

2020-1059  
2020-06-12

<b>GROUP</b>	<b>1B</b>	<b>INSECTICIDE</b>
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# NUFOS<sup>®</sup> 4E

**INSECTICIDE - AGRICULTURAL**

**Emulsifiable Concentrate**

**This product is not to be used in and around homes or other residential areas such as parks, school grounds, playing fields. It is not for use by homeowners or other uncertified users.**

**SKIN AND EYE IRRITANT**

**DANGER (Skull & Crossbones) POISON**

**ACTIVE INGREDIENT:** chlorpyrifos 480 g/L

**KEEP OUT OF REACH OF CHILDREN.**

**EMERGENCY TELEPHONE NUMBER**

<b>IN CASE OF EMERGENCY, CALL 1-800-331-3148 (24 HOURS)</b>
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**READ THE LABEL AND ATTACHED BOOKLET BEFORE USING**

REGISTRATION NUMBER 25831  
PEST CONTROL PRODUCTS ACT

**NET CONTENTS: 10L and up to Bulk**

FMC of Canada Limited  
6755 Mississauga Road, Suite 204  
Mississauga, ON L5N 7Y2  
1-833-362-7722

Label

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#### **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.

#### **FIRST AID**

In case of poisoning, call a physician or poison control centre IMMEDIATELY. Have person lie down and keep quiet. 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. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give any liquid to the person. 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 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.

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

#### **TOXICOLOGICAL INFORMATION**

Chlorpyrifos is an organophosphate that is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing respiratory and cardiac depression. Typical symptoms of overexposure to cholinesterase inhibitors include headache, nausea, dizziness, sweating, salivation, runny nose and eyes. This may progress to muscle twitching, weakness and tremor in coordination, vomiting, abdominal cramps and diarrhea in more serious poisonings. A lifethreatening poisoning is signified by loss of consciousness, incontinence, convulsions and respiratory depression with a secondary cardiovascular component. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate degree of exposure (baseline data are useful). **ANTIDOTE:** Atropine, only by injection, is the preferable antidote. Administer atropine sulphate in large doses; TWO or FOUR mg intravenously or intramuscularly as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear. Oximes, such as pralidoxime chloride, may be therapeutic if used early; however, use only in conjunction with atropine. **DO NOT GIVE MORPHINE OR TRANQUILIZERS.** In cases of severe acute poisoning, use antidotes immediately after establishing an open airway and respiration. With oral exposure, the decision of whether to induce vomiting or not should be made by an attending physician. At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Continued absorption of chlorpyrifos may occur and relapse may occur after initial improvement. **VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.**

NOTE: Product contains a petroleum distillate solvent. Vomiting may cause aspiration pneumonia.

#### **PRECAUTIONS**

##### **KEEP OUT OF REACH OF CHILDREN AND UNAUTHORIZED PERSONNEL**

Fatal if swallowed. May be harmful if inhaled or absorbed through skin. Causes eye irritation. May cause skin irritation. Do not get in eyes, on skin, or on clothing. Do not inhale vapours or spray mist. Handle chemical in a ventilated area. Wear protective clothing and rubber gloves when handling. Wash thoroughly with soap and water after handling and before eating, drinking, or smoking. Remove contaminated clothing and launder separately before reuse. Do not wear contaminated shoes or boots. Keep away from food, feedstuffs, and water supplies.

#### **ENVIRONMENTAL AND USE PRECAUTIONS**

This pesticide contains a petroleum distillate and is extremely toxic to fish and aquatic organisms, toxic to birds and wild mammals. This pesticide is TOXIC to bees exposed to direct treatment, drift, or residues on blooming plants. Do not use on flowering crops or weeds. **DO NOT** apply this product or allow it to drift to flowering crops or weeds if bees are visiting the treatment area. Applicators should inform local bee keepers prior to application if hives are in adjacent fields. Minimize spray drift to reduce harmful effects on bees in habitats close to the application site. TOXIC to certain beneficial insects. Minimize spray drift to reduce harmful effects on beneficial insects in habitats next to the application site such as hedgerows and woodland. Avoid contamination of aquatic systems such as lakes, streams, ponds, estuaries, oceans, or other waters during application. Do not contaminate these systems through direct

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application, disposal of waste, or cleaning of equipment. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Spilled material should be soaked up with absorbent material and disposed of in an approved manner. 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 or fine textured such as clay). Avoid application of this product when heavy rain is forecast. Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip (buffer zone) between the treated area and the edge of the water body. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact the provincial regulatory authority or the manufacturer.

