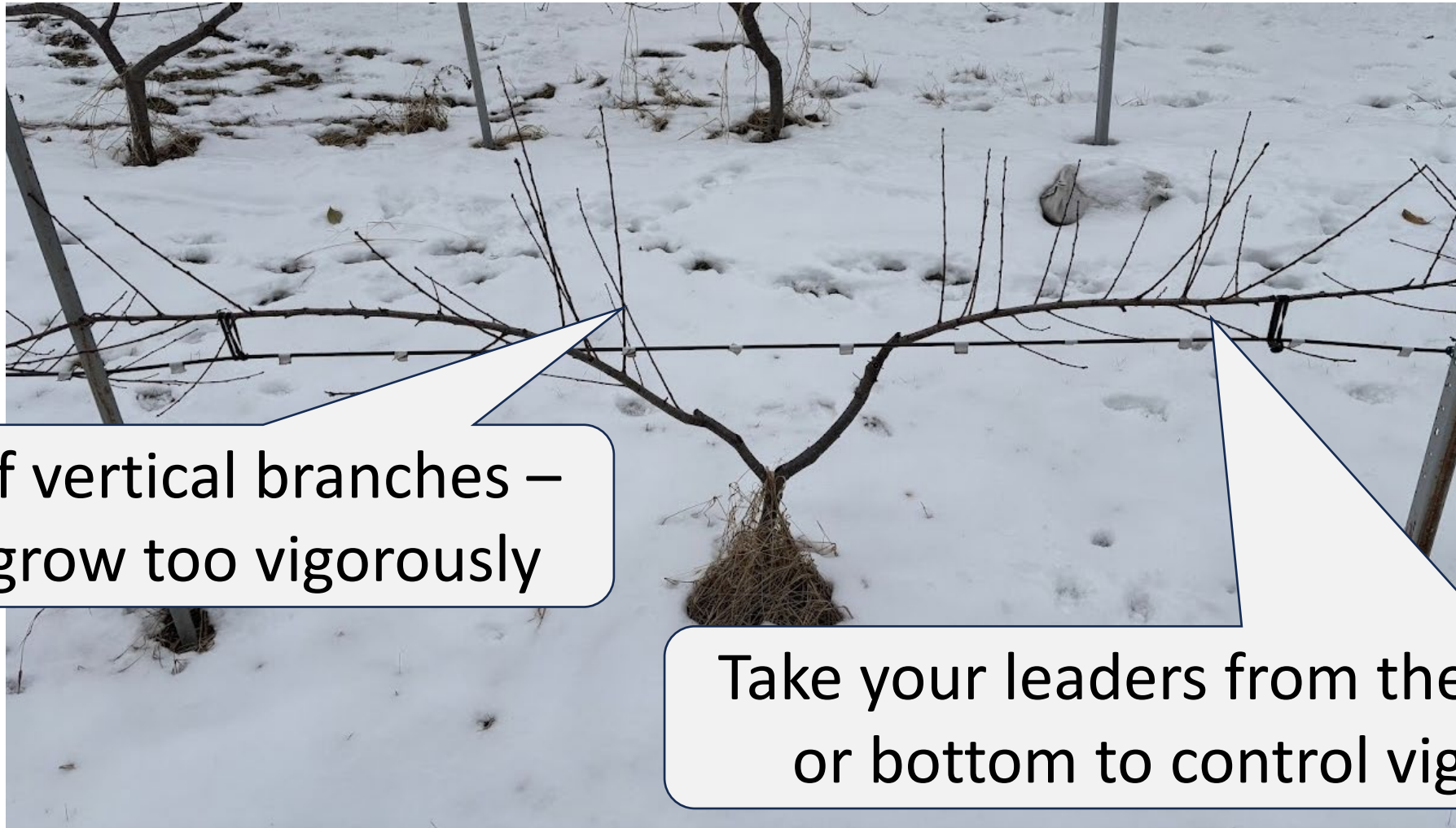
Greg Lang's system calls for multi-leader trees that are heavily pruned.

Each of our trees have six leaders spaced 16 inches apart.

With apples, it is critical to grow the outside leaders first to keep the tree balanced and we follow the same rule for peaches.



