



Engarde™ Herbicide

GROUP	2	HERBICIDE
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GROUP	27	HERBICIDE
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WETTABLE GRANULES

REGISTRATION NO. 31595 PEST CONTROL PRODUCTS ACT

FOR SALE FOR USE ON FIELD CORN IN EASTERN CANADA

COMMERCIAL (AGRICULTURAL)

READ THE LABEL AND ATTACHED BOOKLET BEFORE USING

ACTIVE INGREDIENTS: Rimsulfuron 4.31%
Mesotrione 41.38%

Warning, contains the allergens milk and sulfites

NET CONTENTS: 139.2 grams - 1000 KG

Corteva Agriscience Canada Company

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Calgary, AB

T2C 5G9

1-800-667-3852

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PRECAUTIONS

- KEEP OUT OF REACH OF CHILDREN
- Avoid breathing spray mist.
- Avoid contact with skin, eyes and clothing.
- Do not contaminate any body of water.
- **DO NOT** apply by air.
- Wash the outside of the gloves before removing. Wash splashes from skin and eyes IMMEDIATELY with plenty of water.
- Avoid working in spray mist. After spraying, wash hands and shower thoroughly with soap and water.
- While using product, do not eat, drink or smoke. Wash hands and exposed skin with soap and water thoroughly before eating, drinking, smoking, applying cosmetics or using the toilet.
- **DO NOT** enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours after application.
- Apply only when the potential for drift beyond the area to be treated is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

PERSONAL PROTECTIVE EQUIPMENT

Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, clean-up and repair. In addition, wear protective eyewear (goggles or face shield) and a NIOSH-approved N95 (minimum) filtering facepiece respirator (dust mask) that is properly fit tested during mixing, loading, clean-up and repair. Gloves are not required during application within a closed cab.

IMPORTANT

Injury to or loss of desirable trees or vegetation may result from failure to observe the following: Do not apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of spray to desirable plants. Do not contaminate any body of water, including irrigation water. Keep from contact with fertilizers, insecticides, fungicides and seeds.

Carefully observe sprayer cleanup instructions, as spray tank residue may damage crops other than corn.

FIRST AID

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

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 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.

ENVIRONMENTAL PRECAUTIONS

- TOXIC to small wild animals, non-target terrestrial plants and aquatic organisms. Observe spray buffer zones specified under DIRECTIONS FOR USE.

- This product demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this product in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.
- 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 filter strip between the treated area and the edge of the water body.

TOXICOLOGICAL INFORMATION: Treat symptomatically.

GENERAL INFORMATION

Engarde Herbicide is a wettable granule formulation to be mixed in water and applied pre-emergence or early post, up to the 2-leaf stage of field corn in Eastern Canada. Engarde Herbicide has soil residual activity and provides selective control or suppression of annual broadleaf weeds and annual grass weeds as well as quackgrass in field corn. When applied early post, Engarde Herbicide is absorbed through the leaves and is rapidly translocated to the plant's growing points.

DIRECTIONS FOR USE

- Make only one application per year.
- Apply with ground equipment only.
- 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.

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) medium classification. Boom height must be 60 cm or less above the crop or ground.

SPRAY BUFFER ZONES

The spray 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, rangelands, riparian areas and shrublands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

Method of application	Spray Buffer Zones (metres) Required for the Protection of:		
	Terrestrial Habitat	Aquatic habitats of depths:	
		Less than 1 m	Greater than 1 m
Field sprayer	5	1	1

When tank mixes are permitted, consult the labels of the tank-mix partners and observe the largest (most restrictive) spray 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 spray buffer zones for this product can be modified based on weather conditions and spray equipment configuration by accessing the Spray Buffer Zone Calculator on the Pesticides portion of the Canada.ca.

ENVIRONMENTAL CONDITIONS AND BIOLOGICAL ACTIVITY

- A rapid fluctuation in temperature (greater than 20°C difference within 24-36 hours) will stress the corn crop. For maximum crop safety, allow 48-72 hours for the corn to acclimatize before spraying Engarde Herbicide as an early postemergent application on emerged corn.
- For Engarde Herbicide applied early postemergent used alone or in a tank mix, apply **ONLY** when the temperature in the 24 hours before **AND** after application ranges between 5°C and 28°C. Temperatures beyond this range increase the potential for crop injury.
- **WARNING:** Crop injury including bleaching may result if application is made to corn that has been stressed by abnormally hot, humid or cold weather conditions, frost, low fertility, drought, water saturated soil, compacted soil, previous pesticide applications, disease or insect damage. If corn has been injured by frost, wait 48-72 hours before applying Engarde Herbicide.
- Engarde Herbicide rapidly stops growth of susceptible species; typical symptoms usually appear within 5-7 days, but may not be noticeable for 2-3 weeks after application, depending on growing conditions and weed susceptibility.
- Warm, moist conditions following application promote the activity of Engarde Herbicide, while cool and/or dry conditions may reduce or delay activity. Weeds hardened off by cold weather or drought stress may not be controlled.