#### **STORAGE**

**Keep away from food, drinks, and animal feedstuffs. Keep only in the original container, tightly closed. Do not store near heat or open flame.**

Do not contaminate water, food or feed by storage. Store only in original container in secure, dry storage area. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 38°C (100°F) for extended periods of time. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

#### **DECONTAMINATION AND DISPOSAL**

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

##### **For returnable containers:**

Do not reuse this container for any purpose. For disposal, this empty container may be returned to the point of purchase distributor/dealer).

##### **For refillable containers:**

For disposal, this container may be returned to the point of purchase (distributor/dealer). It must be refilled by the distributor/dealer with the same product. Do not reuse this container for any other purpose.

##### **For recyclable containers:**

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 requirements.

**IN CASE OF A MEDICAL EMERGENCY, CALL TOLL FREE,  
DAY OR NIGHT: 1-800-331-3148**

® NUFOS is a registered trademark of FMC Corporation or an affiliate.

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<p style="text-align: center;"><b>IN CASE OF A MEDICAL EMERGENCY, CALL TOLL FREE, DAY OR NIGHT: 1-800-331-3148</b></p>
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#### **GENERAL INFORMATION**

NUFOS 4E INSECTICIDE is active against various insect pests by contact and ingestion. It is not systemic in the plant. Treatment

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of plants that are under extreme drought stress may result in some crop damage. The active ingredient in this product is decomposed by sunlight.

#### PRECAUTIONS FOR USE

**Do not spray under windy conditions or from spraying equipment which could be expected to cause spray drift onto nearby crops or pastures. Do not mix with other pesticides when used on vegetables. Compatible with most commonly used pesticides except those that are alkaline. Do not add any additional adjuvants, surfactants, or spreader-stickers.**

#### PRECAUTIONS FOR MIXERS/LOADERS

##### **For liquid formulations packaged in containers more than 10 L**

Mixers/loaders must use a closed mechanical transfer loading system.

Mixers/loaders must wear:

- coveralls over a long-sleeved shirt and long pants;
- chemical-resistant gloves;
- an air purifying respirator with an -R or -P series filter; and
- socks and shoes.

##### **For liquid formulations packaged in containers holding 10 L or less**

Mixers/loaders must wear:

- coveralls over a long-sleeved shirt and long pants;
- chemical-resistant gloves;
- a chemical-resistant apron;
- chemical-resistant footwear plus socks; and
- an air purifying respirator equipped with an -R or -P series filter.

#### PRECAUTIONS FOR APPLICATORS

Do not apply with high-pressure handwand equipment.

Applicators using airblast equipment with a closed cab must wear:

- a long-sleeved shirt and long pants
- socks and shoes
- chemical-resistant gloves when leaving cab for clean-up and repair (gloves must be removed and left outside when re-entering the cab)

Applicators using airblast equipment with an open cab must wear:

- a long-sleeved shirt and long pants
- chemical-resistant coveralls and head protection
- socks and shoes
- chemical-resistant gloves
- an air purifying respirator with an -R or -P series filter

##### **Applicators using ground application equipment with a closed cab must wear:**

- a long-sleeved shirt and long pants;
- chemical-resistant gloves when leaving cab for clean-up and repair (gloves must be removed and left outside when re-entering the cab); and
- socks and shoes.

##### **Applicators using ground application equipment with an open cab must wear:**

- coveralls over a long-sleeved shirt and long pants;
- chemical-resistant gloves; and

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- socks and shoes.

**Applicators using aerial application equipment must use enclosed cockpits and must wear:**

- a long-sleeved shirt and long pants; and
- socks and shoes.

**Applicators using handheld equipment must wear:**

- a long-sleeved shirt and long pants;
- chemical-resistant coveralls and head protection (if spray is upwardly directed);
- chemical-resistant footwear and socks;
- chemical-resistant gloves; and
- an air purifying respirator with an -R or -P series filter.

