3. Evaluating and Developing a Wild Blueberry Field

INTRODUCTION
The evaluation of site potential is a crucial step in the development of a blueberry field. Since native blueberry plants are already present on the land, development should be carried out with constant attention to preserving the resource of existing rhizomes. To develop a blueberry field successfully, it is very important to respect the sequence of steps involved. Most new development of blueberry fields in Québec is done in wooded areas. On rare occasions it may be possible to develop land that was cultivated in the past. Development requires a significant investment, and it usually takes several years for the fields to reach their full production potential.

EVALUATING SITE POTENTIAL
A preliminary site evaluation can be performed by a professional using pedological and ecoforestry maps. That evaluation must be validated however by a visit to the field (Figure 1). The main criteria to be considered are presented below.

Proximity of existing blueberry fields
The presence nearby of existing blueberry fields can indicate a field’s potential.

Presence of blueberry plants
Since the wild blueberry is not planted, the most important factor to consider is whether it is already present naturally. Blueberries should be well distributed throughout any site being considered for development.

In dense forest, blueberry growth may be limited by lack of light at ground level. Sunlit clearings, hydroelectric rights-of-way, ATV trails and snowmobile trails provide precious assistance in determining the natural presence of blueberries.

Soil characteristics
Blueberries grow in sandy, well-drained soils with a pH between 4.0 and 5.5. They do not require particularly deep soil in order to grow. However, if the soil layer (including organic matter and the mineral portion) is too thin, production can be severely limited by sun, wind, drought and cold.

Forest stands
In Saguenay–Lac-Saint-Jean, stands that are predominantly jack pine (at least 75%) have good potential as sites for blueberry development. Where jack pine grows in mixed stands the potential is variable. An initial stand composed primarily of deciduous trees usually has less potential.

On the Côte-Nord, stands of black spruce either alone or in association with jack pine are also indicators of good potential.

Where there is a strong presence of deciduous species, one should expect to devote extra effort to managing weeds and dealing with shrubby regrowth.
### Plants associated with wild blueberry

Lambkill (*Kalmia angustifolia*) is the plant most frequently encountered in association with the wild blueberry. This makes it a good indicator of the presence of blueberry plants and a site's potential. Sweet-fern (*Comptonia peregrina*) and bracken fern (*Pteridium aquilinum* Kuhn) are often found as well on the same sites.

### Soil drainage

The soil should be well-drained and the water table should not be close to the surface. Soils that tend to retain surface water should be avoided, unless the problem can be corrected with drainage works.

When leatherleaf (*Chamaedaphne calyculata* Moench) is present, this tends to indicate poor drainage in terms of what wild blueberries need.

### Air drainage

The risk of frost is much reduced when cold air can drain off the field efficiently. For this reason, unless drainage passages can be created practically it is important to avoid areas where cold air can accumulate. The ideal is to have gentle slopes and adjacent lower areas to allow cold air to flow off the field.

### Site access

The site must allow safe access for both development work and harvest activities.

### Topography

Flat and gently undulating terrain is preferable. Steep slopes that are hard to cultivate should be avoided, since they are more susceptible to erosion, leaching and runoff. They are also unsafe for working with machinery.

### Presence of rocks

On a site where large rocks are present, development is feasible provided the rocks can be moved or worked around. However, sites with large numbers of smaller rocks or with rocky outcrops are not worth developing.

### Erosion-sensitive sites and endangered plants

Sites that are sensitive to wind erosion or that are colonized by endangered plants should be avoided.

### DEVELOPING A BLUEBERRY FIELD

After site evaluation and before the work of development begins, a development plan and specifications are prepared by an agronomist. This step ensures that the development project complies with all applicable regulations, and that whatever work is planned is truly designed to optimize the site's potential. The development plan and specifications provide customized recommendations that are tailored to the specifics of each site. They specify the location of elements to be conserved or created, such as windbreaks, shelterbelts to protect against erosion, riparian strips, potential cold air outlets, drainage works and firebreaks.

### Ribboning

All features to be conserved must be indicated on the development plan and ribboned before work begins. This step is mandatory, for its purpose is to guide equipment operators during clearing and shredding. Particular attention must be paid to ribboning fallow land and young forest stands.
3. Evaluating and Developing a Wild Blueberry Field

Harvesting woody material
There are three distinct activities involved in harvesting woody material: felling, lopping and hauling (Figure 2). None of these operations should be performed during spring thaw, because they require the use of heavy machinery that would compact the soil and damage its structure.

To optimize shredding, all trees of commercial value should be cut at 10-15 cm from the ground. Generally, felled trees are lopped on-site. Trees of no commercial value, branches and knocked-down trees are also left on-site. Treetops should be laid out in the direction the shredder will take.

Moving machinery during clearing
Clearing should be done in a flexible, realistic and efficient manner while protecting organic matter and buried rhizomes. In that spirit, the operator should be given the following instructions:

• movement should be continuous and in a straight line, with no sharp turns;
• to avoid creating erosion sites (particularly on hillsides), do not pass repeatedly over the same places;
• machinery should never circulate in windbreaks, protective riparian strips and anti-erosion shelterbelts. Field roads should be provided for that purpose;
• wheeled machines are preferable to tracked, since the latter are heavier.

Shredding brush and forest residue after clearing
Shredding returns forest residues to the ground in the form of relatively coarse chips. The result is a natural mulch that protects or increases the existing layer of organic matter, with beneficial effects on the growth and development of the blueberry plant. Of course, if the layer is too deep it will retard the emergence of new growth in the spring.

It generally takes two passages of the shredder to prepare the terrain properly, with at least one full season (a winter or a summer) between them. After clearing, two years of plant growth are required before the first crop can be harvested.

The tree shredder (Figure 3) is recommended for:

• shredding forest residue after clearing;
• reducing stumps to be flush with the ground;
• shredding undergrowth, young tree shoots and old stumps, both on fallow land and in young forest stands.
Shredding is crucial to ensuring that the terrain is properly prepared for agricultural work and harvesting. It should always be done when the blueberry is in a dormant period, either after the first autumn frosts or before growth resumes in the spring. Such work should be avoided however when conditions are unfavourable for plant recovery, e.g. when the soil is very dry. Also, as with all aspects of clearing, shredding must never be done during spring thaw. Alternatives or complements to the tree shredder include stump removal, a stump-grinder, and a power shovel equipped with a shredder.

**Mowing**

Usually a passage of the flail mower is necessary to prune the blueberry plants effectively. This is done after the second passage of the tree shredder, i.e. before the second year of growth. Besides suitably pruning the plants, this step prepares for the first crop year by further cutting up and spreading around the residues left by shredding.

**Weed control**

The purpose of weed control is two-fold: to facilitate harvesting and to optimize yield (Figures 4a and 4b). Weed control helps to increase the density of blueberry plants by eliminating competition for water, light and minerals.

**CONCLUSION**

Great care must be exercised in the development of a blueberry field. Blueberry plants that are naturally present in the environment have become established over many years. Their cultivation must be carried out with respect for the work accomplished by Nature.
3. Evaluating and Developing a Wild Blueberry Field

Figure 4a. Shredding, mowing and weed control
Source: Stéphanie Claveau

Figure 4b. Shredding, mowing and weed control
Source: Stéphanie Claveau
3. Evaluating and Developing a Wild Blueberry Field

COMPLEMENTARY LEAFLET
12. Riparian Strips in Wild Blueberry Fields

REFERENCES