CORN HYBRID SENSITIVITY

Some corn hybrids with corn-heat-unit (CHU) ratings of 2500 or less have shown some sensitivity to postemergent applications of Engarde Herbicide. **DO NOT APPLY** Engarde Herbicide as an early postemergent application **ON CORN HYBRIDS WITH CHU RATINGS OF 2500 OR LESS OR IN GEOGRAPHIC REGIONS HAVING 2500 OR LESS AVERAGE SEASONAL CORN HEAT UNITS.**

Most commercial field corn hybrids of 2550 CHU or greater have excellent tolerance to postemergent applications of Engarde Herbicide. Growers are advised to contact their seed corn supplier to determine herbicide tolerance ratings on specific hybrids.

Engarde Herbicide should not be sprayed for weed control in fields planted with these hybrids.

PIONEER Brand 3897
PIONEER Brand 3936
PIONEER Brand 3941
MAX 78
G-4120
G-4034
G-4160
Pickseed 2525

Do not use on sweet corn. Do not use on seed corn.

ENGARDE HERBICIDE ON FIELD CORN IN EASTERN CANADA ONLY

SPRAY ADJUVANTS

For early postemergent applications, Engarde Herbicide must be tank-mixed with a non-ionic surfactant (such as Citowett Plus, Agral 90 or Ag-Surf), at 2 L per 1000 L spray solution (0.2% v/v).

PRE-EMERGENT AND EARLY POSTEMERGENT APPLICATION

Apply Engarde Herbicide at 348 grams/hectare as a broadcast spray, pre-emergence and up to 2 leaf stage of corn.

Pre-emergent application of Engarde Herbicide will control the following weeds:

Barnyard Grass	Green Foxtail
Large (Hairy) Crabgrass†	Yellow Foxtail†
Common Ragweed†	Lamb's-quarters
Redroot Pigweed	Velvetleaf
Wild Mustard	

Early post emergent application of Engarde Herbicide (up to 2 leaf stage of corn) will control the weeds listed above plus:

Fall Panicum	Old-witch Grass
Quackgrass† ¹	Volunteer Canola ²

†Suppression only. Weed suppression is a visual reduction in weed competition (reduced population or vigour) as compared to an untreated area. Degree of suppression will vary with size of weed and environmental conditions prior to and following treatment.

¹ Quackgrass - Apply Engarde Herbicide with a recommended surfactant postemergent when the majority of the quackgrass shoots are actively growing and in the 3 to 6 leaf stage (< 25 cm - leaf extended). Application to quackgrass prior to the 3 to 6 leaf stage may result in reduced weed control since the majority of shoots may not have emerged.

² For control of volunteer canola, including glyphosate tolerant varieties, apply Engarde™ Herbicide as a broadcast spray, with a recommended surfactant to corn pre-emergent or post-emergent and when the volunteer canola is between the cotyledon and 5-leaf stage.

ENGARDE HERBICIDE WITH 28% UAN SOLUTION AS A CARRIER – PREEMERGENCE APPLICATIONS ONLY

Apply Engarde Herbicide at 348 grams per hectare in 400 L/ha of 28 % urea ammonium nitrate solution. This is for pre-emergence applications only. Applications to emerged corn may result in severe crop injury.

MIXING INSTRUCTIONS

1. Fill clean tank about 1/3 full with fresh water.
2. Turn on full agitation.
3. With the agitator running, add the required amount of Engarde Herbicide. Continue to agitate for a minimum of 5 minutes to ensure that Engarde Herbicide is **completely** dispersed.
4. Once granules are dispersed continue to fill the tank to 2/3 to 3/4 full, then add the required amount of the tank mix partner.
5. After Engarde Herbicide has been well mixed and is in suspension, add a recommended non-ionic surfactant such as Citowett Plus, Agral 90, or Ag-Surf at 2 L per 1000 L spray solution (0.2 % v/v).
6. Fill the remainder of the spray tank.
7. For repeat tank loads, reduce the material remaining in the tank to 10% of the original volume **or less** before proceeding with step 1, because remaining chemicals may prevent Engarde Herbicide granules from completely dissolving. If this is not possible, pre-slurry Engarde Herbicide in a small amount (5-10 L) of water before adding to the tank.