**DIRECTIONS FOR USE**

**MIXING:** To prepare the spray, add approximately 1/4 of the required amount of water to the clean spray tank, add required quantity of product and mix well. Complete filling the tank with the balance of the water needed.

Do not allow the pesticide to come into contact with the water intake pipe. Maintain sufficient agitation during both mixing and application to ensure uniformity of the spray mixture.

To avoid injury to the crop, mix only with pesticides listed on this label.

**For all applications: DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty.

**For aerial applications: DO NOT** apply when wind speed is greater than 16 km/h at flying height at the site of application. The nozzle type is restricted to CP®, with the following set-up restriction:

<b>Nozzle Type Restriction</b> CP® <b>DO NOT</b> use greater than 30° deflection
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**For airblast applications:** Airblast applications are only permitted on peaches and nectarines. **DO NOT** direct spray above plants to be treated. Turn off outward pointing nozzles at row ends and outer rows. **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.

**Buffer Zones**

The buffer zones specified in the following tables are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands), estuarine habitats and marine habitats.

**Aerial Applications**

For all aerial applications, a buffer zone of 100 metres is required for the protection of aquatic habitats.

**Field Sprayer Applications**<sup>1,2</sup>

Rate of Application (L/ha)	Buffer Zones (metres) Required for the Protection of Aquatic Habitats With Water Depths Of:		
	< 1 metre	1–3 metre	> 3 metre
Up to 1.2	50	40	30
Greater than 1.2, and less	55	45	35



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than or equal to 2.4			
Greater than 2.4 and up to 4.8	60	50	40

1. For field sprayer application, buffer zones can be reduced with the use of drift reducing spray shields. When using a spray boom fitted with a full shield (shroud, curtain) that extends to the crop canopy or ground, the labelled buffer zone can be reduced by 70%. When using a spray boom where individual nozzles are fitted with cone-shaped shields that are no more than 30 cm above the crop canopy or ground, the labelled buffer zone can be reduced by 30%.

2. Buffer zones are not required for treatments applied as a drench (i.e., drench applications for control of cabbage maggot, onion maggot and seedcorn maggot).

**Airblast Applications**

Rate of Application (L/ha)	Buffer Zones (metres) Required for the Protection of Aquatic Habitats With Water Depths Of:		
	< 1 metre	1–3 metre	> 3 metre
Up to 3.6	80	70	55

**AERIAL APPLICATION**

**Directions for use:** Crops and rates for control of various insects are given in the table below. Uniform coverage of the crop and crop canopy is essential. Use a boom and nozzle configuration which provides optimum coverage.

Apply only by fixed-wing or rotary-wing aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions, and precautions are product specific. Read and understand the entire label before opening this product.

Apply only at the rate recommended for aerial application on this label. Where no rate for aerial application appears for the specific use, this product may not be applied by any type of aerial equipment.

Ensure uniform application. To avoid streaked, uneven, or overlapped applications, use appropriate marking devices.

**Aerial Use Precautions**

Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Apply only under conditions of good practice specific to aerial application as outlined in the National Aerial Pesticide Application Manual, developed by the Federal/Provincial/Territorial Committee on Pest Management and Pesticides.

Do not apply to any body of water. Avoid drifting of spray onto any body of water or other non-target areas. Specified buffer zones should be observed.

Coarse sprays are less likely to drift. Therefore, avoid combinations of pressure and nozzle type that will result in fine particles (mist). Do not apply in periods of dead calm or when wind velocity and direction pose a risk of spray drift. Do not spray when wind is blowing toward a nearby sensitive crop, garden, terrestrial habitat such as shelterbelt, or aquatic habitat.

**Operator Precautions**

Do not allow the pilot to mix chemicals to be loaded onto the aircraft. Loading of premixed chemicals with a closed system is permitted. It is desirable that the pilot have communication capabilities at each treatment site at the time of application.

The field crew and the mixer-loaders must wear chemical-resistant gloves, coveralls, and goggles or face shield during mixing/loading, cleanup, and repair. Follow the more stringent label precautions in cases where the operator precautions exceed the generic label recommendations of the existing ground-boom label.

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit,

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and vehicle cabs must be decontaminated regularly.

