

GROUP	4	9	HERBICIDES
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## **Roundup Xtend™ with VaporGrip™ Technology Herbicide**

Water soluble herbicide for non-selective control of annual and perennial weeds in Roundup Ready 2 Xtend™ soybeans, XtendFlex™ soybeans and corn with Roundup Ready® 2 Technology

### **SOLUTION**

### **COMMERCIAL (AGRICULTURAL)**

### **REGISTRATION NO. 32274 PEST CONTROL PRODUCTS ACT**

#### **ACTIVE INGREDIENT:**

Glyphosate, present as the monoethanolamine salt.....240 g a.e./L  
Dicamba, present as the diglycolamine salt.....120 g a.e./L

### **READ THE LABEL AND ATTACHED BOOKLET BEFORE USING**

### **NET CONTENTS: 10 litres to Bulk**

Bayer CropScience Inc.  
Suite 200,160 Quarry Park Blvd. SE  
Calgary AB T2C 3G3  
1-888-283-6847  
[www.cropscience.bayer.ca](http://www.cropscience.bayer.ca)

**NOTICE TO USER.** This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

## **PRECAUTIONS**

### **KEEP OUT OF REACH OF CHILDREN**

Avoid inhaling dust, sprays, etc.

Do not get in eyes, on skin or on clothing.

The restricted entry interval is 12 hours after application for all agricultural uses. Wear a long-sleeved shirt, long pants and chemical-resistant gloves during mixing, loading, clean-up or repair activities. Applicators must wear a long-sleeved shirt, long pants and chemical-resistant gloves. Wash thoroughly with soap and water after handling.

## **FIRST AID**

**If swallowed:** Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

For first aid instructions or the toxicological information essential for treatment, obtain and read the approved label from the registrant or phone the number indicated on this container.

## **TOXICOLOGICAL INFORMATION:**

Dicamba may cause severe irritation to the eyes, and irritation to the skin and mucous membranes. Symptoms of overexposure to dicamba may include dizziness, muscle weakness, loss of appetite, weight loss, vomiting, decreased heart rate, shortness of breath, excitement, tenseness, depression, incontinence, cyanosis, muscle spasms, exhaustion and loss of voice. Treat symptomatically.

In case of an emergency involving this product, call Bayer CropScience day or night:

Accident/Spills/Medical Emergency ..... 1-800-334-7577

For additional information on this or other Bayer CropScience agricultural products, call Bayer CropScience at: 1-888-283-6847

## **PHYSICAL OR CHEMICAL HAZARDS**

Spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminum, fiberglass, plastic and plastic-lined steel containers.

**DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS.** This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

## **ENVIRONMENTAL PRECAUTIONS**

Avoid direct applications to any body of water. Do not use in areas where adverse impact on domestic water or aquatic species is likely. Do not contaminate water by disposal of waste or cleaning of equipment. Avoid all drift to or contact with other vegetation for which treatment is not intended as damage or destruction may occur.

Application is limited to agricultural crops only when there is low risk of drift to areas of human habitation or activity such as houses, cottages, schools and recreational areas, taking into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

- **TOXIC** to aquatic organisms and non-target terrestrial plants. Observe buffer zones specified under DIRECTIONS FOR USE.

- To reduce runoff from treated areas into aquatic habitats, avoid application to areas with a moderate to steep slope, compacted soil or clay.
- Avoid application when heavy rain is forecast.
- Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

### **SURFACE RUNOFF**

To reduce runoff from treated areas into aquatic habitats, consider the characteristics and conditions of the site before treatment. Site characteristics and conditions that may lead to runoff include but are not limited to heavy rainfall, moderate to steep slope, bare soil, poorly draining soil (e.g. soils that are compacted, fine textured, or low in organic matter such as clay).

Potential for contamination of aquatic areas as a result of runoff may be reduced by including an untreated vegetative strip between the treated area and the edge of the water body.

Do not treat areas where movement of the herbicide into the soil or surface washing may bring **Roundup Xtend with VaporGrip Technology** into contact with roots of desirable plants.

Avoid applying this product when heavy rain is forecast.

### **LEACHING**

The use of this chemical may result in contamination of groundwater, particularly in areas where soils are permeable (e.g. sand, loamy sand and sandy loam soils) and/or the depth to the water table is shallow.

### **STORAGE**

Store product in original container only, away from other pesticides, fertilizer, food or feed. Not for use or storage in or around the home. Store above -10°C to keep product in solution. If the product freezes and crystals form, place in a warm room (20°C), allow the product to reach room temperature and roll or shake periodically until crystals have re-dissolved. Keep container closed to prevent spills and contamination.

