



## Fall Glyphosate Use for Lambkill Control

Lambkill (*Kalmia angustifolia*), a vigorous perennial species in the same family as wild blueberry, is a difficult weed to control in newly established wild blueberry fields. Lambkill is a short, woody shrub which spreads by underground rhizomes. The leaves are waxy, persistent and grow in whorls of three. Lambkill flowers in late June to early July in the second year of growth. The flowers are a bright pink cluster about three quarters of the way up the plant. It is frequently present at high densities within new fields which have been developed from forested land. It is a strong competitor with wild blueberry and acts as an impediment to efficient harvesting. Historically, hexazinone (Velpar or Pronone) has effectively controlled this weed.

One difference between wild blueberry and lambkill is whether or not leaves are retained in the fall. Lambkill leaves tend to remain green and attached to the plant, while blueberry plants drop their leaves earlier in the fall. Due to this difference research was carried out on the use of a late fall application of a non-selective herbicide, glyphosate. Following late fall glyphosate applications, lambkill control was high while blueberry injury was very low (Figure 1), especially when using the Roundup WeatherMAX formulation of glyphosate. Blueberry yields were not decreased following glyphosate application and were improved when lambkill was effectively controlled. Fall glyphosate application for lambkill control provides economical weed control with a reduced environmental impact when compared to conventional herbicide treatments.



**Figure 1.** Untreated (left) and glyphosate treatment (right) in early crop year following treatment. Note lambkill flowers (pink) in untreated areas.

## Wild Blueberry Fact Sheet C.4.7.0

A User Requested Minor Use Label Expansion (URMULE) for a late fall broadcast treatment of Roundup WeatherMAX in newly established wild blueberries was approved. Other glyphosate formulations can still be used in wild blueberries as a spot or wiping treatments in established fields but are not recommended for a late fall application for lambkill control. Other glyphosate formulations were not tested using this application pattern and cannot be recommended at this time. This fact sheet outlines best management practices to ensure adequate weed control and crop safety when applying Roundup WeatherMAX. If used incorrectly, glyphosate can cause significant crop injury to wild blueberry plants.

### *Field Management*

This herbicide treatment pattern for Roundup WeatherMAX is only registered within newly cleared wild blueberry production. All research and use of this herbicide has been focused within fields in the early phases of production (1-5 years after land clearing). There still is a risk of crop injury when using this treatment, although this potential risk is better tolerated during early production years. The potential for yield reduction caused by failing to control lambkill is significantly higher than the minimal risk from using glyphosate if the proper application methods are followed. Crop safety of this application pattern in mature fields was not evaluated and use in mature fields cannot be recommended at this time.

The research used to support this registration examined the use of Roundup WeatherMAX following a crop (or fruiting) year, in fields which had been pruned at least once. There is an increased risk of crop injury if glyphosate is applied in the late fall following a sprout (or vegetative) year, as these blueberry plants tend to retain their leaves later in the fall and have more green plant tissue in the fall. Any treatment areas should be harvested in the year of application, as harvesting the crop places stress on the blueberry plants and contributes to early leaf drop. The use of fertilizers and/ or fungicides in the cropping year may cause blueberry plants to remain greener, retain their leaves longer and delay dormancy, which all increase the potential for crop injury. **Only apply glyphosate in the late fall within fields that have 95% blueberry leaf drop.**

### *Application Factors*

As the correct application conditions are a balance between the stage between lambkill and blueberry plants, potential treatment areas should be monitored closely in the fall. Applications should be made in the fall before pruning the field, when blueberry plants have 95% leaf drop. The typical timing in research evaluations was late October or November. Lambkill plants typically have about 50% green leaves at this stage. Do not apply glyphosate before one or two heavy fall frosts have occurred. The ideal stage for application is shown in Figure 2.



**Figure 2.** Ideal lambkill stage (50% green) and blueberry stage (95% leaf drop) for fall glyphosate treatment.

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Only one formulation of glyphosate, Roundup WeatherMAX, is currently registered for this use. Within previous research evaluations, other glyphosate formulations tested did not provide a similar level of control as the WeatherMAX formulation. The addition of an adjuvant, such as Sylgard, with other glyphosate formulations increased blueberry injury.

Apply Roundup WeatherMAX at 1.67 litres per hectare in 200-300 litres per hectare of clean water using a boom applicator. Do not add adjuvant to the spray mixture. Treat only areas of the field which have lambkill present. Do not prune for at least 14 days after application. All fields treated with Roundup WeatherMAX must be pruned post treatment in the fall or pruned the following spring before May 15th. Any delay in pruning in the spring can decrease the level of weed control.

As with all herbicide applications, proper sprayer calibration is essential for weed control and crop safety. The amount of water applied, boom height, spray pressure and nozzle choice must all be considered. More information on sprayer calibration and calculating the amount of herbicide required can be found in the New Brunswick Department of Agriculture, Aquaculture and Fisheries' Sprayer Calibration Fact Sheet ([C.1.2](#)) or in the Guide to Weed Control (Publication 75) from the Ontario Ministry of Agriculture, Food and Rural Affairs (available [here](#)).

### Post Treatment Factors

Following a Roundup WeatherMAX treatment, pruning is essential to achieve lambkill control. If pruning does not occur, there will not be any lambkill control. Field areas must be pruned following herbicide application, waiting at least 14 days to ensure the herbicide will have enough time to control the weed species. Pruning should be delayed if poor environmental conditions follow glyphosate application. Within research evaluations, no differences in control were found between burning in the fall, mowing in the fall or mowing in the early spring were found. Current field experience recommends a fall pruning by mowing as the preferred pruning method, ideally three weeks following herbicide application. Lambkill control in the following season has been very good.

If pruning is delayed, or if mowing height is too high, lambkill control will be reduced (Figure 3). Mowing as close as possible to the ground is recommended. Control of other weeds species has not been observed in any previous evaluations. No control of rhodora (*Rhododendron canadense*) or sweet fern (*Comptonia peregrina*) has occurred following a fall glyphosate application. No crop injury has been reported from hexazinone (Velpar or Pronone) treatment in the spring following glyphosate application, or from applying glyphosate as a tank mix with dicamba in the fall.



**Figure 3.** Reduced lambkill control following glyphosate when improperly mowed (mowed too high).

In research evaluations, crop injury following a fall application has been very minor, provided the proper application conditions were met. In some evaluations, there was a one to two week delay in blueberry emergence as compared to areas which did not receive glyphosate treatment. If glyphosate is applied to non-dormant blueberries, injury symptoms, similar to glyphosate injury following a wiping or spot-treatment, may appear in the following season. Blueberry plants may be stunted or new leaf growth may have a feathered, yellow appearance as shown in Figure 4.



**Figure 4.** Glyphosate injury on blueberry.

Only one application of glyphosate is registered in a typical cropping cycle (2 year rotation). As a general precaution, only apply fall glyphosate once for two production cycles. Research evaluations from Quebec have shown blueberry injury when glyphosate was applied in two consecutive fall applications. The direct

cause of this injury is not known, so glyphosate applications must be separated by at least two growing seasons. One glyphosate application, if made under the proper application conditions, generally provides a very high level of lambkill control and follow-up lambkill control treatments are usually not required.

### **Conclusions**

The use of Roundup WeatherMAX in the late fall for control of lambkill in newly cleared wild blueberry production offers lambkill control with adequate crop safety, provided the application conditions listed on the product label and outlined above are followed. Fall glyphosate application for lambkill control provides economical weed control with a reduced environmental impact when compared to conventional herbicide treatments.