#### **Product Specific Precautions**

Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-331-3148, or obtain technical advice from the distributor or your provincial agricultural representative. Application of this specific product must meet and/or conform to the following:

VOLUME: Apply the recommended rate in a minimum spray volume of 20 litres per hectare.

**DO NOT** apply this product directly to aquatic habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, ditches and wetlands), estuaries habitats or marine habitats.

**DO NOT** contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

Application by aircraft is permitted only where specified in the directions for use.

A plantback interval of 30 days must be observed between application and planting of rotational crops, with the exception of radish, Chinese cabbage, pak choi and cole crops for which no plantback restriction is required.

#### **TANK MIX COMBINATIONS WITH HERBICIDES**

NUFOS 4E INSECTICIDE can be tank mixed with the herbicides listed below for wheat, oats, and barley. The mixture will control insect pests as well as grassy or broadleaf weeds as recommended on the labels of the products used.

Read carefully and follow all use directions and use precautions on both the NUFOS 4E INSECTICIDE label and the label of the herbicide to be used for tank mixing. Failure to follow the rates of use and timing of application as recommended for each product will result in unsatisfactory control of the insect or weed target pest.

When tank-mixing with the following herbicides, always add herbicide to the partially water-filled spray tank, then add the NUFOS 4E INSECTICIDE, then add the remaining water:

AVENGE 200-C*	BUCTRIL M*	MCPA Ester	TORDON 202 C*
BANVEL*	GLEAN*	MCPA Amine	2,4-D Ester
2,4-D Amine			

#### **SOIL APPLICATIONS**

Crops and rates for control of various insects are given below. The higher rate should be used when soil surface is extremely dry or the insect infestation is heavy. When pre-plant soil applications are being made to muck soils, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.

#### **FOLIAR APPLICATIONS**

Crops and rates for control of various insects are given below. Best results will be obtained when application is made during the early evening. Apply as a broadcast application in sufficient water to ensure thorough coverage of the foliage.

#### **RESTRICTED ENTRY INTERVALS**

The Restricted Entry Interval is 24 hours for all crops except as noted:

Tree nuts:	2 days
Cauliflower:	10 days

CROP	INSECTS	METHOD OF APPLICATION, RATES AND RECOMMENDATIONS
Barley Wheat Oats		Do not apply more than once per season to barley or wheat. Do not apply within 60 days of harvest. Application is permitted by ground application equipment or aircraft where specified. Do not enter treated fields until 1 day after application.
	Armyworms (including bertha armyworm) Army cutworms Darksided cutworms Pale western cutworms Redbacked cutworms	Apply 0.875 L – 1.2L in 50–200 L of water/ha for ground application equipment or in 10–30 L/ha for aircraft. Apply to soil or foliage. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.
	Grasshoppers	Apply 0.580L – 0.875L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply as a broadcast foliar spray. Use the low rate for juvenile grasshoppers and the high rate for adults. Treat adjacent ungrazed and unoccupied areas such as roadsides, rights-of-way and fence lines at the first sign of infestation.
	Brown wheat mites	Apply 0.625L in 50–200 L of water/ha for ground application equipment or in 10–30 L/ha for aircraft. Apply as a foliar spray.
	Russian wheat aphids	Apply 0.500L in a minimum of 100 L of water/ha for ground application equipment or in a minimum of 20 L/ha and maximum of 40 L/ha spray solution for aircraft. Apply as a foliar spray.  Application can be made in spring or fall when aphids exceed the economic threshold. Use a boom configuration that will maximize spray coverage and penetration of the crop canopy.
Wheat	Orange wheat blossom midge	Apply 0.830L – 1.0L in 50–200 L of water/ha for ground application. Apply 1.0L in 10–30 L of water/ha for aerial application. Apply when adults reach the economic threshold and when 25% of the wheat heads have emerged from the boot, but preferably delay spraying until 30% of the crop is flowering. Timing is critical to ensure good control. Applications should be made in the late afternoon or early evening when temperatures exceed 15°C and wind speed is less than 10 km/h. Apply as a foliar spray. Use boom configurations that maximize spray coverage and penetration of crop canopy.
Cucumber Celery		Do not apply more than once per season. DO NOT APPLY BY AIRCRAFT. Do not apply within 70 days of harvest for celery,

