



Pruning Blueberries in Florida¹

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GENERAL CHARACTERISTICS

The pruning of blueberries is a well-established horticultural practice that has a number of useful purposes. Pruning balances shoot and root size for newly planted bushes, controls plant size, balances crop load, and is useful for removal of dead or unproductive wood, a practice that improves light penetration and flower bud formation in the interior portion of the plant. Pruning is also used to shape the bush for mechanical harvesting.

There are two major types of pruning cuts: heading-back and thinning-out. Heading-back removes the tip portion of the shoot, including the apical bud. This stimulates lateral buds along the shoot to break. Heading-back is used to control plant height and redistribute growth. Thinning-out cuts are made to totally remove a particular shoot at its origin. This type of cut does not stimulate lateral bud break, but is used to remove deadwood and rejuvenate older plants. Thinning-out has a very pronounced effect on plant shape and size.

It is important to use proper tools and techniques whenever pruning. Cuts should be made cleanly, without splintering the limb or leaving nubs along remaining limbs. Thinning-out cuts should be made as close to the remaining limbs as possible. Hand shears should be used only for clipping small limbs. Use large loppers or saws for larger limbs. Sharp, properly lubricated tools make pruning much easier.

Some work can be done using power shears, blades or saws. These work well if the tools are sharp.

PRUNING YOUNG PLANTS

The major reasons for pruning young (1- or 2-year-old) blueberry plants is to 'balance shoot and root growth, and to remove weak or improperly positioned shoots. People usually buy young plants based on size of the top, when in fact they should be looking for a large, healthy root system. A rule of thumb is to remove from $\frac{1}{3}$ to $\frac{1}{2}$ of the top using heading back cuts at the time of planting. Small plants with weak root systems may require heavier pruning, while healthy, vigorous plants may not need a large amount of wood removed.

Selective pruning of newly set or 2-year-old plants is not necessary, but it is desirable to remove flower buds from weak, poorly developed shoots. Studies suggest that removal of flowers during the first season improves vegetative growth and vigor of young rabbiteye blueberries, particularly for less vigorous cultivars such as 'Woodard.' Flowers compete with vegetative parts of the plant for water and nutrients, and may cause stunting if present in high numbers on a small bush. Nevertheless, although some pruning is encouraged, many successful rabbiteye blueberry plantings have been established without pruning. It is advisable, however, to remove all the flower buds from highbush blueberries when they are planted, and

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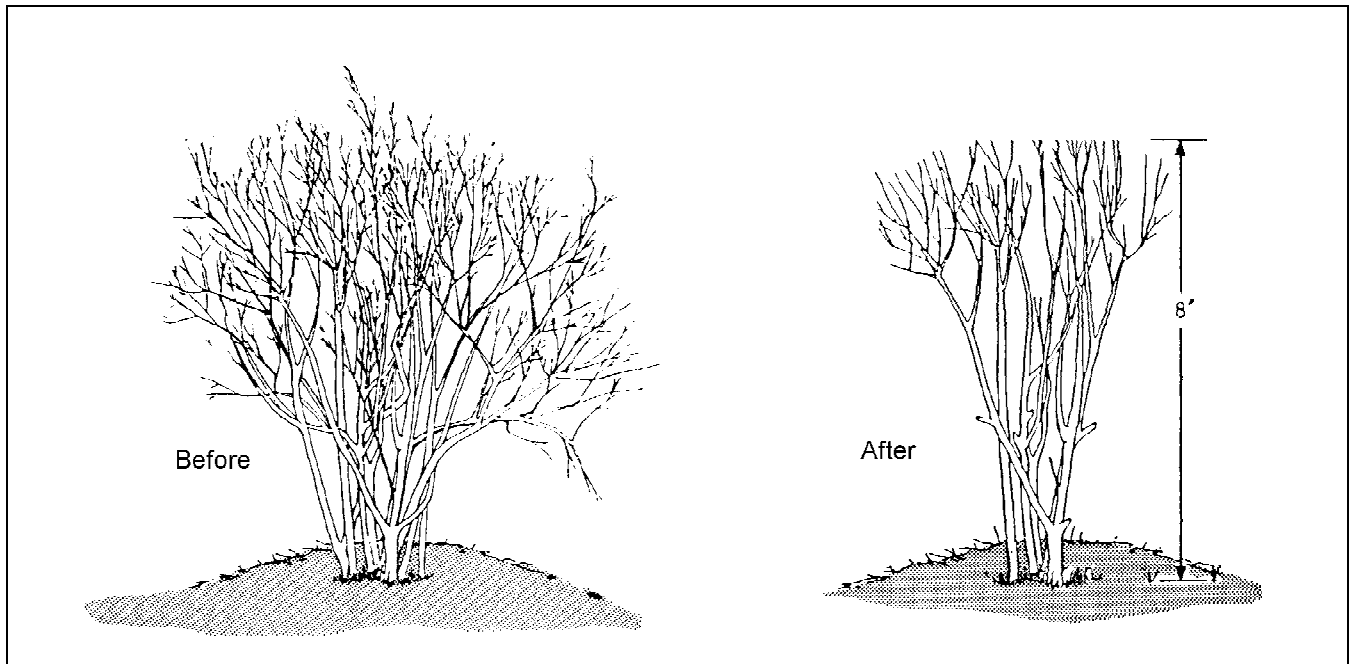