Agitation is required for uniform mixing and application. The optimum water volume for Engarde Herbicide application is 140 - 200 litres of water per hectare (minimum of 100 litres of water per hectare). Use a spray pressure of 175 - 275 kPa. Flat fan nozzles are recommended. Use 50 mesh filter screens or larger. Use spray preparation of Engarde Herbicide within 24 hours or product degradation may occur resulting in a loss of weed control. Use vigorous agitation to thoroughly disperse spray mixtures that have been allowed to stand in the tank.

NOTE: Engarde Herbicide will degrade in acidic or highly alkaline water. Mix no more than can be used in one day. If spraying is interrupted, thoroughly re-agitate the spray mixture before resuming spraying.

Engarde Herbicide may be mixed with water or pre-slurried in water and added to 28% UAN solution for pre-emergence application.

MIXING INSTRUCTIONS FOR ENGARDE HERBICIDE WITH 28% UAN SOLUTION AS A CARRIER

1. Mix the required amount Engarde Herbicide in sufficient water in a bucket to prepare a slurry and dissolve the herbicide granules.
2. Fill sprayer tank about half full with 28% UAN solution and turn on agitator.
3. Slowly add the Engarde Herbicide slurry to the sprayer tank, while continuing agitation.
4. After Engarde Herbicide has been well mixed and is in suspension, add other tank-mix products.
5. Add the remaining 28 % UAN solution with the agitator running.
6. A surfactant is not required for this treatment.

On repeat tank loads, ensure that the amount of spray solution left in the tank from the previous load is less than 10% of the volume about to be mixed.

Agitation is required for uniform mixing and application. Use spray preparation of Engarde Herbicide within 24 hours or product degradation may occur resulting in a loss of weed control. Use vigorous agitation to thoroughly disperse spray mixtures that have been allowed to stand in the tank.

Tank Mixtures

This product may be tank mixed with a fertilizer, a supplement, or with registered pest control products, whose labels also allow tank mixing, provided the entirety of both labels, including Directions For Use, Precautions, Restrictions, Environmental Precautions, and Spray Buffer Zones are followed for each product. In cases where these requirements differ between the tank mix partner labels, the most restrictive label must be followed. Do not tank mix products containing the same active ingredient unless specifically listed on this label.

In some cases, tank mixing pest control products can result in reduced pesticide efficacy or increased host crop injury. The user should contact Corteva Agriscience Canada Company at 1-800-667-3852 or www.corteva.ca for information before applying any tank mix that is not specifically recommended on this label.

SPRAYER CLEANUP

To avoid subsequent injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of Engarde Herbicide as follows:

1. Drain tank and flush tank, boom and hoses with clean water. If boom is equipped with multiple nozzle bodies, be sure to rotate through all nozzles to ensure clean water reaches all parts of these assemblies.
2. Visually inspect tank to ensure removal of all visible herbicide residues. If necessary, repeat Step 1.
3. Fill the tank with clean water, and then add 1 litre household AMMONIA (containing minimum of 3% ammonia) or equivalent amount of a sprayer tank cleaner containing ammonia, per 100 litres of water. Ammonia will not neutralize the herbicide, but helps dissolve dried – on herbicide deposits. If an emulsifiable concentrate has been tank mixed with Engarde Herbicide, use of a wetting agent in the cleaning process will assist in removing oily residue that may trap Engarde Herbicide on the tank and hoses.
4. Flush solution through boom and hoses, and then add more water to completely fill tank. Allow to sit for 15 minutes with agitation.
5. Drain the tank.
6. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.

7. Thoroughly rinse the tank with clean water for a minimum of 5 minutes, flushing water through the hoses and boom.
8. Prior to using the sprayer for the next application, flush the tank, boom, and hoses for 5 minutes with fresh water.

CAUTION: DO NOT mix ammonia with chlorine bleach. Using ammonia with chlorine bleach will release a gas with a musty chlorine odour which may cause eye, nose, throat and lung irritation. DO NOT clean equipment in an enclosed area. DO NOT clean the sprayer near desirable vegetation, wells or other water sources.

USE OF INSECTICIDES

For maximum crop safety, Engarde Herbicide should be applied only to corn which has NOT been treated with a highly systemic organophosphorus soil insecticide or carbamate insecticide. DO NOT tank mix Engarde Herbicide with any organophosphorus insecticide. DO NOT apply a foliar organophosphorus insecticide or carbamate insecticide within 7 days before or after applying Engarde Herbicide.

