

2006 'Rainier' Sweet Cherry Yield and Fruit Size, with and without High Tunnels (MSU-CHES)



	<u>'Rainier'/Gisela 5</u>		<u>'Rainier'/Gisela 6</u>	
	<u>Covered</u> <u>(tunnel)</u>	<u>Open</u> <u>(no tunnel)</u>	<u>Covered</u> <u>(tunnel)</u>	<u>Open</u> <u>(no tunnel)</u>
<i>Yield</i> (lb/tree)	30.1	55.2	22.0	50.0
¹ <i>Orchard Yield</i> (ton/acre)	6.7	12.3	4.9	11.2
<i>Fruit Weight</i> 100 fruit mean (g)	12.5	8.3	12.5	9.3
	<i>Fruit Size Distribution (%)</i>			
30 mm & larger	73	3	81	9
26 to 29 mm	24	39	17	62
24 to 25 mm	3	38	2	25
23 mm & smaller	1	20	0	4

¹Tree density is 1083 trees/ha (446 trees/acre)

2007 'Rainier' Sweet Cherry Yield and Fruit Size at MSU-CHES, with Bumblebee Pollinators



	<u>'Rainier'/Gisela 5</u>		<u>'Rainier'/Gisela 6</u>	
	<u>Covered (tunnel)</u>	<u>Open (no tunnel)</u>	<u>Covered (tunnel)</u>	<u>Open (no tunnel)</u>
<i>Tree Yield</i> (lb/tree)	47.1	44.9	49.7	48.4
<i>¹Orchard Yield</i> (ton/acre)				
<i>Fruit Weight</i> 100 fruit mean (g)	10.4	9.9	11.2	9.6



Significantly improved blush in tunnel

¹Tree density is 1083 trees/ha (446 trees/acre)

2008 'Rainier' Sweet Cherry Yield, Fruit Size, and 'Rainier' & 'Lapins' Fruit Cracking at MSU-CHES

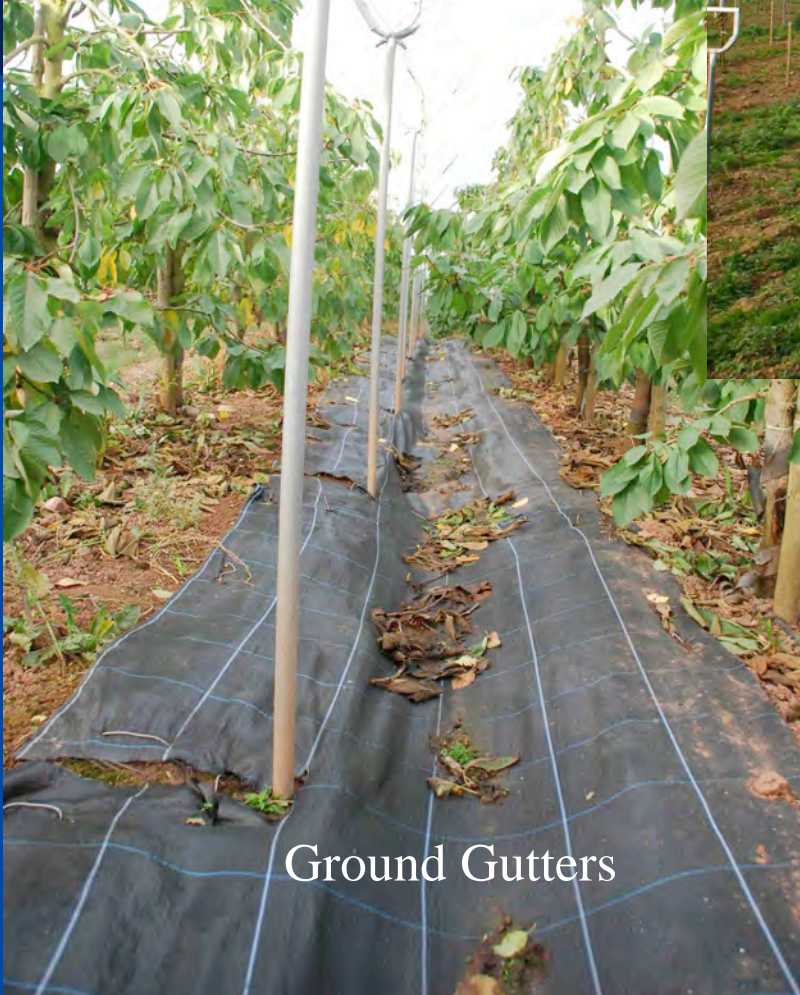


	<u>'Rainier'/Gisela 5</u>		<u>'Rainier'/Gisela 6</u>	
	<u>Covered</u> <u>(tunnel)</u>	<u>Open</u> <u>(no tunnel)</u>	<u>Covered</u> <u>(tunnel)</u>	<u>Open</u> <u>(no tunnel)</u>
<i>Tree Yield</i> (lb/tree)	42.0	32.6	71.5	28.8
<i>Orchard Yield</i> (ton/acre)	9.4	7.3	15.9	6.4
<i>Fruit cracking</i> (%)	60	89		
<i>Lapins fruit</i> <i>cracking (%)</i>	32	91		





Tunnel Gutters



Ground Gutters

Drainage

Rain-induced fruit cracking can occur even when fruit are kept dry, if the rainfall, humidity, soil, and temperatures are “right”; managing excess soil water is critical!

