



# Pruning wild blueberry fields

## *Introduction*

The wild blueberry plant, in a natural growing state, becomes less productive when left unmanaged. A single stem develops many floral buds in its first year of growth, but becomes increasingly branched and much of its energy will be devoted to vegetative (green) growth, to the detriment of floral bud formation. In subsequent years, the floral buds will be located at the end of the branches and will be smaller and more susceptible to winter injury.

By observing the growth habit of wild blueberry plants after accidental pruning (forest fires), native people and colonial forefathers quickly understood that to maintain the productivity of wild blueberry stands, this activity would need to be repeated on a cyclical basis. The first management of wild blueberry fields resulted from this observation. Based on a 2 or 3 year cycle, the burning of fields replaces older, branched bushes having few floral buds with single more productive stems. Pruning techniques originated with the use of fire to destroy the aerial portion of the plant. Over time, mowing was adopted as a method of pruning. This method is less expensive, simpler and facilitates cultural practices.

## *When to prune*

It is important to note that pruning should be conducted during a period of dormancy, after the first severe autumn frost (when the leaves have turned red) and before regrowth in the spring. A field repeatedly pruned too early in the fall may result in inadequate storage reserves in the rhizomes. These reserves are used for new growth the following spring. Pruning too late in the spring shortens the growing period, resulting in a lower yield potential.

Choose the method of pruning that is most appropriate for the time that the pruning will be done. For example, straw burning is usually far more uniform in the spring than in the fall. There is no significant difference in timing using an oil burner.

Differences have occasionally been observed when pruning with a flail mower. If the field is mowed in the fall, the majority of stems which are not cut at ground level will be killed during the winter. However, in a winter with little or no snow cover, damage to rhizomes may be observed due to the lack of snow or ice accumulation. If mowing is done in the spring, the stems which have not been cut below the lowest buds will give rise to lateral branches, resulting in fewer stems from the rhizomes. These branches are generally not as productive. It is important to verify that fields are pruned correctly during the spring mowing,

## Burning

Pruning by burning offers several advantages over mowing. The heat used to burn the aerial plant parts will encourage the new sprouts to develop from buds on the rhizome. Nutrients will also be available to the plant for growth and development. The heat, depending on the intensity, may also reduce disease incidence, and the amount of weed seeds and insects which overwinter on or near the soil surface. The insects controlled in this way are the blueberry spanworm, the blueberry flea beetle and the blueberry sawfly. The heat may also lower the incidence of Monilinia blight and blossom blight (Botrytis) by eliminating mummy berries and leaf material necessary for spores to develop.

A very important component of burning is the intensity of the burn. If the heat source is too hot, the pruning will be thorough however a portion of the organic matter layer will be destroyed. It is important to note that the rhizomes effectively grow in this horizon layer. In addition, this will utilize more oil, thus increasing the cost for the operation. Conversely, if the heat source is not hot enough, only a portion of the plants will be destroyed. Proper burning requires a good knowledge of the operation of the machinery under varying conditions of moisture, wind and travelling speed.

For an efficient burn, only enough heat is required for the buds to pop on a wild blueberry stand. It is best to burn when the ground is at least moist. This will help conserve the organic matter layer.

Burning cannot be done **without a permit** and a well maintained fire-break.

The principal methods of burning are the following:

### **Straw burn:**

Some growers use this method of burning their blueberry fields. The straw can be spread manually or by a mechanical spreader. It is important for the straw to be free of weeds and spread uniformly. For best results, spread the straw in the fall. The snow will help compact the straw near the plants. Depending on the uniformity of the spread, it may require 2 to 4 metric tons per hectare of straw.

One person can spread, by hand, the 40 or 50 bales of straw, enough to cover 0.4 ha (1 acre) of land per day. A mechanical spreader can cover 7.2 to 8 hectares (18 to 20 acres) in a day. Comments from growers who have experience using straw indicate that oat straw gives the best burn and spreads easily. The order of preferences is oat straw, wheat straw, barley straw and old hay. However, there has been no research to measure differences in the burning.

To get a good spread, the straw should be 30 or more cm in length. Greater quantities are required if the straw is short. Moist and clumpy straw should be avoided. The ideal time to burn with straw is in the spring when the ground is fairly dry, with a temperature close to 20°C, on a day with a light wind. Excellent fire-breaks are necessary, and burning should be done in a piece-meal fashion, starting with the section of the field which is the furthest downwind. Straw burning is best suited to fields that are too steep and/or too rocky for pruning with machinery.

### **Oil burning:**

The first oil burners were developed in the 1940's. They had 3 or 4 heads which looked like torches. Oil consumption with these burners was of the order of 190 litres (50 US gal) per hour. During the energy crisis of the 70's, more economical burning heads were developed, including the Bossé heads and economy heads. These improvements resulted in savings of 40 to 60% on

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energy expenditures, compared to conventional heads. A study conducted in Maine demonstrated the following variations in oil consumption for the three types of burners:

- conventional heads: 385 litres/ha (41.2 US gal/acre)
- economy heads: 230 litres/ha (24.7 US gal/acre)
- Bossé heads: 155 litres/ha (16.5 US gal/acre)

The ideal weather for burning requires nice, light wind and a sunny day. Rainy days should be avoided. Unfavourable burning conditions can increase oil consumption by 30 to 40%.

### Mowing

The flail mower is used for pruning wild blueberry fields. Mowing is equivalent to burning when used properly. It is not recommended to use rotary mowers (brush cutters) because they damage the land and do not produce a uniform cut.

#### The advantages of flail mowing:

- ✓ Facilitates harvesting and improved fruit quality because old stems are destroyed.
- ✓ Maintain organic matter
- ✓ Weather conditions have less influence on the timing of operations
- ✓ Reduce cost associated with pruning

#### The disadvantages of flail mowing:

- ✓ Cost associated with leveling fields
- ✓ The incidence of weeds, insects and diseases may increase
- ✓ If the technique has not been mastered properly, mowing can result in increased numbers of branches resulting in lower yield potential.

#### Types of flail mowers:

Several companies sell varying capacities and qualities of flail mowers, some of which have been designed specifically for wild blueberry fields. For rough terrain, it is important to seek out models which have shafts and blades that are sufficiently solid. Flail mowers vary in width from 60 cm to 4.5 m, and their use is determined by the condition of the terrain. Some are powered by the tractor, by hydraulics or self powered. Mowers can be gang-mounted to cover a greater width, while maintaining the ability to follow the contours of the terrain. The choice of a mower should be given a lot of consideration, and should take into account the field layout and the working conditions.



**Getting the most from flail mowing:**

- ✓ Select a width which is appropriate for the field.
- ✓ Proper mowing requires a slow travelling speed. The normal speed is between 1.6 and 3.2 km/h (1 and 2 mph).
- ✓ The height of the cut should be verified periodically and adjusted according to the wear on the blades. It is important to cut as close to the soil as possible.
- ✓ **Safety:** Keep your distance from a working mower and turn off the PTO if it is necessary to do work on the mower.

**Conclusion**

Pruning techniques can be considered equivalent, as long as the plants are dormant and the techniques are properly applied. Success of any technique will depend more on its suitability within the field's cropping system than on the technique itself.

**Certain segments of this document were adapted from factsheet # 229, "Pruning Lowbush Blueberry Fields, University of Maine.**