Figure 1. Removal of one-fourth to one-fifth of major limbs at base of a mature blueberry plant.

to use twig pruning or flower removal to prevent over-fruiting in subsequent years.

PRUNING OF MATURE BUSHES

Rabbiteye

Rabbiteye blueberries require little pruning during the first 5 to 7 years after planting, although some of the more vigorous cultivars like 'Aliceblue,' 'Beckyblue,' and 'Tifblue' may need to be pruned prior to this time. Bushes growing in particularly good locations or under favorable growing conditions may also need pruning in less than 5 years after planting.

Rabbiteye blueberries are pruned to control plant size, remove old, unproductive wood, and rejuvenate older portions of the bush. To accomplish this, a number of basic pruning systems can be used, depending on the desired market (U-Pick or commercial) and size of the planting.

Pruning for U-Pick operations

Mature bushes used in a U-Pick operation may be pruned in the summer after harvest (June 15 to August 1) or during the dormant period (December and January). Summer pruning reduces plant size and indirectly reduces berry numbers by limiting bearing volume. In contrast, since flower buds are formed from October to December, winter pruning

will invariably reduce bush size and number of berries produced. This is why it is important to choose limbs carefully when winter pruning, as overzealous pruning may reduce subsequent yields. However, winter pruning has the advantage of being performed during a cool part of the year and at a time when there are less demands on grower time.

Most small-to-moderate U-Pick operations prune bushes by hand using shears, loppers, and saws. Heading-back cuts should be made at 6 to 7 feet to allow for easier hand harvesting. Deadwood and broken or damaged limbs should be removed. For bushes 8 years old or older, it is advisable to remove from one-fourth to one-fifth of the major limbs at the base of the bush (thinning-out) (Fig. 1). This will allow renewal canes to fill in the open space, providing framework for future crops. Five to ten healthy, vigorous canes should be left while small weak canes should be pruned at ground level. Root sprouts produced away from the center of the row also should be removed at ground level to facilitate harvesting and herbicide applications. Hand pruning in this manner yields an aesthetically pleasing, open framework that is easy to hand harvest. This operation takes from 5 to 15 minutes per bush.

Pruning for commercial operations

The pruning of a large, commercial, rabbiteye blueberry planting may also be done by hand, but may

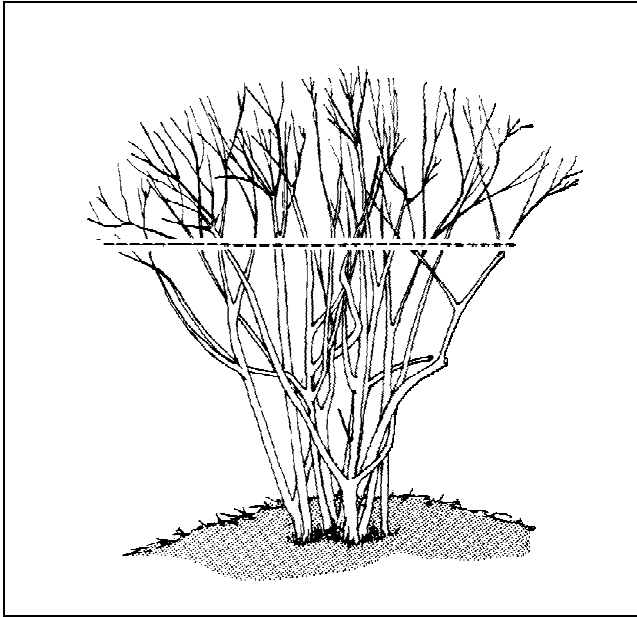


Figure 2. Topping the plant at 4.5 ft.

