

2020-2344
2021-01-04
[Container Label]

GROUP 4 15 INSECTICIDES

CORMORAN
Insecticide
Emulsifiable Concentrate

For Control or Suppression of Listed Insect Pests on Apple, Potato, Stone Fruits (Crop Group 12-09), Peppers (Bell and Non-Bell), Strawberry, *Brassica* Head and Stem Vegetables (Crop Group 5-13), *Brassica* Leafy Greens (Crop Subgroup 4-13B), Bushberries (Crop Subgroup 13-07B), Sweet corn and alfalfa grown for seed.

AGRICULTURAL

READ THE LABEL BEFORE USING
KEEP OUT OF THE REACH OF CHILDREN

ACTIVE INGREDIENT:
Acetamiprid..... 80 g/L
Novaluron..... 100 g/L

REGISTRATION NO. 33353 PEST CONTROL PRODUCTS ACT

For emergency medical help call PROSAR at 1.877.250.9291 (24 hours a day)
For spill, leak or fire call INFOTRAC at 1.800.535.5053 (24 hours a day)

NET CONTENTS: 1 – 1050 Litres

ADAMA Agricultural Solutions Canada Ltd.
300 – 191 Lombard Avenue
Winnipeg MB R3B 0X1
1-855-264-6262

PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN. Keep out of reach of domestic animals. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** reuse them. Follow manufacturer's instructions for cleaning/maintaining personal protective equipment. If no such instructions for washables, use detergent and hot water. Keep and wash personal protective equipment separately from other laundry. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

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.

Personal Protective Equipment:

Wear a long-sleeved shirt, long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, and clean-up and repair. In addition, wear chemical-resistant headgear during open cab airblast application. Chemical-resistant headgear includes Sou'Wester hat, chemical-resistant rain hat or large brimmed waterproof hat and hood with sufficient neck protection. Gloves are not required during application within a closed cab.

For potato crop, sweet corn and alfalfa seed:

When using more than 7 kg, to a maximum of 19 kg of product per day, workers must wear chemical-resistant coveralls over long-sleeved shirt, long pants, chemical-resistant gloves, and a respirator with a NIOSH-approved organic-vapour-removing cartridge with a prefilter approved for pesticides OR a NIOSH-approved canister approved for pesticides during mixing and loading, and for clean-up and repair.

Restricted Entry Interval:

DO NOT enter or allow worker entry into treated areas during the restricted entry intervals (REIs) specified in the following table:

Crop	Re-entry activities	Restricted entry interval
Apple	Fruit thinning	7 days
	All other activities	12 hours
Potato	All activities	12 hours
Stone Fruit	Fruit thinning	6 days
	All other activities	12 hours
Pepper (Bell and Non-Bell)	All activities	12 hours
Strawberry	All activities	12 hours
Crop Group 5-13	Hand weeding, scouting, tying, training	2 days
	All other activities	12 hours
Crop Group 4-13B	All activities	12 hours
Crop Group 13-07B	All activities	12 hours
Sweet Corn	All activities	12 hours
Alfalfa Grown for Seed	All activities	12 hours

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 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 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.

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

TOXICOLOGICAL INFORMATION

There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient.

ENVIRONMENTAL HAZARDS

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

TOXIC to certain beneficial insects (e.g. predatory mites, parasitoid wasps). Minimize spray drift to reduce harmful effects on beneficial insects in habitats next to the application site such as hedgerows and woodland.

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.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with 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.

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

Toxic to bees exposed to direct treatment, drift, or residues in flowering crops or weeds. **DO NOT** apply this product to flowering crops or weeds if bees are visiting the treatment area. Minimize spray drift to reduce harmful effects on bees in habitats close to application site.

STORAGE

1. Store in original, tightly closed container.
2. **DO NOT** ship or store near food, feed, seed and fertilizers.
3. Store in cool, dry, locked, well-ventilated area without floor drain.
4. Keep away from fire or open flame, or other sources of heat.

DISPOSAL

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. 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.

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.

[Booklet Label]

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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.