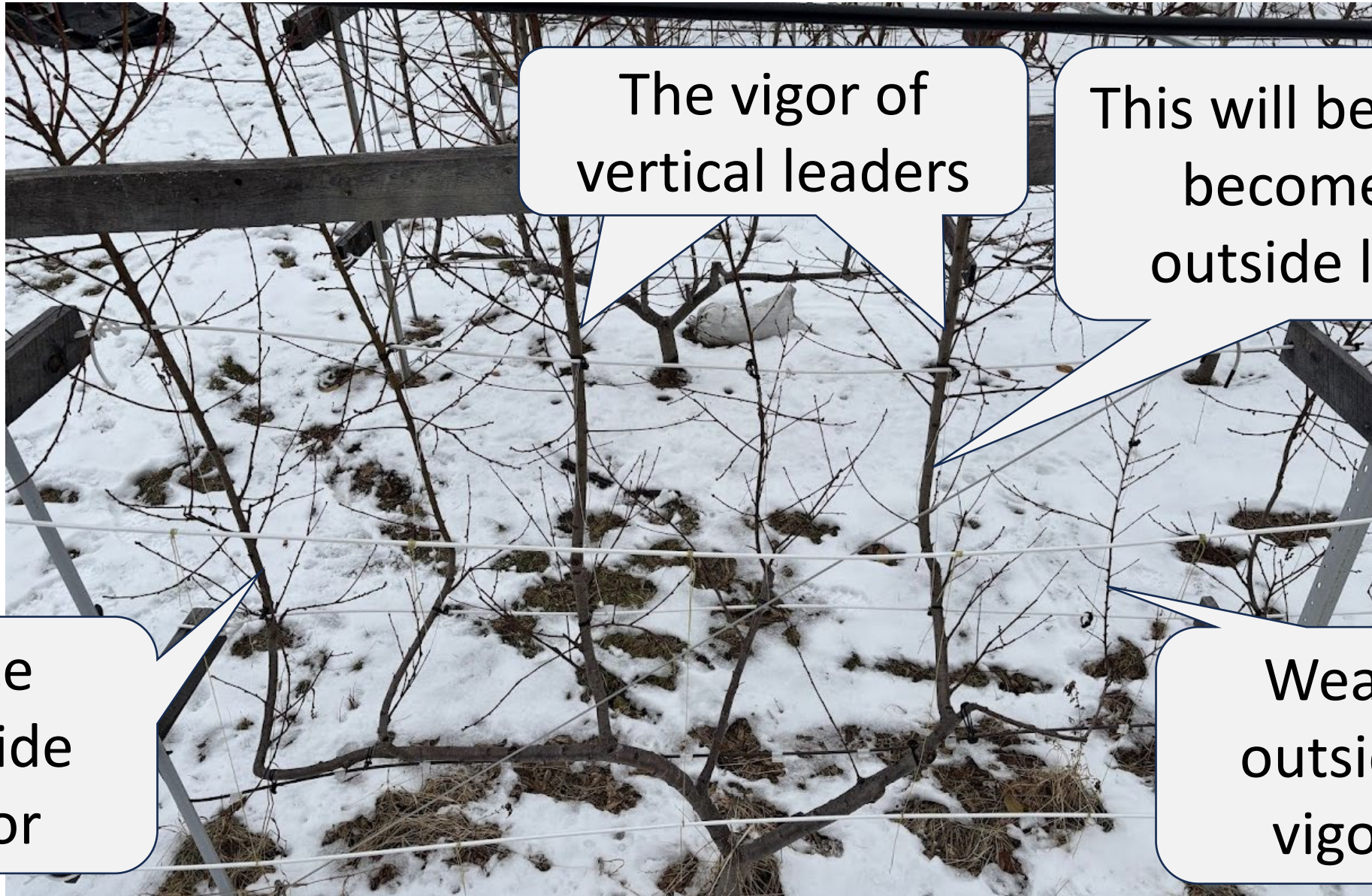
# A Year One Tree



Cut off vertical branches –  
they grow too vigorously

Take your leaders from the side  
or bottom to control vigor

# A Year Three Tree



The vigor of vertical leaders

This will be bent to become the outside leader

Nice outside vigor

Weak outside vigor

# Leader Structure & Thinning

We pruned each leader to 20 eight-inch branches.

Fruit were thinned to two per branch.

Each tree was targeted to produce 240 fruit (2,400 lbs. per tunnel).

We Pruned all summer long, with heavy pruning once a month.



