Brush Management with

Garlon* 4

Application guidelines

Active ingredient: *triclopyr ester*

Control description: Garlon 4 is readily absorbed by the foliage of growing plants and translocates to the growth regions of the plant (meristems). It creates an imbalance of plant growth hormones, causing unregulated growth which kills the plant.

For consistent brush control, apply Garlon (foliar) after full-leaf development and before autumn colouration. Adequate soil moisture for normal plant growth is important for consistent control. Balsam poplar and willow can yellow due to drought stress in July, reducing efficacy. An indicator of potential loss of efficacy is hardening leaves that lose their elasticity when gently crushed in the hand.

Rate. Apply Garlon at a rate of 4 to 8 litres per hectare. Use higher application rates as seasonal growth slows or when hard-to-kill species are present.

Coverage. Mix Garlon in at least 400 litres of water per hectare, up to 1,000 litres of water per hectare (35 to 90 imperial gallons per acre). Ensure even or uniform coverage of target plants.

For more detailed information on coverage refer to the "Guide to Improving Triclopyr Ester Efficacy".

Drift management. When using large droplets to reduce risk of drift, increase spray volume to maintain uniformity of coverage.

Hard-To-Kill Species

Maples are the main hard-to-kill species, but aspen and balsam poplar can be problematic to control near the end of the season. When treating these species or spraying late in the growing season, pay particular attention to coverage and condition of foliage on target plants to ensure adequate control.

Factors Affecting Performance

Dr. Bob Campbell (Herbicide Physiologist, Forest Pest Management Institute, Great Lakes Forestry Center) evaluated the impact of herbicide concentration, droplet size and droplet number of *triclopyr* on the control of aspen.

Campbell's experiments indicated that coverage is the most important variable when applying *triclopyr* foliar. The key to successfully applying foliar *triclopyr* is even or uniform coverage with no shadows or scattered, large, splotchy droplets on target plants.

Performance Expectations

When evaluating Garlon applications it is important to have realistic expectations in mind. Research trials have evaluated the following two criteria for control performance:

1. **Percentage defoliation:** percentage of the foliage on the vegetation that is gone and/or discoloured.
2. **Stem kill:** percentage of each stem that is dead.

When planning an application of Garlon, be sure to choose rates, equipment and methods appropriate for the level of control (percentage defoliation and stem kill) you require.

Re-growth can be expected with certain species. Extent of re-growth depends on seasonal timing, coverage, application rate, and species treated, in that order.

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General guidelines for brush control

The success of a vegetation management program can be greatly influenced by what type of application equipment and method are employed. Factors that influence optimal control include atomizer orifice size, spray pressure, atomizer stability, atomizer dwell time over target and atomizer orientation. For all equipment and methods used, these factors should be adjusted to ensure even coverage of target vegetation and sufficient penetration of target plant canopies to ensure at least 70% of the height of target plant crowns are covered.

Equipment

Hose and hand gun. Perhaps the oldest and most commonly used application method for both spot and broadcast treatment of brush is the hose and hand gun. Many different models are available, most with the ability to adjust the spray pattern from a solid stream to a wide cone pattern. Droplet size is variable, determined by pump pressure, size of orifice and spray pattern setting. Typically, pressures of 100 to 300 psi and spray volumes of 800 to 2,000 litres per hectare are required to adequately wet brush to the point of runoff.

When using handguns to apply Garlon, pay particular attention to nozzle orientation and dwell time, as these factors are vital to maintaining adequate coverage and canopy penetration. Increased application pressure will not replace proper downward-directed application with sufficient dwell time.

Boomless spray equipment. In recent years, broadcast spraying using boomless spray equipment has become increasingly popular. Some of the commercially available equipment include the off centre nozzle (OC). This is a single nozzle that produces a wide swath, flat spray pattern. Although it operates at low pressures (30 to 40 psi), drift is a concern because of the wide range of droplet sizes it produces. Tests show that droplets closest to the nozzle centre are small, while the droplets on the outer edge are coarse, leading to irregularities in coverage.

The Boom Buster® nozzle is a straight stream, diffuse nozzle available in different spray widths and outputs. The stream of spray solution is split by a plastic vane to produce a fan pattern. Proper operating pressure is between 30 and 50 psi. As with the OC nozzle, it is important to ensure that the spray pattern covers the top of the brush canopy. But at higher spray heights, be aware that air movement can often distort the spray pattern and thus lessen coverage.

Both OC and Boom Buster nozzles produce somewhat uneven patterns and droplet sizes. This makes them difficult to calibrate to achieve adequate coverage and renders them more susceptible to drift. Use these nozzles only for narrow band control of weeds or for brush less than 1.5 m in height.

Radiarc. Another popular boomless device is the radiarc controlled droplet applicator, which consists of two parallel rows of up to 11 straight-stream nozzles that oscillate to break up the stream of spray solution. Five nozzle sizes are available with the larger .070, .085 and .101 nozzles most practical for brush spraying. The spray head can be mounted to spray either a horizontal or vertical pattern. Uniform droplet size provides a high degree of drift control.

Methods

With the boomless spray nozzles (atomizers), it is not necessary to use the higher hand gun water volume rates of application. However, water volumes must be sufficient to provide thorough coverage and foliar canopy penetration.

For medium density brush, water volumes of 200 to 400 litres per hectare are generally used. The key to successfully applying foliar *triclopyr* is even or uniform coverage with no shadows or scattered, large, splotchy droplets on target plants.

Water volume becomes a significant factor only when droplet size is increased to address other concerns, such as drift control. In such cases, increase water volume to ensure uniform coverage. This is particularly important when treating larger or taller brush with broadcast application.

This is not a label, and is intended as a review of key guidelines for use of this product. Before using Garlon 4, read and follow label directions.

What else do you need?

For even more information on how Dow AgroSciences can meet your vegetation management needs, call the Solutions Center at 1-800-667-3852, or visit us at www.dowagro.ca.

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