### **DISPOSAL**

### **RETURNABLE CONTAINERS**

Do not reuse container for any other purpose.

For disposal, this empty container may be returned to the point of purchase (distributor/dealer).

### **REFILLABLE CONTAINERS**

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### **RECYCLABLE CONTAINERS**

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1. Triple- or pressure-rinse the empty container. Add the rinsing to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

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For information on the disposal of unused, unwanted product, contact the Provincial Regulatory Agency or the manufacturer. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

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- Avoid application when heavy rain is forecast.
- Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

## **SURFACE RUNOFF**

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Potential for contamination of aquatic areas as a result of runoff may be reduced by including an untreated vegetative strip between the treated area and the edge of the water body.

Do not treat areas where movement of the herbicide into the soil or surface washing may bring **Roundup Xtend with VaporGrip Technology** into contact with roots of desirable plants.

Avoid applying this product when heavy rain is forecast.

## **LEACHING**

The use of this chemical may result in contamination of groundwater, particularly in areas where soils are permeable (e.g. sand, loamy sand and sandy loam soils) and/or the depth to the water table is shallow.

## **STORAGE**

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For information on the disposal of unused, unwanted product, contact the Provincial Regulatory Agency or the manufacturer. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

## **GENERAL INFORMATION ABOUT ROUNDUP XTEND WITH VAPORGRIP TECHNOLOGY HERBICIDE**

**Roundup Xtend with VaporGrip Technology Herbicide** is a post-emergence, systemic herbicide which can have some soil residual control on small seeded broadleaf weeds, depending upon rainfall and soil conditions. It is generally non-selective and gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid. It may be applied using most standard industrial or field sprayers after dilution and thorough mixing with water or other carriers according to label directions.

This product enters the plant through the roots (dicamba only) and foliage and moves systemically within the plant. Visual effects of control are gradual wilting and twisting (epinasty) of stems and leaves as well as yellowing of the plant, which advances to complete browning of above-ground growth and deterioration of affected underground plant parts. Visible symptoms will usually develop on labeled weeds within 5 to 7 days after applications, but may not occur for more than 7 days. Extremely cool or cloudy weather following treatment or prolonged drought conditions may slow activity of this product and delay the visual effects of control. Always use the higher rate of this product per hectare when weeds are under poor growing conditions, such as drought.

**Roundup Xtend with VaporGrip Technology Herbicide** is a broad spectrum weed resistance management tool with two effective modes of action on annual and perennial broadleaf weeds. **Roundup Xtend with VaporGrip Technology Herbicide** also controls grass weeds.

Reduced control may result if treatments are made during poor growing conditions such as drought stress, disease or insect damage, or if weeds have been mowed, grazed or cut. Heavy dust on foliage or an overstory canopy covering targeted weeds may also reduce control.

At the highest label rate this product will provide short term residual broadleaf weed control. For season long residual weed control, **Roundup Xtend with VaporGrip Technology Herbicide** should be tank mixed with other appropriate herbicides. Follow the label rates and weeds controlled on the respective labels of tank mix partners with **Roundup Xtend with VaporGrip Technology Herbicide**. Read and carefully observe the precautionary statements and all other information appearing on the labels of all herbicides used.

Rainfall occurring within 4 hours after application, particularly on weeds growing under stress conditions, may reduce the effectiveness of this product. Heavy rainfall within 2 hours after application may wash the chemical off the foliage and a repeat treatment may be required. For best results spray coverage should be uniform and complete.

## **RESISTANCE-MANAGEMENT RECOMMENDATIONS**

For resistance management, **Roundup Xtend with VaporGrip Technology Herbicide** is a Group 4 and 9 herbicide. Any weed population may contain or develop plants naturally resistant to **Roundup Xtend with VaporGrip Technology Herbicide** and other Group 4 or 9 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay herbicide resistance:

- Where possible, rotate the use of **Roundup Xtend with VaporGrip Technology Herbicide** or other Group 4 or Group 9 herbicides within a growing season (sequence) or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted. To delay resistance, the less resistance-prone partner should control the target weed(s) as effectively as the more resistance-prone partner.
- Herbicide use should be based on an integrated weed management program that includes scouting, historical information related to herbicide

use and crop rotation, and considers tillage (or other mechanical control methods), cultural (for example, higher crop seeding rates; precision fertilizer application method and timing to favour the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.

