



Hexazinone (Velpar[®] DF and Pronone[®] 10G) for Weed Control in Wild Blueberries

Since its registration in 1982, hexazinone has been the predominant herbicide used in wild blueberry production. It revolutionized the industry by providing a high level of grass, broadleaf and woody weed control, which was previously unattainable. Two commercial formulations containing the active ingredient hexazinone are currently available: Velpar[®] DF, a 75% dry Flowable that is mixed with water for application and Pronone[®] 10G, a 10% solid granule. Most wild blueberry growers in New Brunswick currently use and depend upon these two herbicides to provide weed control. After application, hexazinone moves with water into the soil and rooting zone, where it is absorbed by sensitive plants and controls them. In order to achieve optimal results and benefits from hexazinone, there are a number of factors to consider:

Factors Influencing the Performance of Hexazinone

Soil texture: Soil texture influences the performance of hexazinone. In a range of increasing heaviness of soils from sand to clay, increasing rates of hexazinone will be required to obtain the same degree of control. Soils high in clay tend to bind more hexazinone than on sandy soils, thereby making it less available. As a result, higher rates are recommended to make up for the amount that is adsorbed and unavailable. Hexazinone is also highly water soluble and can leach out of the seed and root zone of light textured soils. In seasons of high rainfall, hexazinone can disappear from the rooting zone, thereby resulting in reduced weed control.

On sandy/gravelly soils, best results are obtained when hexazinone is applied as close to the time of blueberry emergence as possible. Pronone[®] 10G may be more effective than Velpar[®] DF on these sandy/gravelly soils, as it can be applied later than Velpar[®] DF. Unlike Velpar[®] DF, significant injury will not result if Pronone[®] 10G is applied to emerged, dry blueberry leaves, as no foliar uptake results from the granules which fall to the ground. However, post emergence use is not presently registered in Canada. In addition, it is thought that hexazinone may be released more slowly from the granules of Pronone[®] 10G than from Velpar[®] DF.

Organic matter: Like heavy soils, fields that are high in organic matter (greater than 6.0%) will also adsorb more hexazinone, thereby making the chemical less available for weed uptake. As a result, reduced weed control can be expected on soils high in organic matter. Higher rates should be used to adjust for this adsorption.

Drainage: Hexazinone can cause injury to blueberries if applied to poorly-drained areas, particularly in standing water. In addition, weed control in poorly drained areas has often been observed to be poor.

Slope: Hexazinone can move in surface water and accumulate in low areas at concentrations high enough to cause blueberry injury. Moreover, movement of hexazinone in surface water can

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have the opposite effect on higher areas of the field, resulting in less available herbicide and reduced weed control.

Frozen ground: Applications should not be made to frozen ground, as the herbicide will not be able to easily move into the soil where it is required. Furthermore, heavy rains may cause the herbicide to run off the frozen surface.

Temperature: Warm temperatures enable weeds to grow more actively. As a result, weeds can pick up and translocate hexazinone more quickly and effectively. In herbaceous broadleaf weeds and grasses, symptoms usually appear within 2 weeks after application under warm, humid conditions while 4-6 weeks may be required when the weather is cool.

Moisture: Hexazinone requires 0.6 to 1.3 cm (1/4 to 1/2 inch) of rainfall within two weeks of application. This is necessary in order to move hexazinone into the weed seed and root zones where the herbicide activity is needed. However, too much rain may leach the herbicide through the soil past that zone, causing reduced herbicide activity.

Crop sensitivity: There are differences in the sensitivity of various blueberry clones to hexazinone. It is estimated that 3 to 10% of blueberry clones are sensitive. Blueberry clonal injury should become less evident after a few years of hexazinone use, as sensitive clones are killed out and replaced by tolerant ones. In addition, blueberry plants weakened by stress are more sensitive to herbicide injury than healthy, vigorously growing plants.

Weed sensitivity: Some weeds are not susceptible to hexazinone and will not be controlled at any of the recommended rates. In addition, even susceptible weeds vary in their sensitivity to hexazinone and their level of control can be dependent on rate, timing and weather. Some sensitive weeds, like sheep sorrel and grasses may re-establish from seed after hexazinone dissipates. **Refer to [Fact Sheet C4.2.0](#) for a list of sensitive and tolerant weeds.**

Accuracy of application equipment: The boom sprayer for Velpar[®] DF application and the fertilizer spreader for Pronone[®] 10G application must be properly calibrated to ensure proper delivery of the products. Uniform distribution with proper overlap is critical, so foam markers are recommended. For Velpar[®] DF, selection of the proper nozzle size for the desired water volume and tractor speed is also very important. Nozzles should be checked to ensure that they are clean and not worn. The fertilizer spreader opening setting is also very important to ensure the proper application rate for Pronone[®] 10G. Even and uniform application is more difficult on rough fields. Tractors should travel very slowly to avoid excessive movement of application equipment. Crop injury and variable weed control often result from uneven or improperly calibrated applications. **For more information about the calibration of a sprayer or a spreader please refer to [Fact Sheet C1.2.0](#) and [C4.4.0](#).**

Rates of Hexazinone to Use

Please consult product labels and the most recent Wild Lowbush Blueberry IPM Weed Management Guide – Fact Sheet C4.2.0 for rate information. Because field conditions vary widely, rates should be adjusted accordingly. In general, on a medium type soil (i.e. loam) annual herbaceous weeds are the easiest to control and require only the lowest recommended rates. Most of the grasses associated with blueberry fields can be reduced to acceptable levels at the low to mid hexazinone rates. Woody weeds are more difficult to control and generally require the highest recommended rate. It is important to remember that the soil type and organic matter levels can dictate herbicide rates as much as the weed species.

In an effort to reduce the herbicide load from an integrated weed management stand point, some growers have been using below labelled rates. Results have been somewhat variable depending upon weed pressure, soil type, organic matter, rainfall amount and application timing. The most consistent and promising results from reduced rates have been obtained from applications made to fields with: (1) a low weed pressure; (2) a medium textured type soil (not too sandy or too much clay); (3) with organic matter levels below 6.0%, and (4) when applied as close to blueberry emergence as possible. Growers will have to experiment on a small scale first to determine whether reduced rates will provide the desired level of weed control on their individual fields.

Specifics on Pronone[®] 10G

Advantages of Pronone[®] 10G:

1. Pronone[®] 10G is a ready-to-use granular product, therefore no mixing or water is required. Applicator exposure is less of a concern.
2. Drift is less of a concern since granules are used. Pronone[®] 10G could therefore be applied in stronger winds than liquid Velpar[®] DF.
3. There is more flexibility in application timing since Pronone[®] 10G can be applied early post emergence with less risk of significant injury, although this use is not registered. This can be beneficial for fields which are wet in the spring, when pre emergence applications are difficult.
4. Pronone[®] 10G can be applied with fertilizer spreaders, which are cheaper than sprayers.
5. Fertilizer spreaders are perceived more positively than pesticide sprayers.

Disadvantages of Pronone[®] 10G:

1. Even coverage can be difficult since rough terrain can influence distribution.
2. Proper overlap can be difficult.
3. As Pronone[®] 10G has a lower concentration of hexazinone per gram of product, more bags will be required as compared to a similar Velpar[®] DF application .
4. In general, the cost of Pronone per acre is generally higher than Velpar, but this may be offset by reduced application costs.