Green pepper		40 days of harvest for pepper, or 60 days of harvest for cucumber. Ground application only (do not apply by aircraft). Do not enter treated fields until 1 day after application.
	Black cutworm, darksided cutworm, redbacked cutworm	<p><b>SOIL TREATMENT</b> Apply 2.4L in 200–400 L of water/ha. Apply once as a soil treatment 3–7 days before planting or transplanting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.</p> <p><b>SEEDLING TREATMENT</b> Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray at the 2- to 5-leaf stage of the crop.</p>
Chinese Broccoli		DO NOT APPLY BY AIRCRAFT. Do not apply more than once per season. Ground application only. Do not apply within 21 days of harvest. Do not enter treated fields until 1 day after application.
	Cabbage maggot	Apply 150mL in 800 L/1000 m row. Apply once per season banded over the row 5–7 days after seeding.
Broccoli Brussels sprouts Cabbage Cauliflower Chinese cabbage Pak Choi		<p>DO NOT APPLY BY AIRCRAFT. Ground application only. Do not enter treated fields until 1 day after application for pak choi and Chinese cabbages. Do not enter treated fields until 10 days after application for cauliflower, 1 day after application for all other crops.</p> <p>If no granular chlorpyrifos treatment has been used, do not apply more than twice per season to broccoli, cabbages, cauliflower, Chinese cabbages and pak choi, or three times per season to Brussels sprouts. If granular treatment has been used, do not apply more than once per season to broccoli, cabbages, cauliflower, Chinese cabbages and pak choi, or twice per season to Brussels sprouts. Do not apply within 32 days of harvest for broccoli, Brussels sprouts, cabbages, cauliflower or Chinese cabbages; or within 15 days of harvest for pak choi.</p>
	Cabbage maggot	<p><b>AT-PLANTING TREATMENT:</b> Apply 210mL/1000 m row. Apply one drench spray in 1000 L/ha spray solution, 10 cm on each side of the plant, 7–10 days after seeding or 3 days after transplanting.</p> <p><b>POST PLANTING DRENCH:</b> Mix 1.68L in enough water to make 1000 L of finished spray. Apply 12.5 L of this solution per 100 m of row on soil, 10 cm on each side of the plant. Do not apply to harvestable portions of the crop.</p> <p><b>Row spacing L/ha</b> 30 cm 7.0 60 cm 3.5</p>

		<p>75 cm 2.8 80 cm 2.63 90 cm 2.33 105 cm 2.0</p> <p><b>If no granular treatment was used at seeding:</b> For broccoli, Brussels sprouts, cabbages and cauliflower, apply a drench treatment within 3 days of transplanting (after plant recovery) or 7–10 days after seeding. Repeat 21 days after the transplanting drench or 28 days after the seeding drench.</p>
	<p>Black cutworm, darksided cutworm, redbacked cutworm (for Broccoli, Brussel Sprouts, Cabbage, Cauliflower, Chinese Cabbage)</p>	<p><b>SOIL TREATMENT</b> Apply 2.4L in 200–400 L of water/ha. Apply once, 3–7 days before transplanting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.</p> <p><b>SEEDLING TREATMENT</b> Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as broadcast spray at the 2- to 5-leaf stage of the crop.</p>
Garlic		<p><b>DO NOT APPLY BY AIRCRAFT.</b> Do not apply more than twice per season. Do not apply within 50 days of harvest. Ground application only. Do not enter treated fields until 1 day after application.</p>
	Onion maggot	<p>Apply 3.5L in 1000 L of water/ha. Apply as a drench to the soil over the seedling row.</p>
	<p>Black cutworm, darksided cutworm, redbacked cutworm</p>	<p><b>SOIL TREATMENT</b> Apply 2.4L in 200–400 L of water/ha. Apply once, 3–7 days before transplanting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.</p> <p><b>SEEDLING TREATMENT</b> Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray at the 2- to 5-leaf stage of the crop.</p>
Potato		<p>Ground application only (do not apply by aircraft). Do not apply more than once per season. Do not apply within 7 days of harvest. Do not enter treated fields to conduct scouting, hand weeding or irrigation activities until 1 day after application.</p>
	<p>Colorado potato beetle (larvae), potato flea beetle, tarnished plant bug</p>	<p>Apply 1L in 400–800 L of water/ha as a foliar spray.</p>
	<p>Black cutworm, darksided cutworm, redbacked cutworm</p>	<p><b>SOIL TREATMENT</b> Apply 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray 3–7 days before planting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.</p> <p><b>SEEDLING TREATMENT</b></p>

		Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray when damage first appears.
Rutabaga		DO NOT APPLY BY AIRCRAFT. Ground application only. Do not enter treated fields until 1 day after application. Do not apply within 30 days of harvest. If no granular chlorpyrifos treatment has been used, do not apply more than 4 times per season. If granular chlorpyrifos treatment has been used, do not apply more than 3 times per season.
	Black cutworm, darksided cutworm, redbacked cutworm	<b>SOIL TREATMENT</b> Apply 2.4L in 200–400 L of water/ha. Apply once, 3–7 days before transplanting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.  <b>SEEDLING TREATMENT</b> Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray at the 2- to 5-leaf stage of the crop.
	Cabbage maggot	Apply 210 mL in 125 L of water/1000 m row. Apply as a postplanting drench to soil, 10 cm on each side of the plant. Application rates for different row spacings are as follows:  <b>Row Spacing L/ha</b> 30 cm 7.0 60 cm 3.5 75 cm 2.8 80 cm 2.63 90 cm 2.33 105 cm 2.0  Do not apply to harvestable portions of the crop. If no granular treatment was used at seeding, apply drench treatments at 10, 28, 49 and 70 days after seeding. If granular treatment with a chlorpyrifos insecticide was used at seeding, apply drench treatments at 28, 49 and 70 days after seeding.
Corn, sweet and field (seedling treatment only)		DO NOT APPLY BY AIRCRAFT. Do not apply more than 1 application per season. Do not apply within 70 days of harvest. Ground application only. Do not enter treated fields until 1 day after application.
	Black cutworm, darksided cutworm, redbacked cutworm	<b>SOIL TREATMENT (PREPLANTING)</b> Apply 2.4L in 200–400 L of water/ha. Apply once as a soil treatment 3–7 days before planting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows.  <b>SEEDLING TREATMENT</b> Apply 1.2L – 2.4L in 200–400 L of water/ha. Apply once as a broadcast spray at the 2- to 5-leaf stage of the crop.

Radish		DO NOT APPLY BY AIRCRAFT. Do not apply more than once per season. Ground application only. Do not apply within 21 days of harvest. Do not enter treated fields until 1 day after application.
	Cabbage maggots	Apply 85mL in 380 L of water per 1000 m row. Apply as a drench with seed at planting time.
Asian radish (Lo bok, Daikon)		DO NOT APPLY BY AIRCRAFT. Do not apply more than 3 times per season. Ground application only. Do not apply within 32 days of harvest. Do not enter treated fields until 1 day after application.
	Cabbage maggots	Apply 210mL in 1000 L of water per 1000 m row. Apply as a drench over seeded rows at 7, 20 and 35 days after seeding.
Carrot		DO NOT APPLY BY AIRCRAFT. Ground application only. Do not apply more than once per season. Do not apply within 60 days of harvest. Do not enter treated fields until 1 day after application.
	Black cutworm, darksided cutworm, redbacked cutworm	<p><b>SOIL TREATMENT</b> Apply 2.4L – 4.8L in 200–400 L of water/ha. Apply once per season before planting or transplanting. May also be applied to a 15 m strip adjacent to fence rows. Use the low rate except under conditions of low soil moisture. Use the high rate if the top 1 cm of soil is dry. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.</p> <p><b>SEEDLING TREATMENT</b> Apply 2.4L – 4.8L in 200–400 L of water/ha. Apply as a broadcast spray at the 2- to 5-leaf stage. Use the low rate except under conditions of low soil moisture. Use the high rate if the top 1 cm of soil is dry.</p>
Bulb onion		DO NOT APPLY BY AIRCRAFT. Ground application only. Do not apply more than once per season. Do not enter treated fields until 1 day after application. Do not apply to bunching onions. Do not apply within 60 days of harvest.
	Darksided cutworms Black cutworms Redbacked cutworms	<p><b>SOIL TREATMENT</b> Apply 2.4L – 4.8L in 200–400 L of water/ha. Apply once per season before planting or transplanting. Application is also permitted on a 15 m strip adjacent to fence rows. Use the low rate except under conditions of low soil moisture. Use the high rate if the top 1 cm of soil is dry. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.</p> <p><b>SEEDLING TREATMENT</b> Apply 2.4L – 4.8L in 200–400 L of water/ha. Apply as a broadcast spray at the 2- to 5-leaf stage. Use the low rate except under conditions of low soil moisture. Use the high rate if the top 1 cm of soil is dry.</p>

