

Weed Control for Lowbush Blueberry 1997

Adapted by K. McCully, K. Jensen and C. Prouse from Advisory Committee on Berry Crops Publication 1014 "Guide to Weed Control for Lowbush Blueberry Production in Atlantic Canada 1991".

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Introduction

The weed flora in blueberry fields is unique compared to that found in cultivated fields. Producers are dealing with a native perennial crop in low pH soils, where there is no associated tillage or cultivation. Most of the problem weeds encountered in low bush blueberry fields are perennials. However annual and biennial weeds may also be present. Weeds which prefer low pH soils and the same habitat as blueberries thrive if not controlled.

The history of a field often determines its weed flora. Fields developed from abandoned hayfields or pastures typically have a large number of grasses and herbaceous perennial weeds.

Fields developed from woodland, however, often have plants commonly associated with the woodland undergrowth such as bunchberry, as well as perennial bushes and shrubs.

To successfully develop a weed control program, it is important to identify the weeds, understand their life cycle and have an appreciation of why particular weeds grow in particular areas.

Weed Biology

The life cycle and reproductive strategy of a weed species are important factors to consider when planning a control program. Weeds can be classified as annuals, biennials or perennials. Weeds can additionally be classified as grasses, broadleaf weeds, ferns, herbaceous or woody weeds.

Annuals

Annuals complete their life cycle from seed in less than one year. There are two types: summer and winter annuals. Summer annuals germinate in the spring, mature, produce flowers and seeds and die before fall. Winter annuals germinate in the fall, overwinter in a seedling or rosette stage, mature, produce flowers and seeds, and die in the spring or early summer. Because of the seedling stage, annual weeds are generally easy to control. There are usually few annual weeds present in lowbush blueberry fields.

Biennials

Biennials generally complete their life cycle over two years. The first year the seeds germinate and form a basal cluster of leaves and a tap root. The plant overwinters in this stage. During the second year the weed produces a flower stalk, sets seed and dies. Examples of biennial weed are evening primrose and wild carrot. Biennial weeds are rarely observed in blueberry fields.

Perennials

Perennial weeds live for more than two years. These weeds are the most common in blueberry fields and generally the most difficult to control. Perennial weeds may reproduce primarily by seed (daisy); by both seed and roots (sheep sorrel); or primarily by vegetative means (bunchberry). Many perennial weeds grow in the same manner as the blueberry plant. Therefore, many of the production practices that promote blueberry growth (e.g. pruning) also promote growth of these weeds. Perennials which are low growing and spread vegetatively by interconnected underground root systems are the most difficult to control. Perennial weeds growing above the blueberries may be controlled by wiping or spot treatments with registered herbicides. Perennial weeds include both woody and herbaceous species.

Woody plants can be classified as any plant which develops woody tissue. This may include brush, shrubs, trees and woody vines. Herbaceous plants are those that are not woody.

Broadleaf Plants

Broadleaf weeds are annual, biennial or perennial plants which generally have two leaves (cotyledons) emerging upon germination. The leaves normally have a branching network of veins and the flowers have distinct petals.

Grasses, Sedges and Rushes

Grasses can be annual or perennial plants. They generally have narrow, upright, parallel-veined leaves. Grasses have jointed stems, usually hollow at the internodes and are circular in cross section.

Sedges are a large group of perennial (rarely annual) grass-like plants which are common in wet, poorly drained soils. Sedge stems are triangular in cross section, solid, and not jointed.

Rushes are annual or perennial plants similar in appearance to sedges with grass-like tufted leaves common at the plant base. Rush stems are hollow, circular in cross section, and not jointed. Like the sedge, this plant is also common in wet areas or poorly drained soil, but is also found in woodland and open fields.

Ferns

Ferns are primitive perennial plants that do not produce flowers and seeds. Ferns consist of a leaf or frond, a stalk and an expanded blade which may then be further subdivided several times. Ferns spread by long creeping rhizomes and/or by spores.