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DIRECTIONS FOR USE

METHOD OF APPLICATION:

Applications can be made by ground equipment in all provinces. **DO NOT APPLY BY AERIAL APPLICATION EQUIPMENT.**

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) fine classification. Boom height must be 60

cm or less above the crop or ground.

Airblast 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. 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.

Use Precautions

Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Specified buffer zones should be observed.

Operator Precautions

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing and vehicle cabs must be decontaminated regularly.

1. Cormoran must comply with the volume rates of not less than 200 L/ha.
2. Effective swath width (as determined by boom width and spray volume overlaps) must be accurately maintained. Conduct tests to determine the effective swath width. (For example, the effective swath width may be less than one-half of the overall swath).
3. Orient nozzles to achieve desired minimum droplet density and maximum coverage. Efficient track-marking is essential.

PRE-HARVEST, GRAZING AND FEEDING INTERVALS

See relevant information under each crop

BUFFER ZONES:

Spot treatments using hand-held equipment **DO NOT** require a buffer zone.

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

Method of application	Crop		Buffer Zones (metres) Required for the Protection of:				Terrestrial Habitat:
			Freshwater Habitat of Depths:		Estuarine/Marine Habitat of Depths:		
			Less than 1 m	Greater than 1 m	Less than 1 m	Greater than 1 m	
Field sprayer	Potato Brassica Head and Stem vegetables (crop group 5-13)		45	25	55	25	2
	Pepper (bell and non-bell), Brassica leafy greens (crop subgroup 4-13B)		60	30	55	30	3
	Strawberry		65	30	60	30	3
	Bush berries (crop group 13-07B)		90	45	85	45	5
	Sweet corn		40	20	50	25	2
	Alfalfa grown for seed		55	25	60	30	3
Airblast	Apple	Early growth stage	60	50	60	50	25

		Late growth stage	50	40	50	40	15
	Stone fruits (crop group 12-09)	Early growth stage	65	55	65	55	25
		Late growth stage	55	45	55	45	15
	Bush berries (crop group 13-07B)	Early growth stage	60	50	60	50	20
		Late growth stage	50	40	50	40	10

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 Pest Management Regulatory Agency web site.

REGISTERED USES, APPLICATION TIMING AND TARGET DISEASE

DO NOT APPLY BY AIR

APPLE

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Leafhoppers, Tentiform leafminers	700	DO NOT apply more than 6.9 L/ha per season	Apply in a minimum finished spray volume of 1000 L/ha by ground. Repeat applications if needed to maintain control, but do not make applications less than 12 days apart. Preharvest interval of 14 days.
Aphids	700-1050		
Gypsy moth, Mullein bug, Japanese beetle	840-1260		
Green fruitworm	1050		
Apple maggot, Codling moth, European apple sawfly, Oriental fruit moth, Plum curculio	1050-1260		
Lesser appleworm, Tarnished plant bug	1260		
Dogwood borer	1500		

POTATO

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Colorado potato beetle	440-700	DO NOT apply more than 1.68	
Armyworms, Cabbage looper	440-750		

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Leafhoppers	490-750	L/ha per season	<p>For Colorado potato beetle, DO NOT apply more than twice to a single generation and DO NOT apply to successive generations.</p> <p>Apply in a minimum finished spray volume of 200 L/ha by ground.</p> <p>Minimum re-application interval of 7 days.</p> <p>Preharvest interval of 7 days.</p> <p>DO NOT apply more than once every 10 to 14 days.</p>
Aphids, European corn borer,	650-750		

STONE FRUITS (CROP GROUP 12-09): American plum, Apricot, Beach plum, Black cherry, Canada plum, Cherry plum, Chicksaw plum, Chinese jujube, Damson plum, Japanese apricot, Japanese plum, Klamath plum, Nanking cherry, Nectarine, Peach, Plum, Prune plum, Plumcot, Sloe, Sweet cherry, Tart cherry and cultivars, varieties and/or hybrids of these commodities