REPLANTING TO OTHER CROPS

Engarde Herbicide is degraded by natural soil processes however, certain crops have been shown to be sensitive to low residues of Engarde Herbicide. Field tests have shown that the following crops may safely be planted at the prescribed interval following corn that has been treated with Engarde Herbicide

CROP	REPLANTING INTERVAL
Winter Wheat	4 months
Field Corn	10 months
Soybeans, white beans	11 months
Potatoes	11 months

For other crops, a field bioassay is recommended before planting. A successful field bioassay means growing to maturity a test strip of the crop(s) intended for production the following year.

FIELD BIOASSAY

Select a representative area or areas of the field previously treated with Engarde Herbicide to plant your bioassay crop(s). Be sure to consider factors such as size of field, soil texture, drainage and turn-around areas when selecting the site(s) that are most representative of the soil conditions in the field. On large fields, more than one site may be needed in order to obtain reliable results.

Plant the test strips perpendicular to the direction in which the field was sprayed. The strips should be long enough to cross the width of several spray swaths. Large test strip areas are more reliable than small ones.

Use standard tillage and seeding equipment to plant the bioassay. Prepare a seed bed and plant the crops and varieties you want the option of growing the following year. It is important to use the same planting time, conditions, techniques and cultural practices you normally use to plant and grow the bioassay crop(s). Also plant into an adjacent area not treated with Engarde Herbicide to use as a comparison.

As the crop(s) emerges and grows, examine these key points in Engarde Herbicide treated and non-treated areas:

crop stand	root development	rate of growth
plant colour and vigour	yield	

Allow the bioassay crop(s) to grow to maturity while making your observations. Do not overspray the test strips with herbicides that may damage the bioassay crop(s). If the bioassay indicates that Engarde Herbicide residues are still present, continue cropping only to those crops listed on the label and do not rotate to other crops until bioassay results indicate that susceptible crops are growing normally.

USE PRECAUTIONS

Do not apply Engarde Herbicide during periods of intense rainfall or to soils saturated with water. Do not apply directly to standing or running water. Do not apply in areas where surface water from the treatment site can run off to adjacent cropland, either planted or to be planted, or into streams, irrigation water or wells. Applications should only be made when there is no hazard of spray drift contaminating non-target land areas since very small quantities of the Engarde Herbicide spray solution may severely injure susceptible crops during both growing and dormant periods.

As with any herbicide, overlaps or starting, stopping, slowing and turning while spraying may result in crop injury.

Crop injury may result if application is made to corn that has been stressed by abnormally hot, humid or cold weather conditions, frost, low fertility, drought, water saturated soil, compacted soil, previous pesticide applications, disease or insect damage. Temporary crop injury may occur. The symptoms are most visible where excessive rates have been applied, such as sprayer overlaps. Corn quickly outgrows these effects and continues to grow normally.

Do not apply to soils that contain less than 1% or more than 10% organic matter.

Under extreme weather conditions, such as hot, dry weather, excessive moisture, or frost, weed control may be reduced. Optimum control of emerged weeds will be obtained when weeds are actively growing.

Dry conditions following application may reduce the preemergent activity of Engarde Herbicide. If an activating rain (12 mm) is not received within 7-10 days after a preemergent application, rotary hoeing is suggested to activate the herbicide.

Severe injury and crop yield loss may occur if Engarde Herbicide is applied to crops that are treated with organophosphorus soil insecticide or carbamate insecticide.

Do not cultivate corn within 7 days before or after a postemergent Engarde Herbicide application.

Rainfall within 2 to 4 hours after postemergent applications of Engarde Herbicide may reduce weed control.

Because corn hybrids differ in their tolerance to herbicides, limit first use of Engarde Herbicide to a small area of each hybrid prior to adoption as a field practice.

Engarde Herbicide must not be applied within 100 days of harvest.

Make only one application of Engarde Herbicide per year.

CAUTION: Do not graze the treated crop or cut for hay; sufficient data are not available to support such use.

RESISTANCE-MANAGEMENT RECOMMENDATIONS

For resistance management, Engarde Herbicide is a Group 2 and Group 27 herbicide. Any weed population may contain or develop plants naturally resistant to Engarde Herbicide and other Group 2 or Group 27 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 Engarde Herbicide or other Group 2 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 your local Corteva Agriscience Canada Company representative or the Corteva Agriscience Canada Company hotline at 1 800 667 3852 for further information.

STORAGE

Store this product away from food or feed. Store product in original container only, away from other pesticides and fertilizer. Not for use or storage in or around the home. Keep container closed. Keep product container away from moisture. DO NOT use or store product near heat or open flame.

DISPOSAL

Recyclable Container

DO NOT reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

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

If there is no container collection site in your area, dispose of the container in accordance with provincial/territorial requirements.

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

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. The user assumes the risk to persons or property that arises from any such use of this product.

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Specimen Label Notes:

PPE and general update