- Monitor weed populations after herbicide application for signs of resistance development (for example, only one weed species on the herbicide label not controlled). If resistance is suspected, prevent weed seed production in the affected area if possible by an alternative herbicide from a different group. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- Have suspected resistant weed seeds tested by a qualified laboratory to confirm resistance and identify alternative herbicide options.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact Bayer CropScience at 1-888-283-6847 or at [www.cropscience.bayer.ca](http://www.cropscience.bayer.ca)

## **APPLICATION PRECAUTIONS**

### **SPRAY DRIFT MANAGEMENT AND APPLICATION REQUIREMENTS**

Do not allow herbicide solution to mist, drip, drift or splash onto desirable vegetation because severe injury or destruction to desirable broadleaf plants could result.

When applying **Roundup Xtend with VaporGrip Technology Herbicide** adjacent to sensitive crops, apply as a pre-plant, pre-emergent or early post-emergent treatment to avoid potential drift onto the sensitive crops.

The following drift management requirements must be followed to ensure application accuracy from ground application onto agricultural field crops.

#### **Controlling Droplet Size**

The most effective way to reduce spray drift potential is to apply large droplets (coarser spray qualities) that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if the application is made improperly, or under unfavorable environmental conditions (see the “**Wind Speed and Direction**”, “**Temperature and Humidity**” and “**Temperature Inversions**” sections of this label).

#### **Nozzle type**

Use only spray nozzles that produce Extremely Coarse to Ultra Coarse spray qualities and minimal amounts of fine spray droplets as defined by the American Society of Agricultural Engineers (ASAE S-572.1). Do not use conventional flat fan nozzles that produce Medium or Fine spray qualities. Check nozzle manufacturer's recommendations to determine the proper operating pressure, nozzle spacing and ground speed that will deliver Extremely Coarse to Ultra Coarse spray qualities at spray volumes of at least 100 L/ha.

### **Spray Pressure**

Adjust pressure for selected nozzles according to the nozzle manufacturer to maintain Extremely Coarse to Ultra Coarse spray qualities. Do not exceed the nozzle manufacturer's recommended pressures. Use sufficient spray pressure with air induction nozzles to ensure a good spray pattern, while maintaining Extremely Coarse to Ultra Coarse sprays; use at least 200 kPa (30 psi) to ensure proper pattern overlap and check this visually. Confirm that sprayer rate controller hardware (if so equipped) does not increase pressure above the range that produces the correct spray quality. Calibrate the flow rate for the selected nozzles on the equipment used to apply this product.

### **Spray Volume**

Apply this product in a minimum of 100 Liters of spray solution per hectare. Use a higher spray volume when treating dense vegetation. Higher spray volumes also allow the use of larger nozzle orifices (sizes) which produce coarser spray droplets.

### **Equipment Ground Speed**

Select a ground speed under 25 km/h that will deliver the desired spray volume while maintaining the desired spray pressure. Slower speeds generally result in more uniform spray coverage and deposition on the target area.

### **Spray Boom Height**

Spray at the appropriate boom height based on nozzle selection and nozzle spacing (should not be more than 50 cm above target pest or crop canopy). Set boom to lowest effective height over the target pest or crop canopy based on equipment manufacturer's directions. Automated boom height controllers are recommended with large booms to better maintain optimum nozzle to canopy height. Excessive boom height will increase the potential for spray drift.

### **Temperature and Humidity**

Apply when air temperature is between 10 and 25°C. Do not apply when there is risk of severe fall in night temperature after use. When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry. Do not spray when the temperature is expected to exceed 30°C. Avoid applications in fog or high humidity.

### **Temperature Inversions**

Do not apply during a temperature inversion because off-target movement potential is high. Temperature inversions increase drift potential because fine droplets may remain suspended after application and move in unpredictable directions with light and variable wind. The following environmental conditions are often associated with temperature inversions:

- The atmosphere is very stable and vertical air mixing is restricted, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions.
- Temperature inversions are characterized by increasing temperatures with altitude and are common on evenings, nights, and early mornings with limited cloud cover and light to no wind. After sunset, air at the earth's surface cools and air is trapped by warmer air above it. Inversions begin to form as the sun sets and often continue into the morning.
- Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.
- The inversion will dissipate with increased winds (above 5 km/h) or after sunrise when the surface air begins to warm.

### Wind Speed and Direction

Drift potential is lowest between wind speeds of 5 to 15 km/h. If the wind speed is 5 km/h or less and fog is present, indicating a temperature inversion, do not apply this product. If fog is not present, conduct a smoke test. Smoke that moves upward confirms there is no inversion present whereas smoke that layers and moves laterally in a concentrated cloud indicates a temperature inversion exists. Do not apply this product during a temperature inversion. Wait until the wind speed is greater than 5 km/h to ensure that any inversion has lifted. Do not spray this product when the wind is blowing in the direction of a sensitive area at a wind speed greater than 15 km/h.

