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EFFECT OF HEDGING HEIGHT ON 3-YEAR'S GROWTH AND YIELD OF 'DELITE' BLUEBERRIES

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Background. Rabbiteye blueberries naturally grow to heights of 12 to 15 feet, which makes fruit harvesting difficult. Also, when plants become overgrown plant vigor and fruit production decline. Many methods have been tried to reduce plant size, including cutting a V-shaped area from the center of the plant year 1, followed by yearly detailed hand pruning; hedging one third to one half of the plant year 1 and the remainder in subsequent years; and severe, detailed hand pruning. None of these methods is totally satisfactory since yield is reduced and it takes 2 or more years of pruning to finally reduce plant size. Whole plant hedging, although not the best pruning method, may be one way to rejuvenate 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) and received no additional pruning throughout the duration of the study. To determine yield, fruit were hand harvested at weekly intervals for 3 years following hedging. The same plant was harvested each year. After harvest, the plant was measured to determine growth.

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 1991 the opposite was true, with yield increasing with hedging height. Yield doubled between 1990 and 1991 for the unpruned and 9 inch treatments and tripled for the 18 and 36 inch heights. In both years unpruned plants had the lowest yield. By 1992, yield had reached acceptable commercial levels. Yield in 1992 was high for all treatments, including the unpruned treatment.

A spring frost occurred on March 28 in 1990. This accounts for the higher yields for the 9 and 18 inch hedged plants. The more severe the hedging, the more new vigorous growth which is more frost tolerant. Much of the crop on unpruned plants was destroyed by the spring frost. This is due to the vigor of the fruiting wood. Vigorous, new shoots produce buds that tend to flower 3 to 7 days later and are more frost hardy than buds formed on older, weak wood.

In 1991 and 1992 yield increased with hedging height. This would be expected since plant size is increased, increasing the fruiting area. The hedged treatments had a higher proportion of vigorous growth, which in turn usually produces more and higher quality fruit. What is unexplained, is the difference in yield in the unpruned plants between years 2 and 3.

Plant height was significantly different after 1 year's growth, ranging from 4.5 feet for 9 inch hedging to 6.9 feet for unpruned plants. In 1991, the hedged plants grew at least 2 feet taller, recovering to pre-hedging height. Between 1991 and 1992 there was little change in height of the plants. The shorter plants were easily hand harvested in all years, while the 36 inch treatment was beginning to become more unmanageable.

In both 1990 and 1991, soluble solids (sugars) increased with plant height (data not shown). The sugar content of the fruit directly corresponds to fruit size. This is caused by the concentrating effect of the smaller fruit size. Fruit size was smaller on unpruned plants in all years. This is related to the lack of vigorous fruiting wood on the unpruned plants.

Application. This study demonstrates the effectiveness of hedging as a pruning tool and between 18 and 36 inches is the optimum height. Yields were reduced in the first year, but were returning to profitable levels by the second year, and had recovered by the third. Fruit size increased due to the vigorous growth encouraged by hedging, while other fruit quality parameters are relatively unaffected. Once the plants have recovered from the initial hedging a yearly maintenance pruning schedule should be adopted to prevent the overgrowth problem from reoccurring.

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. It must be remembered that healthy plants respond quicker to hedging treatment than weak or diseased plants. 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.

Table 1. Effect of hedging height on 'Delite' blueberry growth and yield.

Hedging Ht. (inches)	Height (ft)			Yield (lb/bush)			Fruit Size (g/berry)		
	1990	1991	1992	1990	1991	1992	1990	1991	1992
9	4.5	6.5	6.5	4.3	8.2	9.7	1.28	1.13	1.25
18	4.7	7.0	7.3	3.9	9.4	11.1	1.26	1.18	1.30
36	5.4	7.6	7.8	3.2	10.4	13.3	1.09	1.16	1.24
unpruned	6.9	8.3	8.2	2.8	5.7	14.0	1.12	1.06	1.18