

## QUESTIONS AND ANSWERS ABOUT GARLON ULTRA

### WHY A HERBICIDE? WHY NOT JUST CUT THE VEGETATION?

Besides being very labour intensive, mowing creates multiple re-sprouts – the plant's natural response to cutting. This only worsens the vegetation problem and requires more frequent management. Garlon Ultra eliminates re-sprouting. Because of this improved control, crews and machinery visit the site less often and have less impact.

### WHO WILL BE APPLYING GARLON ULTRA?

A vegetation manager plans herbicide treatments and oversees crew activities. Trained, professional applicators apply Garlon Ultra in designated areas using approved application techniques. Applicators follow directions on the product label, which is approved by Health Canada's Pest Management Regulatory Agency (PMRA).

### HOW WILL GARLON ULTRA BE APPLIED?

Options include foliar, basal bark and cut stump treatments. Foliar applications spray solution on the plant's leaves. Basal bark techniques apply small amounts of solution to the lower 30 to 50 cm of bark at the base of the plant. Cut stump applications apply the Garlon Ultra solution to the stump's surface and to the remaining bark to the ground line, including the root collar and root flares to prevent re-sprouting.

### IS GARLON ULTRA TOXIC?

If ingested, Garlon Ultra has low toxicity when compared to many substances we contact in daily life. For example, Garlon Ultra has a similar toxicological profile to Aspirin or vitamin A, and is in fact less toxic than caffeine or nicotine. It's highly unlikely that anyone, including applicators, would receive a large enough dose to be harmed.

### WILL GARLON ULTRA HURT ANIMALS?

Garlon Ultra only affects plants. The herbicide's active ingredient disrupts the growth process within the plant by affecting enzymes unique to plants. Garlon Ultra has a large margin of safety to animals, birds and insects.

For aquatic organisms, often the most sensitive organisms, Garlon Ultra study results show that the moderately toxic (to fish) ester formulation quickly converts to a practically

non-toxic technical acid within two hours.

Field trials of intentional application to water show that Garlon Ultra did not reach toxic levels for the length of time necessary to cause harm to aquatic organisms.

### MEANS OF PROTECTION?

Stay away from the treated area until leaves, stems and bark have dried. Control exposure by using common sense and avoiding the area for those few hours.

### CONSUMPTION OF TREATED BERRIES?

You should not consume berries treated with Garlon Ultra. However, it has been determined that a 68 kg person could accidentally consume 10.4 litres of treated berries every day for the remainder of their life without experiencing any adverse effects.

### WALKING ACROSS A TREATED AREA?

Exposure may occur from walking across an area still damp from a foliar treatment. However, the dose received is not likely to cause any harm. A 68 kg person has a safety factor of 2,000 times over such exposure. Of course, it is not recommended to walk through a treated area until the vegetation has dried completely.

### WILL GARLON ULTRA HARM THE SOIL?

Garlon Ultra is broken down by soil micro organisms (fungi and bacteria) and sunlight. Final breakdown products are carbon dioxide, water and other organic materials. The breakdown rate depends on rainfall, soil temperature and micro organism activity. The time for 50 percent of the active ingredient to break down ranges from 30 – 46 days.

### WILL GARLON ULTRA SEEP INTO GROUNDWATER?

It is not likely, because Garlon Ultra binds tightly to soil organic matter and clay particles. This limits its downward movement in the soil. Researchers find that most of the active ingredient remains in the upper 30 cm of the soil – far from the water table.

<sup>1</sup> Bramble, W.C., R.H. Yahner and W.R. Byrnes. 1992 Breeding Bird Population Changes Following Rights-of-Way Maintenance Treatments. *Journal of Aboriculture*. 18(1):23-32.

<sup>2</sup> Guggenmoos, Sig, P.Ag. 1989. Why Use Herbicides in Disturbance Line Clearance?

<sup>3</sup> Transalta Utilities, 1991, Using Herbicides to Control Brush.



**For the right of way manager, Garlon Ultra utilizes a unique plant derived carrier, providing superior broad-spectrum foliar control of trees with a favorable environmental profile.**

Garlon™ Ultra is a selective, systemic herbicide with application flexibility that provides control of hard-to-kill deciduous trees, pine and broadleaf weeds without harming grass. It is registered to control many broadleaf weeds and woody plants on pipelines, roadways, railways, electrical power lines, military bases, airports, industrial manufacturing and storage sites. Garlon Ultra is non residual in the soil and degrades quickly in the environment, giving it a favorable environmental profile.