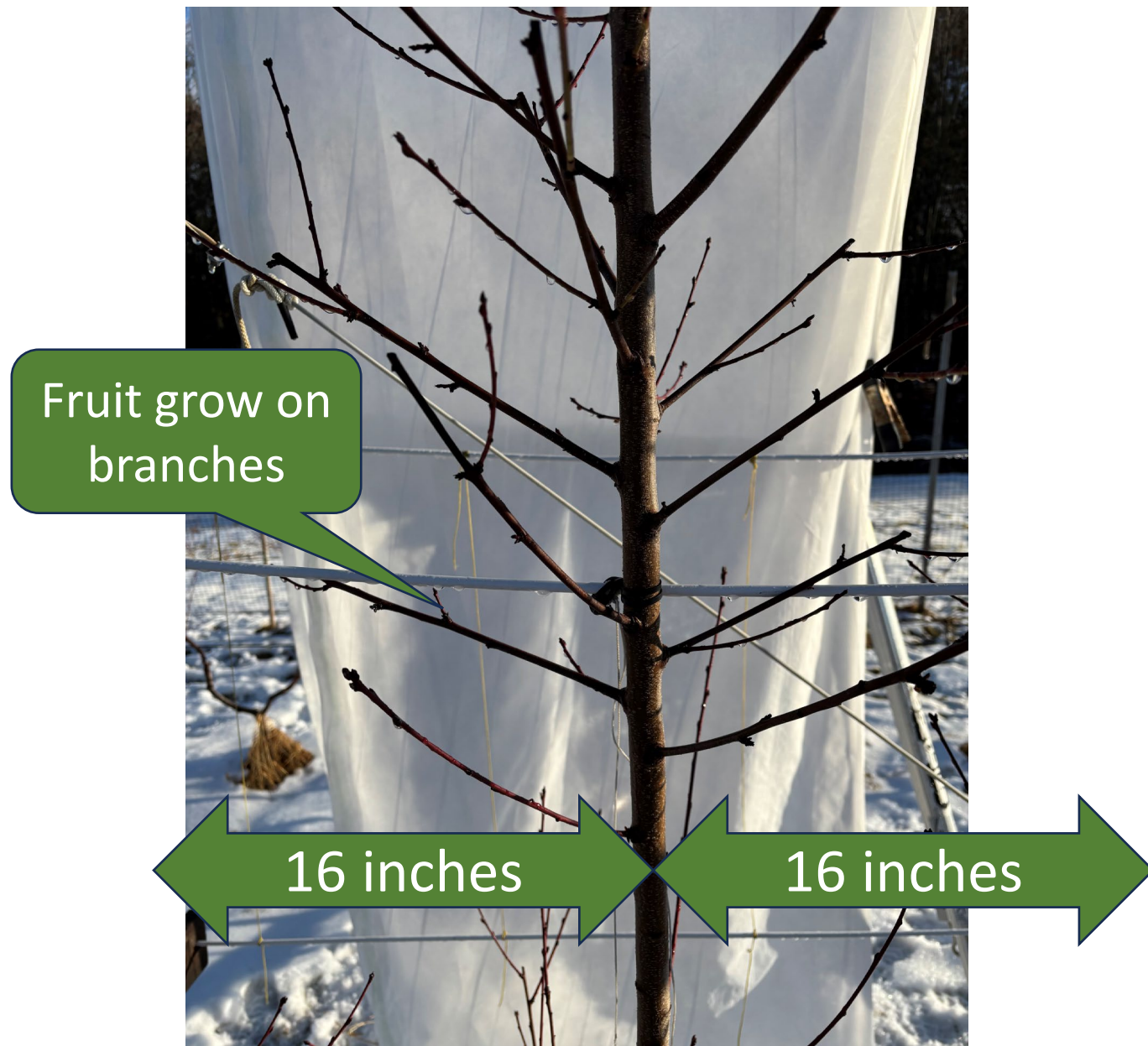


# Leader Structure

## Apples



## Peaches

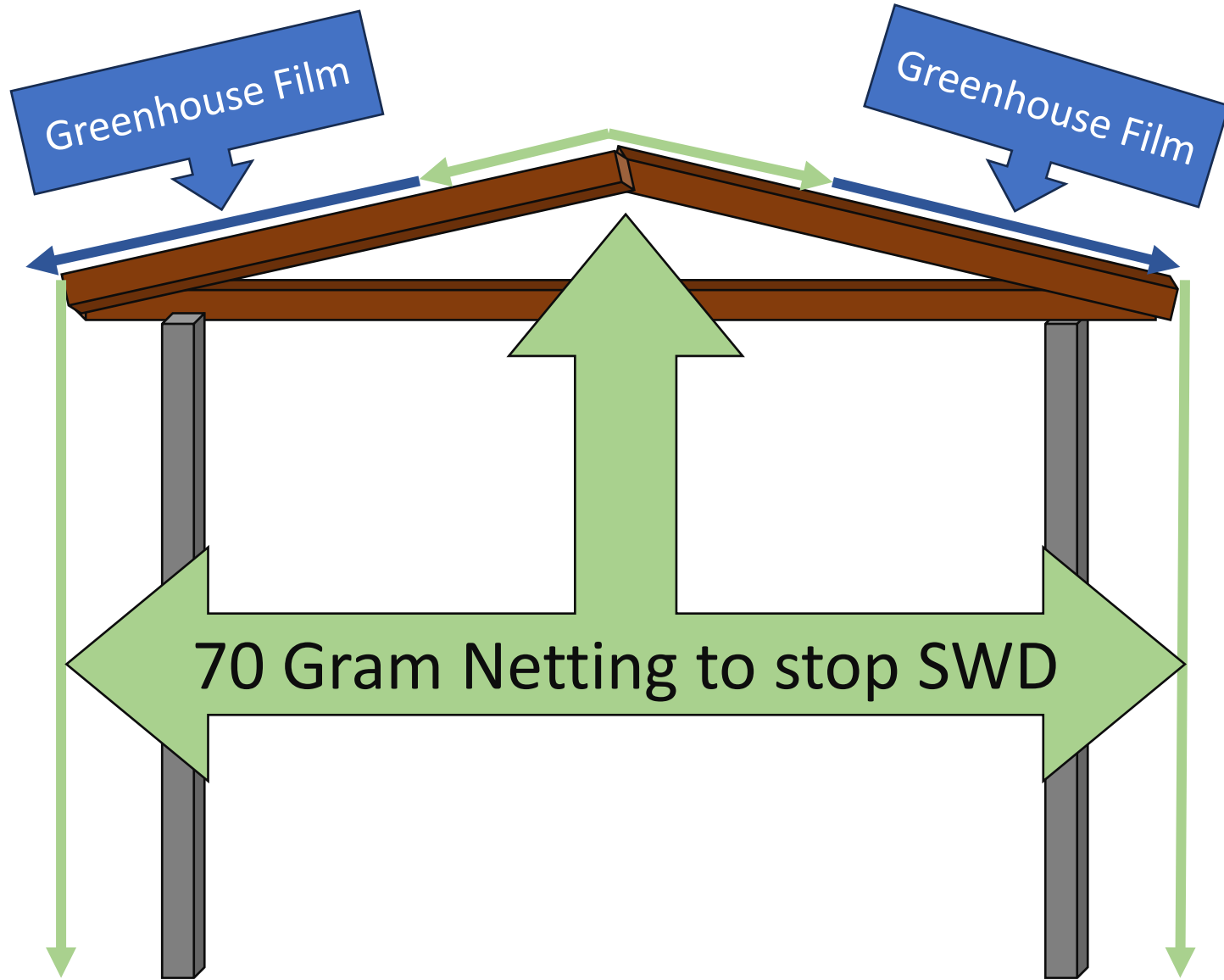


# 2024 Roof Layout

The attached roof system is the same as our apples, just wider.

Plastic covered 70% of top with netting over a gap down the center. The idea was to catch some rain in the center walking isle.

70-gram netting is needed for Spotted Wing Drosophila exclusion.



# Spray Regime

- Micronized copper for Peach Leaf Curl
- Dormant oil spray for aphids, nothing else
- We didn't spray until we knew what we needed to attack



# Summer Management

Greenhouse film and netting barriers were installed later than we wanted, about a week after the end of bloom.

We got plenty of pollination but we also had lots of Plum Curculio damage.

Fortunately, we had a lot of fruit to thin and hit our goal of two fruit per branch. All fruit growing on leaders and all double fruit were removed.