For **ROUNDUP XTEND WITH VAPORGRIP TECHNOLOGY HERBICIDE** wind speed and direction restrictions see table below:

Wind speed	Application conditions and restrictions
<5 km/hr	Do not apply if temperature inversion exists
5-15 km/h	Optimum application conditions.
>15 km/h	DO NOT apply <b>Roundup Xtend with VaporGrip Technology Herbicide</b> .

**NOTE:** Local terrain can influence wind patterns. Every applicator must be familiar with local wind patterns and how they affect drift. Determine wind speed and direction at boom height.

### Additives and Tank Mixtures

Nozzle selection is one of the most important parameters for drift reduction. A drift reduction additive may be used with this product to further reduce fine droplets.

Not all drift reduction additives are compatible with every nozzle type and pesticide / adjuvant combination. Check with the additive manufacturer to determine if the drift additive will work properly with the spray nozzle, spray pressure and your specific spray solution. Read and carefully observe all precautions, limitations and all other information on the product label.

A quality nonionic surfactant (NIS) of at least 70% active may be added to the spray solution at 0.25 % v/v. Read and carefully observe all caution statements and other information on the surfactant label.

Do not add acidifying buffering agents, acidic pH adjusting agents or adjuvants other than agriculturally approved NIS to the spray solution. Do not add ammonium sulfate (AMS), AMS-containing adjuvants, water conditioners, or sprayable fluid fertilizers.

Do not use crop oil concentrates (COC) and methylated seed oils (MSO) as adjuvants. When **Roundup Xtend with VaporGrip Technology Herbicide** is used with another herbicide that requires the use of a COC or MSO adjuvant follow the label instructions of that product.

This product can provide some residual control on small-seeded broadleaf weeds, depending upon rainfall and soil conditions. This product may be tank-mixed with other herbicides to provide longer residual weed control, a broader spectrum of weed control or an alternate mode of action. Always read and follow label directions for all products in the tank mixture.

Some tank mix products have the potential to cause crop injury under certain conditions, at certain growth stages and/or under other circumstances. Read all labels of products used in the tank mixture prior to use to determine the potential for crop injury.

Tank mixtures with other herbicides, insecticides, fungicides, micronutrients or foliar fertilizers could result in reduced weed control or crop injury. Bayer CropScience has not tested all tank-mix product formulations for compatibility, antagonism or reduction in product performance. To the extent consistent with applicable law, buyer and all users are responsible for any and all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly specified on this label or in separate supplemental labeling published for this product.

Refer to all individual product labels, or supplemental labeling for all products in the tank mixture, and observe all precautions and limitations on the label, including application timing restrictions, soil restrictions, minimum re-cropping intervals and rotational guidelines. Use according to the most restrictive precautionary statements for each product in the tank mixture.

Always predetermine the compatibility of all tank-mix products together in the carrier by mixing small proportional quantities in advance.

For best results, apply tank mixtures with this product at a minimum spray volume of 100 L/ha.

### **Sensitive Areas**

This product should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for species at risk, or sensitive crop plants) is minimal (e.g. when the wind is blowing away from sensitive areas). Applicators should survey the surrounding area before making an application of this product.

Failure to follow the requirements in this label, could result in severe injury or destruction to desirable sensitive crops and trees, particularly, beans, cotton, flowers, fruit trees, grapes, ornamentals, peas, potatoes, soybeans, sunflowers, tobacco, tomatoes, and other broadleaf plants when contacting their roots, stems or foliage.

### **Application Awareness**

**AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR.**

The interaction of equipment and weather related factors must be monitored to maximize performance and on-target spray deposition. The applicator is responsible for considering all of these factors when making a spray decision.

**NOTE:** Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences. Keep container closed to prevent spills and contamination.

### **Proper Spray System Cleanout**

Minute quantities of dicamba may cause injury to non-Roundup Ready 2 Xtend soybeans, XtendFlex™ soybeans and other sensitive crops (see the “Sensitive Areas” section of this label for a listing of sensitive crops).

Clean equipment immediately after using this product, using a triple rinse procedure as follows:

1. After spraying, drain the sprayer (including boom and lines) immediately. Do not allow the spray solution to remain in the spray boom lines over night prior to flushing.
2. Flush tank, hoses, boom and nozzles with clean water.
3. Inspect and clean all strainers, screens and filters.