Canola		Do not apply more than once per season. Do not apply within 21 days of harvest. Application is permitted by ground application equipment or aircraft where specified. Do not enter treated fields until 1 day after application.
	Darksided cutworms Redbacked cutworms Variegated cutworms Pale western cutworms Army cutworms	Apply 0.875L – 1.2L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply to the soil or foliage. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.
	Bertha armyworms Alfalfa loopers Armyworms	Apply 0.750L – 1.0L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply as a foliar spray. Use the higher rate of dilution when infestations are heavy and when the foliage is dense. Spray in the evening to reduce harm to pollinators.
	Diamondback moth larvae	Apply 1.0L – 1.5L in 100–200 L of water/ha for ground application equipment, or in 40 L/ha for aircraft. Apply as a foliar spray. Use the higher rate of dilution when infestations are heavy and when the foliage is dense. Spray in the evening to reduce harm to pollinators.
	Grasshoppers	Apply 0.580L – 0.875L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply as a foliar spray. Use the low rate for the control of juvenile grasshoppers and the high rate for the control of adult grasshoppers. Adjacent ungrazed and unoccupied areas such as roadsides, rights-of-way and fence lines should be treated at the first sign of infestation.
	Lygus bugs	Apply 0.500L – 1.0 L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply as a foliar spray. Use the higher rate of dilution when infestations are heavy and when the foliage is dense. Spray in the evening to reduce harm to pollinators.
Flax		Do not apply more than once per season. Do not apply within 21 days of harvest. Application is permitted by ground application equipment or aircraft where specified. Do not enter treated fields until 1 day after application.



	Darksided cutworms Redbacked cutworms Variegated cutworms Pale western cutworms Army cutworms Armyworms	Apply 0.875L – 1.2 L in 50–200 L of water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply to the soil or foliage.
	Bertha armyworms	Apply once to the soil or foliage. Apply 0.750L - 1.0L in 50–200 L of water/ha for ground application equipment and 10–30 L/ha for aircraft. Apply as a foliar spray. Use the higher rate for larger larvae or when foliage is dense.
Lentils		Application is permitted by ground application equipment or aircraft where specified. Do not apply more than once per season. Do not apply within 21 days of harvest for applications up to 0.875 L/ha. For application greater than 0.875 L/ha, do not apply within 60 days of harvest. Do not enter treated fields until 1 day after application.
	Pale western cutworms	Apply once at seedling stage, when damage is first noticed. Use boom configurations that maximize spray coverage and penetration of the crop canopy. Apply 0.875L – 1.2L in 100–200 L of water/ha for ground application equipment, or in 20 L/ha for aircraft. Apply as a broadcast spray when damage first appears.
	Grasshoppers	Use a boom and nozzle configuration which provides optimum coverage. <u>Foliar applications:</u> Best results will be obtained when application is made during the early evening. Apply as a broadcast application in sufficient water to ensure thorough coverage of the foliage. Use the higher rate when infestations are heavy and when foliage is dense. Apply 0.58L – 1.2L in 50–200 L water/ha for ground application equipment, or in 10–30 L/ha for aircraft. Apply once per year at the flowering to early podding stage of crop. Uniform coverage of the crop and the crop canopy is essential. Use the low rate for the control of juvenile grasshoppers and the high rate for the control of adult grasshoppers. Adjacent ungrazed and unoccupied areas such as roadsides, right-of-ways and fence lines should be treated at the first sign of infestation.
Strawberry		DO NOT APPLY BY AIRCRAFT. Do not apply more than once per season. Ground application only. Do not apply within 20 days of harvest. Do not enter treated fields until 1 day after application.
	Strawberry	Apply 1.2L in 2000 L of water/ha. Apply once as a foliar spray