# Results

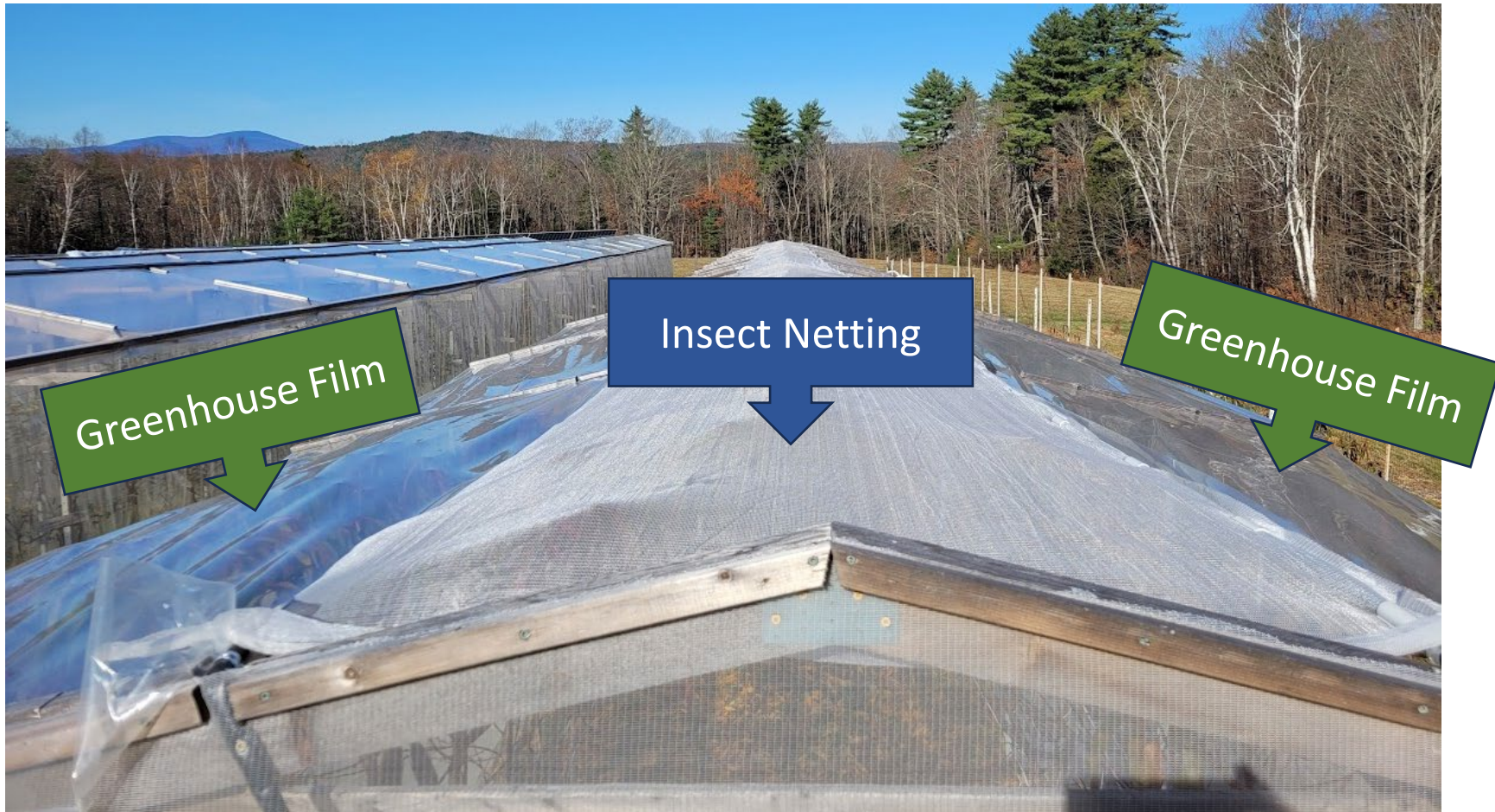
The first half of the season was very wet and we lost half of our peaches to Brown Rot.

As the summer progressed, we had less rain which lowered disease pressure.

We harvested 1,000 pounds of fruit over the course of an 8-week season (half our target). Harvest happened as the fruit ripened.

# Results

The netted gap down the middle of the roof sprayed water on the trees more than it watered the center of the aisle.



# Remedies & Action Going Forward

Plum Curculio – active just before bloom

- Netting and film will be unfurled earlier (after risk of snow)

Brown Rot – requires free standing water from rain, dew or irrigation

- The whole roof will be covered with film (no center netting), stopping all moisture from entering the tunnel
- An organic spray (Serenade?) will be used as a preventative
- Weed barriers will be installed at ground level to cover any Brown Rot disease inoculum

# Things We Hope to Learn

**Pollination:** Nets were dropped after the bees did their thing. If we drop nets well before bloom, what affect will it have? We dropped netting on apples before bloom in 2023 and still got plenty of fruit.

**Tree vigor control:** Trees were still putting out a lot of growth. Can we stretch the tree out and grow more leaders? Should I plant the next tunnel with closer (six feet!) rows?

**Brown Rot:** This is a moisture sensitive disease. Can I eliminate it by excluding all water (rain and dew)?

**Leader renewal:** Will we be able to renew our leaders as the tree ages?



# Peach Revenue Projections per Tunnel

Gross Revenue from Sales	
2,000 pounds @ \$6 a pound	\$ 12,000

Total Annual Costs & Amortization	\$ 3,334
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Net Revenue After Expenses	\$ 8,666
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# Conclusions

This was our first year harvesting peaches. As we gain more experience under this system, we feel our results will improve significantly.

Our goal is to produce 2,000 pounds of high-quality fruit per tunnel. We now know we can sell organic peaches at \$6 or more a pound with ease (each harvest sold out within the hour). One 104-foot tunnel should be able to generate \$12,000 in gross revenue.

We will be building more peach tunnels.

Thank You



The End