4. Prepare a cleaning solution with a commercial detergent or sprayer cleaner or ammonia according to the manufacturer's directions.
5. Take care to wash all parts of the tank, including the inside top surface. Start agitation in the sprayer and thoroughly re-circulate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
6. Flush hoses, spray lines and nozzles for at least 1 minute with the cleaning solution.
7. Repeat above steps for two additional times to accomplish an effective triple rinse.
8. Remove nozzles, screens and strainers and clean separately in the cleaning solution after completing the above procedures.
9. Appropriately dispose of rinsate from steps 1-7 in compliance with all applicable laws and regulations
10. Drain sump, filter and lines.
11. Rinse the complete spraying system with clean water.

All rinse water must be disposed of in compliance with municipal, provincial, and federal guidelines. DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

### **MIXING INSTRUCTIONS**

PRODUCT PERFORMANCE CAN BE SIGNIFICANTLY REDUCED IF WATER CONTAINING SOIL SEDIMENT IS USED AS CARRIER. DO NOT MIX THIS PRODUCT WITH WATER FROM PONDS OR DITCHES THAT IS VISIBLY MUDDY OR MURKY.

This product mixes readily with water. Mix spray solutions of this product as follows. Begin filling the mixing tank or spray tank with clean water. Add the required amount of this product near the end of the filling process and mix gently. Use caution to avoid siphoning back into the carrier source.

### **DIRECTIONS FOR USE**

- Glyphosate is not to be applied using hand-wicking or hand-daubing methods.
- **As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests**
- **DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.**
- Apply only when the potential for drift to areas of human habitation or areas of human activity such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

## BUFFER ZONES

- Field sprayer application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) coarse classification. Boom height must be 60 cm or less above the crop or ground.
- Airblast or mist blower application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** direct spray above plants to be treated. **DO NOT** apply when wind speed is greater than 16 km/h at the application site as measured outside of the treatment area on the upwind side. For airblast applications, turn off outward pointing nozzles at row ends and outer rows.
- Aerial application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply when wind speed is greater than 16 km/h at flying height at the site of application. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) coarse classification. To reduce drift caused by turbulent wingtip vortices, the nozzle distribution along the spray boom length **MUST NOT** exceed 65% of the wing- or rotorspan.

### **BUFFER ZONES:**

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment, inter-row hooded sprayer, low-clearance hooded or shielded sprayers that ensure spray drift does not come in contact with orchard crop fruit or foliage, soil drench and soil incorporation.

For application to rights-of-way and for forestry uses, buffer zones for protection of sensitive terrestrial habitats are not required; however, the best available application strategies which minimize off-site drift, including meteorological conditions (for example, wind direction, low wind speed) and spray equipment (for example, coarse droplet sizes, minimizing height above canopy), should be used. Applicators must, however, observe the specified buffer zones for protection of sensitive aquatic habitats.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands) and sensitive aquatic habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, wetlands and estuarine/marine water bodies).

Agricultural and non-cropland systems		Maximum number of applications	Buffer Zones (metres) Required for the Protection of:	
			Aquatic habitats	Terrestrial habitats
<b>Agricultural crop system and ground boom application method</b>				
Corn (glyphosate non-tolerant varieties including grain, silage and ornamental types)		2	1	2
soybean (glyphosate non-tolerant varieties), corn-sweet (glyphosate tolerant varieties)		3	1	2
Corn (glyphosate tolerant varieties)	Fixed wing	2	20	50
	Rotary wing	2	20	45

For tank mixes, consult the labels of the tank-mix partners and observe the largest (most restrictive) buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASAE) category indicated on the labels for those tank mix partners.

The buffer zones for this product can be modified based on weather conditions and spray equipment configuration by accessing the Buffer Zone Calculator on the Pesticides portion of the Canada.ca website.

## **ROUNDUP READY 2 XTEND™ SOYBEANS AND XTENDFLEX™ SOYBEANS**

### **Roundup Xtend with VaporGrip Technology Herbicide use in Roundup Ready 2 Xtend soybeans and XtendFlex™ Soybeans**

Apply **Roundup Xtend with VaporGrip Technology Herbicide** at **2.5 – 5 L/ha** depending on the target weeds. Apply when weeds are small (<10 cm) and actively growing.

