



Using mulches in wild blueberry fields

Introduction

Wild blueberry fields were developed from cleared forests or abandoned agricultural fields. Over the years, the plants will spread and cover the greater part of the land. However, many fields have bare spots which may be due to the inhospitable growing conditions and/or soil erosion. It is these conditions that have encouraged scientists in Maine, P.E.I. and the Lac St. Jean region of Quebec to evaluate the use of mulches in wild blueberry fields.

Mulching is the addition of organic materials to a soil surface, in order to improve plant growth. It serves to imitate what happens on a forest floor over the decades that tree litter accumulates and decays.

Research results

With the arrival of selective herbicides in wild blueberry fields, it has been possible to virtually eliminate competition from weeds. When this became possible, it was thought that the lateral growth from these clones would allow the plants to develop a full cover. It quickly became clear that the plants did not colonize the field very quickly. The University of Maine researchers, Smagula and McLaughlin undertook studies to understand this situation. These studies have clearly demonstrated that it is neither competition for space nor competition for nutrients that is limiting the lateral spread of the clones. Rather, the most important factors appear to be: the temperature and moisture content of the soil, the impact of frost heaving, the activity of herbicides, light intensity and pruning techniques.

In 1965, Kender and Eggert demonstrated that blueberry plants grew and spread faster when they were planted in undisturbed soil compared to mix soil. Blueberry plant growth and development was even better when surface mulch was used.

Using this information, Smagula and Goltz conducted a detailed study on how the environmental factors at the soil surface were affected by the use of mulch. These studies demonstrated that mulching had a definite impact on several of these environmental factors, and on the growth and rhizome spread of the plants which were mulched. Without mulch, newly planted seedlings barely grew, and some did not even survive frost heaving. These studies suggest that mulching may play a similar role for the established plants in mature wild blueberry fields.

The advantages of mulching are the:

- ✓ Stabilization of soil temperature;
- ✓ Reduction of erosion on slopes;
- ✓ Reduction in light intensity on the edge of the clones;
- ✓ Increase in soil moisture;
- ✓ Reduction in surface heaving due to frost;
- ✓ Binding of herbicides;
- ✓ Protection of the edges of the clones during pruning;
- ✓ Stimulation of plant growth and rhizome spread.

The disadvantages of mulching are the:

- ✓ Cost to purchase and apply mulches;
- ✓ Availability of materials;
- ✓ Difficulty to stabilize the mulch under windy conditions.
- ✓ Possibility of hindering the teeth of harvesters and rakes.

When to use mulch

The use of mulch is desirable on the edge of existing clones in order for these patches to spread. Research has demonstrated that the rate of rhizome spread can actually be doubled by the use of mulches. It is also very desirable to use mulch after, or even before, interplanting into bare spots.

Mulching can also be used to rehabilitate a section of field which has been stripped of the organic surface layer, by clearing, levelling and other activities, thereby resulting in exposed rhizomes. In these instances, cost may remain the primary obstacle to the use of mulches.

Mulch material

Research in Maine and in Québec has shown that the best materials are bark, sawdust, waste peat and wood chips. The Maine studies favor bark as the ideal material for attaining excellent plant growth and for reducing soil erosion. In general, finer material is likely to be very good in improving the environment for plant growth, provided there is sufficient room between the particles for aeration. Coarser material will likely be better for stabilizing slopes and reducing soil erosion. For fine material like sawdust and waste peat, top dressing with bark or wood chips will help to brace the mulch against wind and soil erosion.

Many of the materials used for mulching may have some impact on the soil's nitrogen status, by using up some of the soil's reserves. It is probably advisable to include an application of 60 kg of urea per hectare (50 pounds/ acre) during the first cycle of mulch use.

Ultimately, the choice of material will be strongly influenced by what is available locally and the cost to acquire and spread the material. Mulches are often spread manually, though a manure spreader has been used successfully for some mulches.

A depth of 5 cm (2 or so inches) has been demonstrated to be desirable for most uses. Heavier applications may be used to improve soils with low organic matter, though studies conducted in P.E.I. have demonstrated a decrease in plant survival with mulches of 10 cm (4 inches) for interplanting purposes.

Conclusion

Mulching of bare or newly-planted spots in wild blueberry fields has a very positive effect on the growth and spread of plants. Studies from the 1950's in Charlotte County, New Brunswick have demonstrated yield increases of 30% on fields mulched with sawdust. On sites which have been heavily eroded by wind in Québec, mulching has proven very beneficial in restoring sites (Prévost and Rochefort, 1994). For additional information on managing bare spots in wild blueberry fields, please consult fact sheet #A.3.0.

Reference

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