### PRODUCT FEATURES

- Broad spectrum control of deciduous brush and broadleaf weeds
- Control of the entire plant down to the root
- Fast visual evidence of activity
- Low environmental impact
- Service and support by the leader in industrial vegetation herbicides

### VEGETATION MANAGEMENT BENEFITS

- A single pass to control target vegetation simplifies management and saves time
- Reduces regrowth and extends time between control cycles
- Reduced risk application
- Confidence and peace of mind in the application decision

### VEGETATION CONTROLLED

Garlon Ultra is registered for control of the following:

**Woody plants:** Alder, ash, aspen, basswood, beech, birch, blackberry, buckthorn, cherry†, chokecherry†, cottonwood, dogwood, elderberry, elm†, hawthorn, hickory, hop hornbeam, honey locust†, locust, maples, mulberry, oaks†, poison oak, pines†, poplar, red maple†, raspberry<sup>1</sup>, sassafras, sumac, sycamore, tamarack, wild rose, willow, witch hazel.

**Broadleaf weeds:** Burdock, chicory, curled dock, dandelion, field bindweed, lamb's-quarters, ragweed, smartweed, smooth bedstraw, vetch, wild lettuce.

### APPLICATION METHODS

Include broadcast foliar, direct spray (hose and hand gun) and basal bark.

Foliar applications achieve maximum effectiveness after full leaf development, when soil moisture is adequate for normal plant growth and prior to autumn colouration of leaves.

### MODE OF ACTION

Garlon Ultra contains 480 g/L of the active ingredient triclopyr BE ester (triclopyr). It is a plant growth regulator that mimics growth hormones found exclusively in plants. When applied to leaves and stems, triclopyr uses the plant's own water and nutrient transportation system to move into the leaves and roots. It then initiates rapid mature cell growth, which causes cell walls to rupture.

This hinders the plant's ability to move food and use energy from the leaves, causing the plant to die.

### FATE IN SOIL

Garlon Ultra binds (absorbs) to soil particles and following rainfall, tends to stay within 30 cm of the soil surface. There is little risk of triclopyr reaching groundwater, and it poses no significant environmental hazard due to leaching.

In the soil, Garlon Ultra undergoes degradation by soil micro organisms (fungi and bacteria) and sunlight. Final breakdown products are carbon dioxide, water and organic acids. The average half-life of triclopyr in the soil is 30 – 46 days.

### FATE IN WATER

Like most herbicides, Garlon Ultra is not approved for application to water surfaces and should be kept out of lakes, ponds and streams. Always maintain all provincially mandated buffer zones on water bodies.

Even if Garlon Ultra inadvertently reaches water, it dissipates through a variety of environmental processes that collectively remove it very rapidly. It undergoes simple hydrolysis in water to form triclopyr acid, which breaks down through exposure to ultraviolet rays in sunlight (photolysis).

<sup>1</sup>Higher rates recommended to minimize a possible need to retreat the following year. See label for detailed rates and directions for application.

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## VEGETATION MANAGEMENT WITH HERBICIDES

Using a herbicide such as Garlon Ultra provides selective vegetation control – ends growth of targeted woody plants and weeds without harming established grass. This leaves the grass cover to provide competition, making it harder for new weeds and brush to establish. This provides a management tool for preventing unwanted vegetation growth on electrical utility, gas pipeline, rail and road rights-of-way and around airports and industrial sites.

Selective herbicides can be a safe, simple, cost effective alternative to mechanical control methods such as trimming and mowing, when companies need to manage unwanted weeds and brush to ensure the reliability and safety of the services they offer or perform.

**Electrical utilities** must limit service interruptions, ensuring branches do not contact power lines or prevent electricity from reaching the consumer. During routine maintenance and repair, crews have to access substations, power lines, poles and towers easily and safely.

**Highway** vegetation management helps ensure motorist safety by controlling encroaching weeds and brush that can conceal road signs, emerging wildlife and intersecting or oncoming traffic. Without vegetation control, snow may get trapped and drift across roadways.

**Railway** vegetation hazards include weeds that reduce traction, hide damaged equipment during inspections, limit motorists' line of sight at crossings and cause drainage problems that lead to deteriorating ties and destabilized track beds.

**Pipeline** lines of sight that remain clear are important so that inspection and repair crews can spot leaks or repair problems.

**Airports** need to keep vegetation low to provide safe runoff areas. Long term control of vegetation and minimizing the activity near landing runways increases airport safety.

**Industrial sites** need vegetation management to prevent brush and weeds that can interfere with

operations, create fire hazards and decrease the security provided by protective fences.

### INTERGRATED PEST MANAGEMENT

Integrated pest management (IPM) focuses on the judicious, integrated use of selected, but different vegetation control techniques to achieve maximum results, at affordable costs, and with minimal environmental impact. IPM helps vegetation managers meet their efficacy, budgetary, social, environmental and safety goals.