<b>Weeds controlled</b>	<b>Application rate</b>	<b>Application timing/notes</b>
<p><b>Annual broadleaf weeds:</b> buckwheat (<i>tartary, wild</i>) canola, <i>volunteer (non glyphosate-tolerant)</i> catchfly, <i>night flowering</i> chickweed cleavers cockle, <i>cowflixweed</i> hawk's beard, <i>narrow leaved</i> hempnettle kochia lady's-thumb lamb's-quarters, <i>common</i> mustard, <i>wild</i> pigweed, <i>redroot</i> shepherd's-purse smartweed, <i>green</i> spurry, <i>corn</i> stinkweed stork's-bill thistle, <i>Russian</i> tomato, <i>wild</i></p> <p><b>Annual grass weeds:</b> barely, <i>volunteer</i> barnyard grass foxtail, <i>green</i> oats, <i>wild</i> wheat, <i>volunteer</i></p> <p><b>Perennial weeds (see table "notes on perennial weed control"):</b> dandelion quackgrass sow-thistle, <i>perennial</i> thistle, <i>Canada</i></p>	<p><b>Roundup Xtend with VaporGrip Technology Herbicide applied at 2.5 L/ha</b></p> <p>Notes: <b>Roundup Xtend with VaporGrip Technology Herbicide</b> applied at 2.5 L/ha will provide residual suppression of some annual broadleaf weeds (see weeds listed for residual control at the bottom of this table). However, this rate is most effective when applied post-emergence to the weeds.</p>	<p>Apply <b>Roundup Xtend with VaporGrip Technology Herbicide</b> pre-plant or pre-emergence to the crop</p> <p>and/or</p> <p>post-emergence to the crop once or twice up to the early flower stage (R1).</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• Early applications when the weeds are small reduce early season weed competition and provide maximum yield potential. Do not apply <b>Roundup Xtend with VaporGrip Technology Herbicide</b> to soybeans later than the R1 growth stage.</li> <li>• 10 L/ha of <b>Roundup Xtend with VaporGrip Technology Herbicide</b> is the maximum total to be applied to Roundup Ready 2 Xtend soybeans and XtendFlex™ soybeans in a single growing season (year). A third application of <b>Roundup Xtend with VaporGrip Technology Herbicide</b> should only be made for the control of glyphosate-resistant weed populations.</li> </ul>

<p><b>All weeds listed above plus,</b></p> <p><b>Annual broadleaf weeds:</b>  adzuki beans, <i>volunteer</i><sup>3</sup>  cocklebur  cucumber, <i>bur</i><sup>4</sup>  flax, <i>volunteer</i>  fleabane, <i>Canada</i><sup>1</sup>  lettuce, <i>prickly</i>  mallow, <i>round-leaved</i><sup>2</sup>  nightshade, <i>Eastern black</i>  pigweed, <i>smooth</i>  ragweed, <i>common</i>  smartweed, <i>Pennsylvania</i>  sow <i>thistle</i>, <i>annual</i>  stork's bill  velvetleaf  vetch, <i>narrow-leaved</i>  wormwood, <i>biennial</i><sup>5</sup></p> <p><b>Annual grass weeds:</b>  blue grass, <i>annual</i>  brome, <i>downy</i>  crabgrass (<i>smooth, large</i>)  darnel, <i>Persian</i>  foxtail, <i>yellow</i>  millet, <i>wild proso</i>  panicum, <i>fall</i></p> <p><b>Perennial weeds (see table "notes on perennial weed control"):</b>  bindweed, <i>field</i>  foxtail, <i>barley</i>  milkweed, <i>common</i>  muhly, <i>wire-stemmed</i>  nutsedge, <i>yellow</i></p>	<p><b>Roundup Xtend with VaporGrip Technology Herbicide applied at 3.75 L/ha</b></p> <p>Notes:  <b>Roundup Xtend with VaporGrip Technology Herbicide applied at 3.75 L/ha</b> will provide residual suppression of annual broadleaf weeds (see weeds listed for residual control at the bottom of this table).</p>	<p>See notes above for application details.</p>
<p><b>All weeds listed above plus,</b>  mustard (<i>hare's ear, Indian, tumble, wormseed</i>)  pigweed, <i>Russian</i>  ragweed (<i>false, giant</i>)</p>	<p><b>Roundup Xtend with VaporGrip Technology Herbicide applied at 5 L/ha</b></p>	<p>See notes above for application details.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>The 5L/ha rate is to be used only once in a season and should be applied pre-plant, pre-emergence or in-crop early post-emergence (up to</li> </ul>

<b>short term residual activity on annual broadleaf weeds:</b> buckwheat, <i>wild</i> lamb's-quarters, <i>common</i> pigweed, <i>redroot</i> ragweed, <i>common</i> velvetleaf <sup>6</sup>		the V2 growth stage).
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**Application footnotes for annual weeds:**

1. Post-emergence application only, up to 8 cm in height.
2. Sequential applications required for the control of round-leaved mallow.
3. Apply when adzuki beans are at the unifoliate to 4<sup>th</sup> trifoliate leaf stage.  
For late flushes emerging after the initial treatment, **Roundup brand agricultural herbicides that do not contain dicamba** may be applied at 1.67 L/ha when the adzuki beans are in the unifoliate to 4<sup>th</sup> trifoliate leaf stage and actively growing.
4. Two applications when the bur cucumber is at the 1 to 18 leaf stage.  
Applications should be at least 2 weeks apart for best results.
5. One application applied when biennial wormwood is at the 2-8 leaf stage and actively growing.
6. Provides suppression only of velvetleaf.