High Tunnels: Effects on Insect and Disease Pests

In 2006-07, to determine the potential impact of tunnels on pest issues, **no fungicides or insecticides** were used at CHES

MSU Tree Fruit
Research





Japanese Beetle



Leaf Spot

Excellent non-chemical control of:

- Japanese beetle
- cherry leaf spot
- less incidence of bacterial canker but copper still needed



Canker

Additional Pest Control Issues:

- cherry fruit fly (soil barrier, spinosad)
- mites and aphids (predators)
- mildew (resistant varieties) and brown rot (no organic controls yet)



Aphids



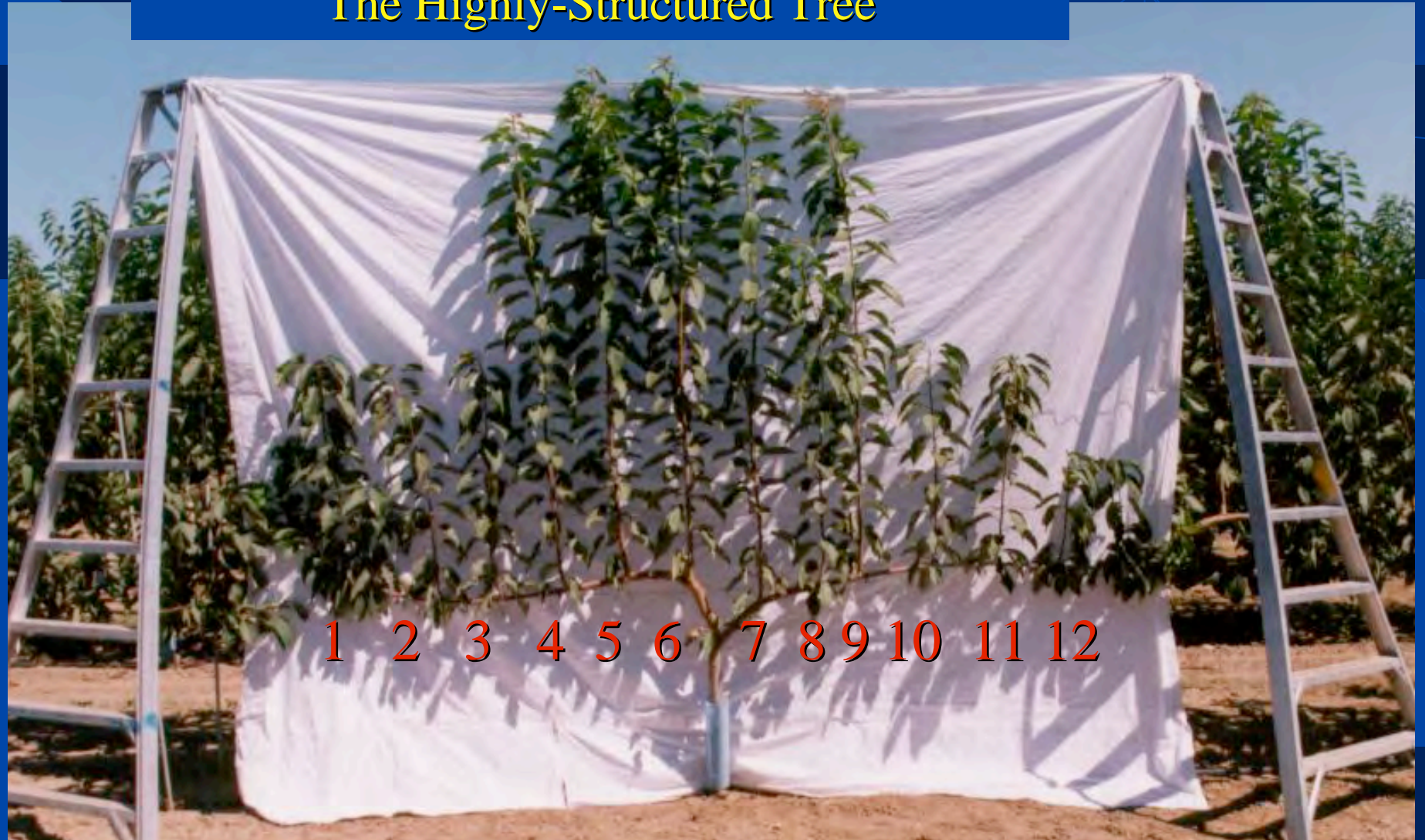
Powdery Mildew



Brown Rot

Strategies to Optimize Precision Cropping: The Highly-Structured Tree

MSU/Tree Fruits



Target: A narrow tree canopy to create a “fruiting wall”, composed of very uniform fruiting units to facilitate precision in 1) optimizing Leaf Area-to-Fruit Number (LA:F) ratios for target fruit quality and 2) renewal of fruiting units