be cost prohibitive and unnecessary. A five-year study at the University of Florida indicates that nonselective topping at 4½ to 5 feet, (Fig. 2) or topping one half of the bush in alternate years (Fig. 3) immediately after harvest, provides adequate size control without significant yield reductions. This type of topping produces a bush that is morphologically quite different from a hand-pruned bush.

Mechanical topping cuts are almost always heading back cuts, thus producing a number of new shoots from just below the topped area. Therefore most of the new growth tends toward the upper part of the bush with little renewal growth in the middle and lower canopy. Topping of extremely vigorous cultivars like 'Tifblue' is not recommended because many new, vigorous, unfruitful shoots will be produced. Mechanical topping does not remove deadwood from the bush interior, nor does it allow for rejuvenation of the bush. Consequently, if mechanical pruning is to be used, some handwork will be necessary, particularly for rejuvenation of older bushes and brush removal.

Mechanical topping of alternate halves of the bush produces an irregular looking bush, but does not appear to affect yields. This system is probably most economical on a commercial basis, but may be less desirable than topping because one half of the bush is left unpruned. Also, hand pruning is again needed

to remove deadwood and for rejuvenation of older limbs.

Very specialized pruning is necessary to shape bushes for mechanical harvesting. Bushes must be trained from an early age to conform to the most efficient shape for mechanical harvesting. All sprouts should be removed from around the base of the plant to allow for equipment movement. The base of the bush should be limited to 5 to 10 large canes all clumped closely together (Fig. 4). Bush height should also be controlled by pruning to allow harvesters to pass over the rows easier. The height will depend on the size of the harvester used.

Rejuvenation Pruning

Rabbiteye blueberries should remain economically productive for 25 years or more. The oldest plantings in Florida are about 25 years old, but older, solitary bushes remain from plantations set in the 1930s. Many highbush cultivars in Michigan and New Jersey are still productive after 50 years. Although the bush itself may remain productive for long periods, individual canes tend to lose vigor and productivity in 10 to 15 years, depending on previous pruning and cultural practices. Therefore some type of rejuvenation pruning may be necessary.

Rejuvenation pruning involves removal of large portions or the entire top of the bush to promote growth of new, vigorous canes.

A limited amount of rejuvenation pruning is done during the standard pruning procedure. Yearly removal of one-fourth to one-fifth of the bush produces a rejuvenated plant in 4 to 5 years, without seriously reducing yields. However, bushes neglected for a number of years can become marginally productive. Fruiting becomes limited to a small area in the top of the bush, and fruit size and quality may be decreased. Bushes in this condition may require severe pruning at or near ground level, and removal of all major canes (Fig. 5).

The resulting bush will produce many young sprouts in a large clump around the base of the bush. These sprouts need to be thinned-out to yield 5 to 10 strong, vigorous shoots per plant which will form the foundation for a new, rejuvenated bush in the future. Drastic rejuvenation pruning will eliminate cropping the season after pruning, producing a modest crop in the second year and a moderate to good crop by year three. Therefore, this type of pruning should be done

