

## **CUCURBITS - ARMYWORMS, ETC.**

### General Information

#### PRODUCT INFORMATION

CORMORAN is a broad-spectrum insecticide containing the active ingredients novaluron and acetamiprid. This mixture controls many sucking and chewing insects on the crops listed in this label. Novaluron and acetamiprid must be ingested and/or contacted by listed insects to be effective. Proper application techniques help ensure thorough spray coverage and correct dosage necessary to obtain optimum control. Apply at the required rates when the majority of insect population is at egg hatch or first instar. Consult the cooperative extension service, professional consultants, or other qualified authorities to determine appropriate threshold levels for treatment in your area. Apply follow-up treatments of CORMORAN per DIRECTIONS FOR USE to keep population within threshold limits. Scout fields regularly to determine optimum application timing based on pest levels and stages of growth.

For resistance-management, CORMORAN contains both a Group 15 and a Group 4A insecticide.

Any insect population may contain individuals naturally resistant to CORMORAN™ and other Group 15 and/or Group 4A insecticides. The resistant individuals may dominate the insect population if these groups of insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed. To reduce the potential for developing insect resistance, rotate to an insecticide with a different mode of action. Monitor treated pest populations for resistance development. Read the product label before applying any insecticide and follow label directions.

To delay insecticide resistance, take the following steps:

- Rotate the use of CORMORAN or other Group 15 and/or Group 4A insecticides within a growing season, or among growing seasons, with different groups that control the same pests. Avoid application of more than the maximum seasonal use rate or the total number of consecutive sprays of CORMORAN™ per season.
- Use tank mixtures with insecticides from a different group that are equally

effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):

- Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
- Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management.
- When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
- Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
- The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide/acaricides use that includes scouting, uses historical information related to pesticide use, crop rotation, record keeping, and which considers cultural, biological and other chemical control practices.
- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- 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 ADAMA representatives at 1-866-406-6262 or at [www.adama.com](http://www.adama.com).

## APPLICATION PROCEDURES

Spray Volume: CORMORAN may be applied in a minimum of 15 gallons of spray solution per acre by ground sprayer or in a minimum of 5 gallons of spray solution per acre by aircraft spray equipment. Check equipment calibration

frequently. Complete coverage and uniform application are essential for the most effective results, especially when lower spray volumes are applied. If necessary, increase the spray volume per acre for complete crop coverage (e.g., pome and stone fruit apply up to 400 GPA).

Chemigation: For chemigation use only on cranberries and potatoes. Chemigation should only be used after foliage has emerged and only through overhead sprinkler irrigation systems. Apply this product only through overhead sprinkler irrigation systems including center pivot, and lateral move, side (wheel) roll, solid set, or hand move irrigation systems after cranberry and potato foliage has emerged. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. The overhead sprinkler chemigation system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed for materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. Public water system means a

system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection. The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected. Do not apply this product through any other type of irrigation system. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. Upon completion of insecticide application, remove scale, pesticide residues, and other foreign matter from the supply tank and entire injector system.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Sprinkler Chemigation: For sprinkler chemigation use only on cranberries and potatoes.

For continuously moving systems, the mixture containing CORMORAN™ must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving. If continuously moving irrigation equipment is used, apply in no more than 0.25 inch of water. For sprinkler systems that do not move during operation, apply in no more than 0.25 inch of irrigation immediately before the end of the irrigation cycle. Maintain continuous agitation of the pesticide supply tank for the duration of the application period.

To apply a pesticide using sprinkler chemigation, the chemigation system must meet the following specifications:

- The system must contain a functional check valve, vacuum relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

Ground Application: Apply required dosage by conventional ground sprayer equipment capable of delivering a minimum of 15 gallons of water per acre to obtain thorough, uniform coverage of the target crop. Orient spray equipment boom and nozzles in a manner to minimize boom height, to optimize coverage uniformity, maximize deposition, and reduce spray drift. Drop nozzles may be required to obtain

uniform coverage against certain pests that develop down in the canopy. Use hollow cone, disc-core hollow cone or twin jet fan nozzles suitable for insecticide spraying.

Orchard Application: Apply CORMORAN™ by conventional orchard sprayers that are calibrated to deliver 50 to 400 gallons of carrier to the trees. Apply at a carrier volume that insures complete coverage to trees. Operate spray equipment at proper ground speeds, adequate sprat pressures and spray volumes that assure that the air volume within the tree canopy is completely replaced by the output from the airblast sprayer resulting in proper coverage of the target crop. Do not use in alternate row middle application patterns since this method will result in off-timing application and poor performance.

Aerial Application: For aerial application in a total of 5 to 10 gallons of water per acre, using a nozzle configuration that will provide a median droplet size of 200-300 microns. Higher gallonage will provide better coverage and performance. Adhere to the minimum safe application height – not greater than 12 feet above crop canopy. Boom length must be less than 75% of wingspan, and swath markers. Use flagging or GPS system during application. Make applications when wind speed is between 2 and 10 MPH. Do not make application when wind speed exceeds 10 MPH. Under low humidity and high temperatures, adjust spar volume upward to compensate for evaporation of spray droplets.

## ROTATIONAL CROPS

Only registered crops may be rotated in a treated field within 30 days of final application.

## Limitations, Restrictions, and Exceptions

## REMARKS

Apply in a minimum finished spray volume of 5 gallons per acre by air or 20 gallons per acre by ground.

Do not apply more than two applications against whiteflies or thrips per season.

## Cucurbits Restrictions:

- Do not apply more than 0.23 lb Novaluron active ingredient containing products per acre per calendar year.
- Do not apply more than 0.5 lb Acetamiprid active ingredient containing products

per acre per calendar year.

- Do not apply more than 35.0 fl oz of formulated product per acre per season.
- Repeat applications if needed to maintain control, but do not make applications less than 14 days apart.
- Preharvest interval of 1 day.
- Restricted entry interval (REI) of 12 hours.

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

Pre-Harvest Interval

1 day

Rates

[field\\_rates 0](#)

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Restricted Entry Interval

12 hours

Timings

[When the majority of insect population is at egg hatch or first instar.](#)