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Oriental fruit moth (Ontario only)	1450-2100	4	<p>*Under high plum curculio pest pressure the level of damage reduction may be limited to suppression.</p> <p>Adequate spray coverage is essential for optimum control. Apply in a minimum finished spray volume of 1000 L/ha.</p> <p>Use the high rate under heavy pest pressure.</p> <p>DO NOT apply during bloom. The first application and follow-up applications, if required, should be applied when treatment thresholds have been reached as indicated by monitoring with pheromone traps in conjunction with degree days. Consult your local extension specialist for advice. The emergence of 3rd or 4th generations of OFM is less synchronized than the 1st and 2nd generations. Alternate with other insecticides for 3rd or 4th generations to delay the development of insecticide resistance in pest populations.</p> <p>Minimum re-application interval of 10 days.</p> <p>Preharvest interval of 7 days.</p>
Cherry fruit fly - suppression (cherry only), Plum curculio*	2100		

PEPPER (BELL AND NON-BELL)

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Colorado potato beetle	440-700	DO NOT apply more than 2.63 L/ha per season	Apply in a minimum finished spray volume of 200 L/ha by ground. For Colorado potato beetle, do not apply more than twice to a single generation and do not apply to successive generations. Repeat applications if needed to maintain control, but do not make applications less than 7 days apart. Preharvest interval of 7 days.
Aphids	490		
European corn borer	650-750		
Armyworms, Cabbage looper	440-750		

STRAWBERRY

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Aphids, Leafhoppers	500-750	3	Adequate spray coverage is essential for optimum control. Apply in a minimum finished spray volume of 200 L/ha by ground. Specific Directions: Begin application when insect populations reach recognized economic threshold levels Consult the provincial extension service or professional consultants or other qualified authorities to determine the appropriate threshold levels for treatment in your area. Use the high rate under heavy pest pressure. DO NOT apply more than once every 10 to 14 days. Preharvest interval of 1 day. DO NOT apply during bloom.
Strawberry clipper weevil, Tarnished plant bug	900		

BRASSICA HEAD AND STEM VEGETABLES (CROP GROUP 5-13): Broccoli, Brussels sprouts, Cabbage, Chinese cabbage (napa), cauliflower and cultivars, varieties and/or hybrids of these commodities

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Alfalfa looper, Armyworms, Cabbage looper, Diamondback moth, Imported cabbageworm	440-750	DO NOT apply more than 1.68 L/ha per season	Apply in a minimum finished spray volume of 200 L/ha by ground. Repeat applications if needed to maintain control, but do not make applications less than 7 days apart. Preharvest interval of 7 days.
Aphids	650-750		
Lygus bugs, Swede midge	740		

BRASSICA LEAFY GREENS (CROP SUBGROUP 4-13B): Arugula, broccoli raab, Chinese broccoli, Abyssinian cabbage, seakale cabbage, bok choy (Chinese cabbage), collards, garden cress, upland cress, Hanover salad, kale, maca, mizuna, mustard greens, radish leaves, rape greens, wild rocket, shepherd's purse, turnip greens, watercress, as well as cultivars, varieties, and hybrids of these commodities.

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Aphids	650-750	3	Apply in a minimum finished spray volume of 200 L/ha by ground. Repeat applications if needed to maintain control, but do not make applications less than 7 days apart. Preharvest interval of 7 days. DO NOT apply more than once every 7 to 10 days

BUSHBERRIES (CROP SUBGROUP 13-07B): Aronia berry, Blueberry (lowbush, highbush), Chilean guava, Cranberry (highbush), Currant (black, buffalo, red) Elderberry, European Barberry, Gooseberry, Honeysuckle (edible), Huckleberry, Jostaberry, Juneberry (Saskatoon berry), Lingonberry, Native currant, Salal, Sea buckthorn and cultivars, varieties and/or hybrids of these commodities

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Aphids, Blueberry gall midge (Cranberry tipworm)	750	3	Apply in a minimum finished spray volume of 200 L/ha by ground. Repeat applications if needed to maintain control, but DO NOT apply more than once every 10 to 14 days. Preharvest interval of 8 days. Some phytotoxic symptoms to foliage in the form of mottled chlorosis may be observed when Cormoran is applied to blueberries under conditions of high temperatures and/or drought stress, particularly during periods of new, tender shoot growth. Such phytotoxic symptoms will not occur on future growth, and will not affect fruiting or yields. Higher spray volumes and lower spray concentration will minimize the risk of transient phytotoxic symptoms on newly expanded foliage.
Japanese beetle	700		
Blueberry maggot	1200-1400		
Blueberry flea beetle, Blueberry spanworm, Strawberry rootworm, Cherry fruitworm, Cranberry fruitworm, Thrips	1400		
Spotted-wing drosophila (<i>Drosophila suzukii</i>)	1400	3	