- By establishing longer maintenance cycles, herbicide treated areas require less frequent intervention and lower costs than mechanical methods.
- Herbicides also effectively control tree roots, which eliminates undesirable vegetation and allows low-growing plants to form a barrier against invading brush, weeds and tall-growing trees.
- Mechanical methods result in higher worker injury rates; insurance coverage costs less for herbicide treatments. An article generated from Ontario Worker's Compensation data reports that injuries on manual tending programs occur 14 times more frequently than reportable injuries from herbicide tending programs.

Prescriptive treatment methods, such as the use of Garlon Ultra, save companies product costs through efficient, effective applications. Research clearly shows that herbicides increase control and reduce vegetation management costs.

By leaving roots intact, hand cutting and mowing results in strong plant regeneration. For every one cut stem of a poplar or birch tree, an average of 18 more stems grow back.<sup>2,3</sup>

### SUPERIOR SERVICE AND SUPPORT

Garlon Ultra is a product you can use with confidence. At Dow AgroSciences, we strive to reduce risk and continuously improve through effective management systems. Our Emergency Response is on call 24 hours a day, 7 days a week in the unlikely event of an emergency.

## ENVIRONMENT AND WILDLIFE IMPACT

When it comes to vegetation control, research recommends herbicide applications over mechanical methods for three major reasons.

1. Mowing can cause ground damage. Heavy machinery use can also lead to slumping, rutting, soil compaction and soil erosion. Herbicides don't pose these ground hazards.
2. Mechanical methods often destroy all desirable rightof- way vegetation, prohibiting future plant diversity and opening the door to undesirable invasive plants.
3. Mechanical methods that clear vegetation can disturb or destroy nesting habitats and kill animals that come in contact with the large machines.

Researched thoroughly by Purdue University, the "Edge Effect" identifies three zones: wire zone (e.g. directly under the transmission wires), border zone and forest. The combination of low grass cover in the wire zone, shrubby border zones and tall forest alongside produces an excellent habitat for diverse species of wildlife on electrical utility rights-of-way.<sup>1</sup>

As highlighted in research<sup>1</sup>, the edge or border zone serves as the busiest wildlife area. It possesses more individual creatures, and has three times the animal variety of most other communities, so preventing tall forest encroachment is important.

The plant diversity that results from herbicide methods increases food and ground cover for some wildlife populations, increasing animal diversity within the right of way. Mechanical methods, by contrast, thoroughly disturb the plants, insects and animals of the area for a very long time.

### GRAZING AND FORAGE TOLERANCES

Triclopyr does not bio-accumulate in body tissues. Animal metabolism studies demonstrate that triclopyr is rapidly excreted unchanged, primarily in the urine.

After treatment with Garlon Ultra, areas may be grazed by livestock or harvested for forage. See label for specific details on intervals.

## GARLON ULTRA TOXICOLOGICAL INFORMATION

The following detailed data can serve as guidelines for human and environmental safety. Always read and follow label and Material Safety Data Sheet (MSDS) directions to prevent unnecessary exposure.

### ORAL TOXICITY

Oral toxicity is moderate. Although small amounts of Garlon Ultra swallowed incidental to handling are unlikely to cause injury, avoid contact with the mouth. The oral LD50 for triclopyr is 1,338 mg/kg for female rats.

### CHRONIC TOXICITY TO MAMMALS

Long term testing has produced no evidence that triclopyr causes carcinogenic, mutagenic or teratogenic effects in mammals. Mammals do not metabolize triclopyr. If ingested, triclopyr is rapidly excreted unchanged. Animal studies have shown that triclopyr consumed in the diet will be cleared from the body within 3 days of intake, with no accumulation in the body organs.

### SKIN CONTACT

A single, prolonged exposure to undiluted Garlon Ultra is unlikely to be absorbed through the skin in harmful amounts. Prolonged or repeated exposure may cause allergic reactions in some individuals. No allergic skin reaction is expected with the product as diluted for use in the field. Wear personal protective equipment specified on the label. The dermal LD50 for triclopyr is 2,315 mg/kg for male rabbits.

### EYE CONTACT

When handled in a manner consistent with proper operator-use procedures as specified on the product label, it is unlikely that undiluted Garlon Ultra will come in contact with eyes. If however, undiluted Garlon Ultra does come in contact with eyes, it may cause temporary irritation. Flush eyes with plenty of water and seek medical attention.

### TOXICITY TO AQUATIC ORGANISMS

Under proper operator-use procedures as specified on the product label, Garlon Ultra poses no threat to aquatic organisms. Triclopyr acid has a very low toxicity to aquatic organisms. When formulated as Garlon Ultra, it has a higher toxicity, but in water it rapidly degrades to triclopyr acid, which is virtually non-toxic. Garlon Ultra is not labelled for application to water surfaces.