	cutworms (crown borer)	between June 1 and June 15. Large volumes of water are desirable to ensure full wetting of the crown area of the plants.
Sugarbeet		DO NOT APPLY BY AIRCRAFT. Ground application only. Do not apply more than once per season. Do not apply within 90 days of harvest. Do not enter treated fields until 1 day after application.
	Redbacked cutworms Pale western cutworms	Apply 1.2L – 2.4L in 50–200 L of water/ha. Apply as a broadcast spray to crop seedlings when damage first appears. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.
Sunflower		Application is permitted by ground application equipment or aircraft where specified. Do not apply more than once per season. Do not apply within 42 days of harvest. Do not enter treated fields until 1 day after application.
	Redbacked cutworms Pale western cutworms Army cutworms	DO NOT APPLY BY AIRCRAFT. Ground application only. Apply 1.2L in 50–200 L of water/ha. Apply as a broadcast spray when damage first appears. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm.
	Seed weevils (buchid)	Ground or aerial application. Apply 1.2L in at least 20 L of water/ha. Apply in late July to early August when populations of weevils are observed in the sunflower heads.  <u>Aerial spray:</u> For aerial applications, apply 1.2 L/ha in a maximum of 40 L/ha spray solution using a boom configuration that maximizes spray coverage of the target.
Filbert (hazelnut)		DO NOT APPLY BY AIRCRAFT. Do not apply more than three times per season. Do not apply within 14 days of harvest. Ground application only. Do not enter treated fields until 4 days after application to conduct scouting activities.
	Filbert aphids	Apply 4.2L – 4.8L in 100 L of water/ha. Apply as a foliar spray with ground application only using an airblast sprayer. Direct nozzles of air blast sprayer into the orchard when spraying border rows.
Tobacco		DO NOT APPLY BY AIRCRAFT. For application to field before tobacco is planted or transplanted. Do not apply more than once per season. Ground application only. Do not enter treated fields until 1 day after application.

Darksided cutworms	<p><b>COVER CROP TREATMENT</b> Apply 1.1-1.2 L in 200–400 L of water/ha. Darksided cutworms may feed on the cover crop before spring plough-down. Apply to the area planted to tobacco and to a strip about 15 m into nearby cover crop and fence rows. Application should be made in mid to late April, 4 to 5 days before plough-down. When the rye cover crop is about 15 cm tall, the cutworm larvae will be at the right stage for the best control. Cereals grown for cover crop treated with this insecticide should not be used for human or animal consumption if treated within 60 days of harvest.</p>
Darksided cutworms Black cutworms Redbacked cutworms	<p><b>SOIL TREATMENT</b> Apply 2.4L – 4.8L in 200–400 L of water/ha. Apply once, 3–7 days before planting or transplanting. If the top 1 cm or more of soil is dry, use the higher rate. When preplant soil applications are being made to muck soil, do not incorporate. Incorporation on mineral soils should be no deeper than 5 cm. Also apply to a 15 m strip into adjacent cover crop and to fence rows.</p>

**RESISTANCE MANAGEMENT**

For resistance management, please note that NUFOS 4E INSECTICIDE contains a Group 1B insecticide. Any insect/mite population may contain individuals naturally resistant to NUFOS 4E INSECTICIDE and other Group 1B insecticides/acaricides. The resistant individuals may dominate the insect/mite population if this group of insecticides/acaricides are used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but are specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay insecticide resistance:

- Where possible, rotate the use of NUFOS 4E INSECTICIDE or other Group 1B insecticides/acaricides with different groups that control the same pests in a field.
- Use tank mixtures with insecticides/acaricides from a different group when such use is permitted.
- Insecticide/acaricide use should be based on an IPM program that includes scouting, record keeping, and considers cultural, biological and other chemical control practices.
- Monitor treated pest populations for resistance development.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance contact FMC at 1-800-331-3148 or at [www.fmccrop.ca](http://www.fmccrop.ca).

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