

7. Filling Bare Spots in Wild Blueberry Fields

INTRODUCTION

In a blueberry field that has been established for many years, over 80% of the terrain is covered with blueberry plants. In contrast, coverage in new fields may be less than 50%. Often, areas without blueberry plants are bare spots that were stripped of their surface layer of organic matter during development, although intensive and repeated burning can have the same result (Figure 1). Bare spots may also be found in uneven terrain (such as dunes) or areas that had little plant coverage to begin with. Winter frost can create unproductive patches over large areas by destroying the blueberry plants and their rhizomes. This usually occurs when a period of intense cold coincides with insufficient snow cover to protect the plants. Occasionally, poor adjustment of a herbicide spreader can damage the blueberry plants and create unproductive patches.

While blueberry plants multiply through dispersal of the seeds in their fruit, they spread and cover an area by sending out underground stems called rhizomes. Propagation by rhizomes varies from one clone to another, but annual growth of more than thirty centimetres has been observed in forest settings. In a blueberry field, rhizome growth is slower due to the management activities of mowing and burning that are performed every two years, combined with the fact that the temperature and moisture conditions are less favourable to growth. In field conditions, rhizome growth is estimated to be a few centimetres per year. This means that without human intervention, bare spots and patches that have suffered frost damage can take many years to recover on their own.

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SITE PREPARATION

Site preparation is very important, consisting of eliminating weeds or brush that could inhibit the establishment of transplants. Weeds must be correctly identified to be sure of applying the right herbicide. It should be noted that hexazinone will destroy natural blueberry seedlings.

PLANTING WILD BLUEBERRY PLANTS

Plants can be collected from around the edges of the fields or in the forest. They should be selected with an eye toward taking only the most vigorous, productive clones. The best approach is to identify interesting clones the year prior to transplanting. Collecting in the wild is done with a shovel or any other tool that can pick up a sufficient amount of material. The clump should have a diameter of at least 15 cm for the plants to be able to survive. The plants should ideally be dormant, and pruned before removal. Since most of the roots are in the upper 10 to 15 centimetres of soil, there is no need to dig deep. This method works well for filling in small areas.

Another method is to plant rooted cuttings, plants grown from seed or plants grown from tissue culture. In the case of the last, a large quantity of plants can be produced from superior clones. Though more costly, plants grown from tissue culture tend to spread more quickly than cuttings and give more consistent results than plants grown from seed. Nowadays, all commercial nurseries use one or more of these methods. Due to the high cost however, planting blueberry plants is only feasible for relatively small areas.

Planting is done in the fall or early in the spring of the growth year, after pruning and weed control have been done. It is



Figure 1. Bare spot in a wild blueberry field

Source: Agrinova

essential that the plants be dormant when transplanted. They must be kept moist before and during planting, and if the soil is dry it should be watered before planting is done.

The plants should be buried to a depth of 5 to 7 cm below the surface. This promotes the production of rhizomes from buried buds, while also reducing the effects of frost heaving. After planting, the soil should be tamped down around the plants to ensure that the roots are in good contact with the soil. Since blueberry plants develop slowly, the density of planting should be quite high. For example, if the plants are separated by 60 cm in all directions, a bare spot will take 6 to 7 years to fill in. A hundred and fifty plants are needed to cover an area of 6 m by 9 m.

It is important to include multiple clones when planting. Thanks to the genetic differences between clones, combining them in the same area will result in improved cross pollination and reduced vulnerability to certain diseases.

PLANTING RHIZOMES

Another method is to collect the rhizomes of blueberry plants. They can be gathered from around the edges of the fields, in the forest or in an area where you intend to plant a windbreak. Rhizomes should be gathered and transplanted in the fall, when the plants are dormant. For easier handling and to ensure a minimum number of buds on each rhizome, cut them into sections of about 10 cm in length. Until they are planted the rhizomes must not be allowed to dry out, so they should be stored in a cool and relatively moist place. For planting, furrows are made using a harrow, making sure that the bottom of the furrow reaches the mineral layer. The rhizomes are placed horizontally on mineral soil and the furrow is closed so that the rhizomes are in good contact with the soil.

Planting rhizomes is feasible over larger bare spots and areas affected by frost damage. Costs are limited to the gathering, handling and planting of the rhizomes. The optimal planting density has yet to be determined. However, to plant 6 rhizomes per metre in rows spaced 50 cm apart, 120 000 rhizomes/ha would be needed.

FERTILIZATION

Fertilization improves the rate at which young blueberry plants become established. A study conducted in Maine showed that using a slow-release, complete fertilizer gives excellent results for the establishment and growth of blueberry plants. Although no such study has been done in Québec, a slow-release, complete fertilizer can be applied when new stems from the rhizomes emerge from the soil.

APPLYING MULCH

It is highly recommended to apply a mulch after planting blueberries in a bare spot. Note however that adding a mulch where the soil already has an organic layer can slow the establishment of young plants as well as the emergence of stems from rhizomes. The purpose of using a mulch is to recreate the optimal growing conditions for blueberry roots and rhizomes. Normally, 5 to 10 cm of mulch is recommended for bare ground. It is important that the plants not be damaged in the course of mulch application.

MAINTENANCE OF PLANTED AREAS

Transplanted areas must remain free of weeds, diseases and insects. Burning should not be done before the third production cycle. If the bare spots are small and scattered throughout a producing field, you have no choice: the field must be managed as a field in full production. In this situation however it is best to prune using mowing instead of burning. If it is possible to avoid transplanted areas during pruning operations, it is best not to mow them until after their 2nd production cycle, i.e. 4 years after transplanting. This length of time is necessary to ensure the maximum development of stems and rhizomes.

COMPLEMENTARY LEAFLETS

- 6. Frost Prevention in Wild Blueberry Fields
- 10. Using Mulches in Wild Blueberry Fields
- 20. Sprayer Calibration
- 22. Granular Spreader Calibration

REFERENCES

- Chiasson, G. and J. Argall. 2011. *Filling Bare Spots in Wild Blueberry Fields*. Factsheet A.3.0. New Brunswick Department of Agriculture and Rural Development. [Online]. www.gnb.ca/0171/10/A30e.pdf (Page consulted on June 20, 2011).
- DeGomez, T. and J. Smagula. 1990. *Filling Bare Spots in Blueberry Fields*. Wildblueberry Fact Sheet No. 221. The University of Maine. Cooperative Extension. 5 pp. [Online]. <http://umaine.edu/blueberries/factsheets/production/filling-bare-spots-in-blueberry-fields/> (Page consulted on June 20, 2011).
- Jeliazkova, E.A. and D.C. Percival. 2003. *N and P Fertilizers, some Growth Variables, and Mycorrhizae in Wild Blueberry (Vaccinium angustifolium)*. Acta Hort. 626: 297-304.

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