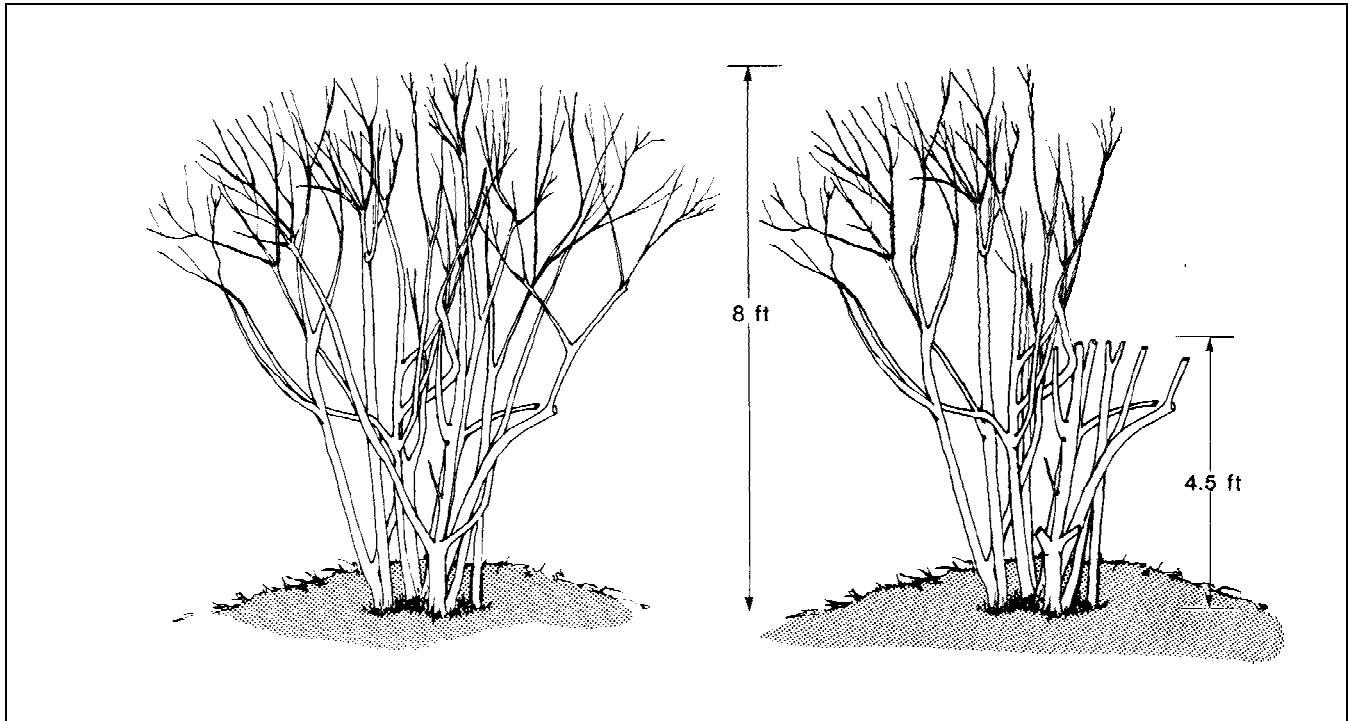


Figure 3. Removal of one-half of the top of the plant.

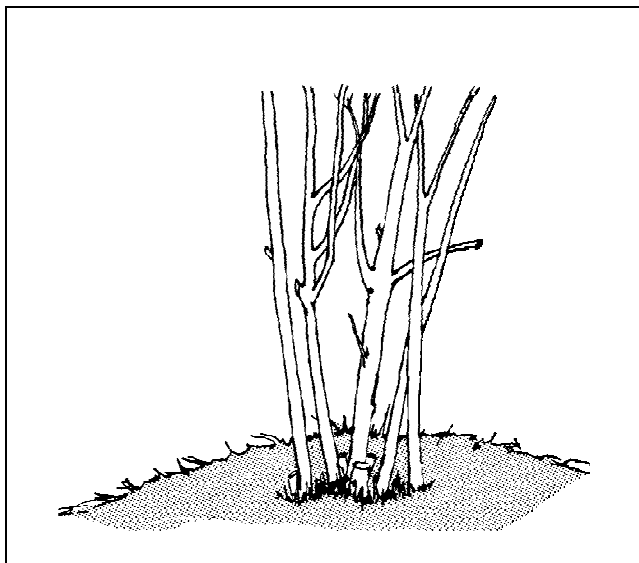


Figure 4. Pruning the plant for mechanical harvesting. Note removal of major canes.

only on neglected, low-yielding bushes or to part of a planting in a given season (to minimize yield reduction).

PRUNING Highbush BLUEBERRIES

Very little information is available on pruning of highbush blueberries under growing conditions in Florida. Nevertheless, we do know that pruning is a necessary part of successful, highbush blueberry production. Highbush plants, unlike rabbiteyes, fruit very heavily in most seasons, placing a strain on the bush to support the crop load. If highbush plants are allowed to fruit too heavily, the bush will be stunted and slow to reach its production potential.

