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EFFECT OF HEDGING HEIGHT ON GROWTH AND YIELD OF 'DELITE' BLUEBERRIES

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Background. Rabbiteye blueberries, if left unpruned, can attain heights of 12 to 15 feet. When plants are allowed to become tall and overgrown the majority of the fruit is produced on the upper canopy above the reach of most hand pickers, or the plants are too large to allow mechanical harvesting. Also, excessively large plants are difficult to handle from the standpoint of management for weed control, irrigation, and fertilization. Hedging, although not the best pruning method, may be one way to rejuvenate old, unthrifty plants.

Research Findings. A spring frost of 28°F on March 10, 1989 destroyed all blossoms on 'Delite' blueberries. On April 26, 1989 plants were hedged at either 9, 18 or 36 inches from ground level or left unpruned (approximately 6 feet tall). After the first year of regrowth, yield was inversely proportional to the hedging height, the more severe the treatment the greater the yield (table 1). However, in year 2, yield was greatest on plants hedged at the 36 inch height. Yield doubled between year 1 and year 2 for the unpruned and 9 inch treatments and tripled for the 18 and 36 inch heights.

Although yield doubled between years 1 and 2 on the unpruned plants, the difference can be attributed to a spring frost in year 1. Unpruned plants exhibited more frost damage than hedged plants. This is presumed to be due to the vigor of the fruiting wood. Vigorous, new shoots produce buds that have been observed to flower 3 to 7 days later than buds formed on older, weak wood and vigorous buds appear to be more frost tolerant.

There was little difference in plant height of hedged plants after 1 year's growth, ranging from 4.5 to 5.2 feet. In year 2 the hedged plants grew 1 foot taller, while there was no change in the height of unpruned plants. All hedged plants were easily hand harvested. Plant efficiency, the volume of plant it takes to produce the fruit, increased with the severity of hedging. Unpruned plants occupied a great deal of space while producing small amounts of fruit.

After the first year of regrowth, fruit soluble solids (sugars) increased with plant height while fruit size decreased (table 2). The increased sugar content of the fruit can be attributed to the concentrating effect of the smaller fruit size. Percent titratable acidity and pH were not affected by hedging treatment. Fruit size was smallest on unpruned plants both years. This can be related to the lack of vigorous growth on the unpruned plants.

Application. This study demonstrates the effectiveness of hedging as a management tool. While hedging should not be used as a replacement for an annual pruning plan, it may have

applications where a blueberry orchard has become overgrown or to reclaim an abandoned orchard. An ideal time to utilize hedging would be in the spring when a partial or total crop failure has occurred, since hedging removes all or most of the fruiting wood. Yields are reduced in the first year, but were returning to profitable levels by the second year. Fruit size increased due to the vigorous growth encouraged by hedging, while other fruit quality parameters are relatively unaffected. The optimum hedging height has not been determined, however, this study indicates that between 18 and 36 inches is best. Hedging is most successful on strong, vigorous plants.

Table 1. Effect of hedging height on blueberry yield and regrowth

Hedging Height (inch)	1990				1991			
	Yield (lb/bush)	Height (ft)	Volume (ft ³)	Efficiency (yield/vol)	Yield (lb/bush)	Height (ft)	Volume (ft ³)	Efficiency (yield/vol)
9	3.8	4.5	16.1	0.23	7.5	5.5	29.4	0.25
18	3.4	4.6	16.1	0.21	8.0	5.8	32.9	0.24
36	3.0	5.2	26.6	0.11	9.6	6.2	46.1	0.22
unpruned	2.5	6.9	55.6	0.05	5.1	7.0	68.9	0.07

Table 2. Effect of hedging on fruit quality

Hedging Height (inch)	Soluble Solids %	Acidity %	pH	Fruit size (grams/berry)	
				1990	1991
9	13.3	1.23	3.14	1.23	1.24
18	13.7	1.23	3.17	1.21	1.26
36	14.1	1.33	3.13	1.11	1.23
unpruned	15.2	1.25	3.13	1.08	1.06