For More Information

Most weed guides do not include many of the important blueberry weeds. However, an excellent illustrated publication for identification of blueberry weeds is:

Weeds of Eastern Canadian Blueberry Fields, by G. Sampson, K. McCully and D. Sampson.

Contact the [Nova Scotia Agricultural College Bookstore](#) to purchase this publication.

Best Management Practices

One way blueberry growers can respond to environmental pressures in a pro-active manner is to adopt "Best Management Practices." These are recommendations and guidelines to help growers make sound environmental decisions in their farming operation. They are a combination of management, cultural, and structural practices that are considered to be effective and economical in controlling problems without disturbing the quality of the environment. They provide opportunities for growers to evaluate their own operation and choose the best management practices that are most appropriate for their own situation. Keep in mind that many of the production and management activities practiced by blueberry growers influence not only their own operation, but their neighbours and community. Anything that can prevent environmental pressures will make their own operation, as well as the industry itself, more sustainable.

Growers should identify problems within their operation and implement the appropriate changes. Examples of best management practices include:

- Scout fields and spray only when and where necessary
- Match appropriate herbicide rates with soil type
- Do not apply herbicides within 50 m of bodies of water
- Do not mix or load near bodies of water, bring the water to the sprayer

- Do not apply herbicides to rock formations and exposed ledges as they may provide a direct channel to groundwater
- Avoid spraying if heavy rainfall or high winds are forecast
- Use an anti-backflow device when filling sprayers from a water source to prevent contamination from backflow
- Make sure your sprayer or spreader is calibrated properly and accurately
- Leave an untreated vegetation strip near any water sources to act as a filter
- Read and follow all instructions as stated on the manufacturer's current label

Non-Chemical Weed Control

Non-chemical methods of weed control have not generally been used alone but are often used prior to or following other treatments to further enhance control.

One common production practice used by blueberry producers is pruning by fire or mowing. Although the main purpose of pruning is to rejuvenate blueberry plants, it also helps control weeds. Burning will control coniferous species and some shallow rooted grasses. The top growth of many deciduous saplings is generally killed by burning but underground parts may sprout again, requiring additional control measures. Burning also helps prevent the return of many weed seeds from mature plants to the soil, and will kill many of the weed seeds present near the soil surface; frequently, however, only partial or erratic control results. Burning or mowing alone may promote growth of many perennial weeds with extensive underground root system.

Mowing and cutting are useful, particularly on weeds higher than the blueberries. Weeds must be mowed or cut several times during the season to ensure suppression. Species such as maple, birch and willow should be cut back to ground level. Regrowth from the roots usually results and should therefore be cut again. Species cut in June, July and August for a few seasons will help ensure weed control. Cutting weeds every mid-summer has also been found to help control bracken fern, sweet fern, bayberry, *Prunus* spp., lambkill, wild rose and others. Bracken fern should be cut just as the fronds unfold, at least two times, at four to six week intervals. Cutting the tops off weeds can also prevent seed production which could reduce future weed problems. This must be done before seeds ripen. Cutting, however, is labour intensive, and does not generally result in permanent control.

Other practices which may help to control weeds include the use of mulches. Wood chips, sawdust or bark mulch can reduce weed problems, particularly on bare spots within the fields. Planting blueberry plants in bare spots throughout the field help bare spots to fill in more rapidly.

Preventive methods such as cleaning field equipment (mowers, harvesters, tractors, winnow machines and boxes) also help prevent the spread of undesirable weeds into uninfested fields. The use of biological control agents such as *Chrysolina* beetle on St. John's Wort can also help suppress weeds although the use of this method is not compatible with most insecticides.

Chemical Control: Methods of Application

For recommendations on chemical weed control, consult your provincial or state lowbush blueberry extension specialist or your weed extension specialist.

There are various methods of applying herbicides to unwanted vegetation. One should choose the method that best suits the conditions and available equipment.

Be sure to read the information that is provided on the label. To avoid damage to the blueberry plants, and to obtain satisfactory control of weeds, herbicides must be applied at the recommended rate.

Overall Broadcast Spray

An overall broadcast spray is used to treat entire fields with a residual soil-applied herbicide after the pruning operation and before blueberry plants emerge in the spring.