It is essential to prune excessive flowering shoots from highbush plants beginning at planting in order to balance fruiting and vegetative growth. Mature bushes should be carefully hand-pruned on a yearly basis, either during the summer or the dormant season. Dormant pruning is probably preferable because flower buds are present and some estimate of crop load can be made. Generally, $\frac{1}{3}$ of the major fruiting canes are removed at the base each year, allowing for bush renewal every 3 years. In addition, heading-back cuts are made to reduce plant height and crop load, and to remove dead, twiggy, or weak canes. Data from mature plantings in Michigan indicate that sprouts smaller than $\frac{1}{8}$ inch in diameter should be removed from around the base of the bush to promote growth of more vigorous, new canes. Proper pruning of highbush blueberries is costly and time consuming, but is essential for adequate, consistent cropping.

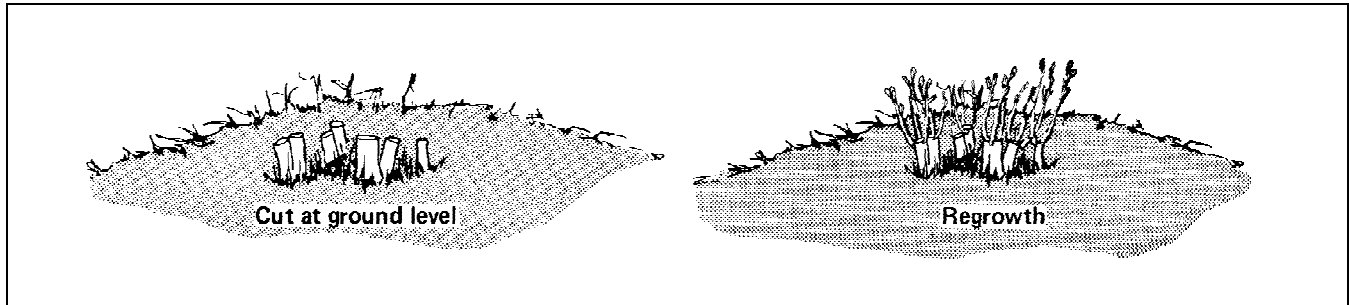


Figure 5. Cutting the plant at ground level and allowing regrowth.

There is some evidence that pruning highbush plants immediately after harvest greatly stimulates new growth. At this pruning, remove the twiggy branches from which the berries were recently harvested. Highbush plants not summer pruned after harvest tend to go into summer dormancy without making further growth after June 15. An alternative to winter pruning of highbush in Florida is to strip-off a portion of the flowers or young fruit by hand using gloves. On plants under 3 years old, this is much faster than selective twig pruning and has the added advantage of stimulating upright growth rather than extensive lateral branching.

In deciding how many flowers to remove from highbush plants, the age, size, and vigor of the plant should be considered. Larger, vigorous plants can support more flowers than small, weak ones. Normally, it takes about 300 berries of 'Sharpblue' to make a pound. A flower bud will usually produce 3 berries, so 100 flower buds will normally produce about one pound of berries. A mature, healthy 'Sharpblue' plant (4 to 5 ft. tall) may be able to support 8 to 10 pounds of fruit, but a plant only 3 to 4 feet tall should not be allowed to produce over 2 to 3 pounds of fruit.

Frost danger is an important consideration in pruning or fruit removal for 'Sharpblue' and other highbush cultivars. On young plants, fruit thinning should be delayed until there is a reasonable likelihood that frost will not thin the crop further.

BRUSH REMOVAL

While the pruning of mature blueberry bushes offers a number of advantages, it also creates the inevitable problem of brush removal. This problem can be quite troublesome, particularly with rejuvenation pruning where the entire top of large bushes is removed. Moreover, summer pruning also removes a large number of leaves which not only add to the volume of brush, but also provide an inoculum source for some leaf diseases. Therefore, it is important to remove the brush as soon as possible after pruning.

Brush removal can be done by hand or mechanically (using a tractor equipped with some type of rake). In cases where light-to-moderate pruning is performed, brush can be broken into small pieces using a disc, and the pieces can be incorporated into the soil over time. Brush should be piled as far away from the planting as possible and burned in compliance with local ordinances.