**Pre-Harvest Interval(s):**

7-10 days for soybean forage and 13 -15 days for soybean hay.

**Rotational Crop Guidelines:**A plant back interval of 120 days is required for those crops not on the **Roundup Xtend with VaporGrip Technology Herbicide label**. Do not count days when the ground is frozen. Moisture is essential for the degradation of this herbicide in soil. If dry weather persists after application, crop injury may occur the following spring.

## CORN WITH ROUNDUP READY 2® TECHNOLOGY

### Roundup Xtend with VaporGrip Technology Herbicide use in corn hybrids with Roundup Ready 2 Technology

#### Treatment notes:

1. Do not apply to sweet corn, corn grown for seed production, or corn without Roundup Ready 2 Technology.
2. When applying **Roundup Xtend with VaporGrip Technology Herbicide** adjacent to sensitive crops, apply as a pre-emergence treatment to avoid potential drift onto these sensitive crops.
3. Apply to medium to fine textured soils containing more than 2.5% organic matter. Do not use on sandy or sandy loam soils.
4. Avoid direct chemical contact with the corn seed. If you plan to apply **Roundup Xtend with VaporGrip Technology Herbicide** pre-emergence, ensure the corn seeds are placed at least 4 cm below the soil surface. If seeded less than 4 cm below the soil surface, delay application until the spike stage.
5. Do not incorporate.
6. Do not apply to corn over 50 cm in height. Measure the corn as it stands, not leaf-extended.
7. Grazing Restrictions:
  - DO NOT permit lactating dairy animals to graze fields within 7 days after application.
  - DO NOT harvest forage or cut hay within 30 days after application.
  - Withdraw meat animals from treated fields at least 3 days before slaughter.

Apply **Roundup Xtend with VaporGrip Technology Herbicide** at 2.5 – 5 L/ha depending on the target weeds.

Weeds controlled	Application rate	Application timing/notes
<b>Annual broadleaf weeds:</b> buckwheat ( <i>tartary, wild</i> ) canola, <i>volunteer (non glyphosate-tolerant)</i> catchfly, <i>night flowering</i> chickweed cleavers cockle, <i>cow</i> flixweed hawk's beard, <i>narrow leaved</i> hempnettle	<b>Roundup Xtend with VaporGrip Technology Herbicide applied at 2.5L/ha</b>  Notes: <b>Roundup Xtend with VaporGrip Technology Herbicide applied at 2.5 L/ha will provide residual suppression of some</b>	Apply <b>Roundup Xtend with VaporGrip Technology Herbicide</b> pre-plant or pre-emergence to the crop  and/or  post-emergence to the crop (spike to 5-leaf corn)

<p>kochia lady's-thumb lamb's-quarters, <i>common</i> mustard, <i>wild</i> pigweed, <i>redroot</i> shepherd's-purse smartweed, <i>green</i> spurry, <i>corn</i> stinkweed stork's-bill thistle, <i>Russian</i> tomato, <i>wild</i></p> <p><b>Annual grass weeds:</b> barely, <i>volunteer</i> barnyard grass foxtail, <i>green</i> oats, <i>wild</i> wheat, <i>volunteer</i></p> <p><b>Perennial weeds (see table "notes on perennial weed control"):</b> dandelion quackgrass sow-thistle, <i>perennial</i> thistle, <i>Canada</i></p>	<p>annual broadleaf weeds (see weeds listed for residual control at the bottom of this table). However, this rate is most effective when applied post-emergence to the weeds.</p>	<p>Notes:</p> <ul style="list-style-type: none"> <li>• Early applications when the weeds are small reduce early season weed competition and provide maximum yield potential.</li> <li>• Post-emergence treatment (spike to 5-leaf corn) can be applied to corn previously treated with other residual broadleaf or grass herbicides, and will provide extended residual control of other late germinating, deep rooted annuals.</li> <li>• 10 L/ha of <b>Roundup Xtend with VaporGrip Technology Herbicide</b> is the maximum total to be applied in a single growing season (year). A third application of <b>Roundup Xtend with VaporGrip Technology Herbicide</b> should only be made for the control of glyphosate-resistant weed populations.</li> </ul>
<p><b>All weeds listed above plus,</b></p> <p><b>Annual broadleaf weeds:</b> adzuki beans, <i>volunteer</i><sup>3</sup> cocklebur</p>	<p><b>Roundup Xtend with VaporGrip Technology Herbicide applied at 3.75 L/ha</b></p>	<p>See notes above for application details.</p>