Overall broadcast spraying is done with a boom sprayer. Irregular spray applications can be avoided by the use of flagging tape, foam markers or the use of an appropriate dye. To apply herbicides at the recommended rate, equipment must be calibrated and in proper working order.

Foliar Applications on Brush

Unless otherwise stated on the label, applications should be limited to bushes which are under 2 meters in height. If bushes are higher, cut and treat the regrowth. Foliar applications are generally the most effective just after full leaf development in late spring or early summer. Applications made to actively growing bushes will be the most effective if good growing conditions and adequate soil moisture are present. Under those conditions, applications may be made up to 2 or 3 weeks before the normal frost date.

Coverage should be uniform and thorough to wet all leaves, stems and root collars. Mix with water only and spray until wet, but avoid spraying to runoff. Extreme caution must be used as any spray contacting blueberry plants can cause severe injury or death. The use of herbicide wipers and rollers can also be useful for applying herbicides to the foliage and stems of species which grow above the crop.

Stump Treatment (Used for site preparation only)

Unless otherwise stated on the label, the herbicides used for stump treatment should be applied in diesel oil, fuel oil, kerosene or mineral oil to help penetrate the exposed bark and cut surfaces (environmentally, mineral oil is the preferred choice). This treatment is useful in that it can be applied any time of the year, including the winter months as long as snow or water does not prevent spraying. Unless otherwise stated, applications should be made to freshly cut stumps. Best results are usually obtained on stumps 5 cm across or larger (refer to individual labels). All exposed bark, roots, and cut surfaces should be wet thoroughly either by painting or spraying. For old stumps it is best to drill several holes or split the stump with a wedge before applying the treatment. Dye can also be added to the mixture to help ensure that all exposed surfaces of the stump have been treated, and stumps do not get retreated or skipped.

Trash from brush cutting operations such as sawdust, leaves, branches, etc. should be removed from the base of the stumps before treating. Care must be taken to ensure that all cut stems in a clump have been treated, or regrowth can result. Most of the stump treatments will control the top growth of root suckering species (i.e. poplar, and aspen), however, regrowth from lateral roots may occur the following season.

Basal Bark Treatments

Brush and small trees (15 cm diameter) can be controlled by spraying or wiping the basal parts of bush stems and tree trunks from the ground line up to a height of 50 cm or as recommended on the label. Treatments are applied in diesel oil, fuel oil, kerosene or mineral oil as recommended on the label (environmentally, mineral oil is the preferred choice).

Old or rough bark requires more volume than young or smooth bark. Treatments can be applied any time of the year except when snow or water prevent spraying at the ground line. Basal bark treatments are advantageous because the entire bush or tree foliage does not require spraying. If spraying, use a nozzle that forms a very narrow band or stream. The basal bark treatment is useful against a wide range of trees and brush with trunk diameters up to 15 cm.

Spot Sprays

Spot spraying applies herbicide to the foliage of weed species, avoiding contact with the blueberry foliage. Depending on the product used and the time of application, blueberry plants can be injured or killed if the foliage is sprayed. Applications are often made in the summer of the sprout year, but these can result in crop injury. Alternatively, evergreen species, such as lambkill and bayberry, can be controlled in the fall. Furthermore, many species such as alders, sweetfern, bayberry, blackberries retain their leaves in a viable condition longer than the harvested blueberries and can be treated in October.

Spot sprays can be applied with either backpack sprayers or by operating a handgun from a line connected to a tractor mounted sprayer.

Wiping Treatments

Wiping and rolling methods can be used where weeds are taller than the blueberries. A commercially available "side-swipe" or "hockey-stick" has been used effectively for applying Roundup.

There are several roller-type applicators now in use, including several tractor mounted models and small one-man portable machines for use in small fields. The herbicide is slowly delivered to a rotating drum, with an absorbent covering, that wipes the foliage of tall weeds and bushes, transferring the herbicide from roller to leaves. To avoid misses, most rollers must be operated quite slowly.