CHERRY WORKSHOP

The following papers were presented at the workshop sponsored by the American Pomological Society, October, 1977, in Salt Lake City at the Annual Meeting held in conjunction with the American Society for Horticultural Science.

Mechanical Summer Tipping as a Method of Controlling Sour Cherry Tree Size: A Preliminary Report

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Michigan is unquestionably the leading producer of sour cherry (*Prunus cerasus* L. cv. Montmorency) in the United States. There are some 40,000 acres of sour cherries in the state and in 1977 this amounted to over 75% of the Nation's production.

Recent substantial increases in growing costs have resulted in renewed interest in producing more fruit per acre. A number of important new cultural practices have been introduced over the past 10 years which have increased sour cherry quality and yield (1, 2, 4, 6, 7). However, practically no changes have been made in tree size, shape or density since the introduction of this fruit crop to Michigan.

Planting trees closer together is one way to increase yield per acre in the early growing years. However, some method of tree size control is necessary if close plantings are to be maintained after the tenth growing year. Dwarfing rootstocks would be one growth control method but few have been tested under Michigan conditions and none are currently recommended for commercial use.

Summer pruning as a method of tree size control is not new. It has been utilized on apples in Europe for many years as recently summarized by Utermark (8). Emmerson and Hayden (3) have indicated a number of benefits from summer pruning of peach trees in Indiana. These include: allowing denser plantings, earlier bearing, favorable tree shapes, earlier fall defoliation, and easier machine harvesting. Summer pruning research on sour cherry in Michigan (5) was begun in 1974 and a number of effects reported by other workers on apple and peach also appear to apply to sour cherry.

In 1974 a 4 year old block of Montmorency trees planted north and south at a 12 x 20 foot spacing was selected on the William Harmon farm near Traverse City, Michigan for summer hedging work. One row 25 trees long was tipped by hand with a hedge trimmer the first week of July in 1974 and again in 1975. This was about two weeks prior to normal harvest. Approximately half the new growth was removed on the East and West sides only, with the trees being tapered slightly in at the top. No yield records were taken during 1974 and 1975 since the trees were essentially non-bearing.

In 1976 a commercial tree hedger was purchased and modified for summer pruning. A cutter bar made up of eight 18 inch saw blades was used. Three test sites were chosen in 1976. The Harmon block was continued and expanded; the McLachlan orchard (8 years old spaced 20 x 16 ft.), Kewadin, Michigan, and PerClin orchard (8 years old spaced 20 x 18 ft.), Bear

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1976 Yield Data (Lbs/A)

	Age	Trees/A — Spacing*	#/A Hedged 1 Yr.	#/A Hedged 3 Yr.	#/A Control
Harmon	6	181 (12′ x 20′)	4163	4525	5068
PerClin	8	121 (18′ x 20′)	9976	——	7396
McLachlan	8	136 (16′ x 20′)	6936	——	6523

*Both hedged and control same spacing

Spur and Shoot Counts 1976*— Harmon orchard

	Spurs	Shoots
1 Yr. hedged (May - July)	22	23
3 Yr. hedged (July only)	8	21
Control	31	21

*Counts made on randomly selected limbs on past 5 yrs. growth.

1977 Yield Data (Lbs/A)

	Age	Tree/A—spacing		Control	Standard* 20′ x 20′	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	7	181	12′ x 20′	19,200	14,380	16,111	16,996	15,767
PerClin	9	121	18′ x 20′	28,098	——	32,096	34,734	——
McLachlan	9	136	16′ x 20′	8,568	——	——	10,472	——

*Both hedged and non-hedged trees same spacing, except the Harmon orchard where both 12′ x 20′ and 20′ x 20′ trees were available the same. age.

1977 Average Number Flowers/bud

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	3.20	3.25	3.45	336
PerClin	3.10	3.10	3.10	—
McLahlan	3.20	—	3.10	—

1977 Average Number Fruit Set (%)

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	13.00	14.85	18.30	22.20
PerClin	15.90	23.40	17.30	—
McLachlan*	10.10	—	8.60	—

*Area severely frost damaged May 1977.

1977 Average Leaf Size (CM^2)*

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	25.10	—	—	35.40
PerClin	24.50	27.40	29.30	—

*Average of 100 leaves.

1977 Average Volume/10 leaves (ml)*, **

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	5.00	5.40	6.60	7.60
PerClin	6.80	7.20	7.80	—

*Average of 5-10 leaf samples.
**Volume of water displaced by 10 leaves.

1977 Fruit Size Wt/50 cherries (gms)

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	206.00	219.00	234.00	239.00
PerClin	243.20	253.70	258.80	—
McLachlan	243.00	254.30	—	—

1977 Fruit Firmness — durometer*

	Control 12′ x 20′	Standard 20′ x 20′	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	55	55	55	54	55
PerClin	58	—	56	55	—
McLachlan	55	—	56	—	—

*Durometer Type 00,70, Shore Instrument & Mfg. Co., Inc., Jamaica, N.Y.

1977 Soluble Solids (%)

	Control	1 yr. Hedged	2 yr. Hedged	4 yr. Hedged
Harmon	11.80	11.20	11.20	12.00
PerClin	11.40	11.00	12.00	—

Lake, Michigan, were added. The first hedging was done just prior to bloom, between May 8 - 12, to establish a rough vertical wall. The second hedging was done the first week of July or about 2 weeks prior to harvest.

Two particularly interesting factors should be noted in the above data. First, trees in the PerClin orchard hedged in May to form a tree wall and again in July had a significantly higher yield than the controls at the same spacing even though a number of blossom buds were cut off during the May hedging. Second, in the Harmon orchard, a shift toward more shoots and less spurs seemed to occur with continued summer tipping.

In 1977, all three above test sites were continued. However, the trees were hedged only once during the first week of July. Three more hedged rows were added to the PerClin orchard in 1977 to determine if May (pre-bloom) plus July (pre-harvest) hedging would again result in an increased yield over control trees at the same spacing. The three hedged rows in the Harmon block were also top hedged to 14 feet in August of 1976—2 weeks after bloom.

In general, summer hedged sour cherry trees have outyielded non-hedged trees at the same spacing except where side hedged trees were also top hedged. Trees hedged for the first time in May to form a tree wall and then again in early July tend to significantly outyield non-hedged trees at the same spacing the year the hedging is done. This is of particular interest since a significant number of flower buds are removed during the May hedging operation.

Summer hedging has caused an increase in leaf size over nonhedged trees. Percent fruit set is also increased while the number of blossoms per flower bud does not seem to be effected.

Fruit size tends to increase with summer hedging but fruit firmness and soluble solids are not changed significantly.

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