<p>cucumber, <i>bur</i><sup>4</sup> flax, <i>volunteer</i> fleabane, <i>Canada</i><sup>1</sup> lettuce, <i>prickly</i> mallow, <i>round-leaved</i><sup>2</sup> nightshade, <i>Eastern black</i> pigweed, <i>smooth</i> ragweed, <i>common</i> smartweed, <i>Pennsylvania</i> <i>sow thistle, annual</i> stork's bill velvetleaf vetch, <i>narrow-leaved</i> wormwood, <i>biennial</i><sup>5</sup></p> <p><b>Annual grass weeds:</b> blue grass, <i>annual</i> brome, <i>downy</i> crabgrass (<i>smooth, large</i>) darnel, <i>Persian</i> foxtail, <i>yellow</i> millet, <i>wild proso</i> panicum, <i>fall</i></p> <p><b>Perennial weeds (see table "notes on perennial weed control"):</b> bindweed, <i>field</i> foxtail, <i>barley</i> milkweed, <i>common</i> muhly, <i>wire-stemmed</i> nutsedge, <i>yellow</i></p>	<p>Notes: <b>Roundup Xtend with VaporGrip Technology Herbicide</b> applied at 3.75 L/ha will provide residual suppression of annual broadleaf weeds (see weeds listed for residual control at the bottom of this table).</p>	
<p><b>All weeds listed above plus,</b> mustard (<i>hare's ear, Indian, tumble, wormseed</i>) pigweed, <i>Russian</i> ragweed (<i>false, giant</i>)</p> <p><b>short term residual activity on annual broadleaved weeds:</b> buckwheat, <i>wild</i> lamb's-quarters, <i>common</i> pigweed, <i>redroot</i> ragweed, <i>common</i> velvetleaf<sup>6</sup></p>	<p><b>Roundup Xtend with VaporGrip Technology Herbicide applied at 5 L/ha</b></p>	<p>See notes above for application details.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• The 5 L/ha rate is to be used only once in a season and should be applied pre-plant, pre-emergence or early post-emergence (spike to 5-leaf corn).</li> </ul>

**Application footnotes for annual weeds:**

1. Post-emergence application only, up to 8 cm in height.
2. Sequential applications may be required for the control of round-leaved mallow.
3. Apply when adzuki beans are at the unifoliate to 4<sup>th</sup> trifoliate leaf stage. For late flushes emerging after the initial treatment, **Roundup brand agricultural herbicides that do not contain dicamba** may be applied at 1.67 L/ha when the adzuki beans are in the unifoliate to 4<sup>th</sup> trifoliate leaf stage and actively growing.
4. Two applications when the bur cucumber is at the 1 to 18 leaf stage. Applications should be at least 2 weeks apart for best results.
5. One application applied when biennial wormwood is at the 2-8 leaf stage and actively growing.
6. Provides suppression only of velvetleaf.

**Notes on perennial weed control:**

Rate	Perennial weeds	Notes*
<b>Roundup Xtend with VaporGrip Technology Herbicide</b> 2.5 L/ha	dandelion	Suppression only.
	foxtail barley	Sequential applications are required.
	sow-thistle, <i>perennial</i>	Single application provides suppression. Sequential applications provides control.
	thistle, <i>Canada</i>	Single application provides suppression. Sequential applications provides control.
<b>Roundup Xtend with VaporGrip Technology Herbicide</b> 3.75 L/ha – 5 L/ha	bindweed, <i>field</i>	Sequential applications provides control.
	dandelion (up to and including bloom)	Single application applied pre-plant or pre-emergence provides control. The addition of <b>Roundup brand agricultural herbicides that do not contain dicamba</b> at 900 g ae/ha (0.67 L/acre) will improve control in heavy infestations and on dandelions greater than 15 cm.
	foxtail barley	Single application provides control.
	milkweed, <i>common</i> (15-60 cm)	Single application provides suppression only. Sequential applications provides control.
	muhly, <i>wire-stemmed</i> (10-20 cm)	Single application provides control
nutsedge, <i>yellow</i> (5-15 cm)	Single application provides	

		suppression only. Sequential applications provides control.
	sow-thistle, <i>perennial</i> (rosette to 50 cm)	Provides control
	thistle, <i>Canada</i> (rosette to 50 cm)	Provides control

\*For sequential applications, ensure the crop has not advanced beyond the recommended growth stage. The sequential application should be applied at least two weeks after the first application. The 5 L/ha rate is to be used only once in a growing season. Do not exceed the maximum season total of 10 L/ha.

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