SWEET CORN

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Aphids	500-700	2	<p>Begin applications when treatment thresholds have been reached as determined by local monitoring. Consult professional consultants or other qualified authorities to determine appropriate threshold levels of treatment in your area.</p> <p>Adequate spray coverage is essential to obtain optimum control. Apply in a minimum finished spray volume of 200 L/ha by ground.</p> <p>Use the higher rate for heavy infestations or dense foliage.</p> <p>Minimum re-application interval of 21 days.</p> <p>Preharvest interval of 10 days.</p>

ALFALFA GROWN FOR SEED

Insects Controlled	Rate mL/ha	Applications per Season	Comment
Alfalfa plant bug, Lygus bugs	750 -900	2	<p>Apply in a minimum finished spray volume of 200 L/ha by ground.</p> <p>Apply prior to bloom up to the time when 50% of seed pods are ripe. Begin when adults and/or 4-5th instar nymphs have reached economic threshold levels for your area. Use the higher rate for heavier infestations.</p> <p>DO NOT make more than 2 applications per season.</p> <p>Minimum re-application interval of 7 days.</p> <p>Preharvest interval of 14 days.</p> <p>DO NOT exceed 1.8 L product per ha per season.</p> <p>DO NOT cut treated fields for hay/forage.</p> <p>DO NOT graze treated fields</p>

SPRAY DRIFT MANAGEMENT:

Avoiding spray drift at the application site is the responsibility of the applicator and the grower. The interaction of many equipment-and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions regarding spraying.

Apply only as a medium or coarser spray (ASABE standard 572) or a volume mean diameter of 200 - 300 microns or greater for spinning atomizer nozzles.

Apply only when the wind speed is 3-16 km/hr at the application site.

For ground applications:

- **DO NOT** apply with a nozzle height greater than 4 feet above the crop canopy above the crop canopy.

For orchard applications:

- Turn off outward pointing nozzles at row ends and outer rows

The applicator should be familiar with and take into an account the information covered in the *Spray Drift Management* section.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap as crop injury may result.

INFORMATION ON DROPLET SIZE:

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (*see Wind, Temperature and Humidity and Temperature Inversions* sections).

Controlling droplet size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle-type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Wind

Drift potential is lowest between wind speeds of 3-16km/h. However, many factors including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

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.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, 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 nights with limited cloud cover and light to no wind. They 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.

Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Ultra Low Volume (ULV) application is not permitted.

MIXING PROCEDURES:

1. Be sure sprayer is clean and not contaminated with any other materials or crop injury or sprayer clogging may result.
2. Fill tank 1/2 full with clean water.
3. Start agitation.
4. Be certain that the agitation system is working properly and creates a rippling or rolling action on the liquid surface.
5. Pour product directly from container into partially filled spray tank.
6. Continue filling tank. Increase agitation if necessary to maintain surface action.
7. Maintain continuous agitation during mixing and application to assure uniform suspension. If mixture sits without agitation for extended periods, agitate the mixture for at least 10 minutes before use.

RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, CORMORAN insecticide contains Group 4 and Group 15 insecticides. Any insect population may contain individuals naturally resistant to CORMORAN and other Group 4 and Group 15 insecticides. The resistant individuals may dominate the insect population if this group of insecticides is 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:

1. Where possible, rotate the use of CORMORAN or other Group 4 and Group 15 insecticides with different groups that control the same pests.
2. Use tank mixtures with insecticides from a different group that is effective on the target pest when such use is permitted.
3. Insecticide use should be based on an IPM program that includes scouting, and record keeping, and considers cultural, biological and other chemical control practices.
4. Monitor treated pest populations for resistance development.
5. 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.

6. For further information or to report suspected resistance, contact a company representative at 1-855-264-6262.