



U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Registration Division (7505P)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg. Number:

89167-60

Date of Issuance:

3/1/19

NOTICE OF PESTICIDE:

Registration
 Reregistration
(under FIFRA, as amended)

Term of Issuance:

Conditional

Name of Pesticide Product:

AX-NOVAL

Name and Address of Registrant (include ZIP Code):

Karen Murphy
Axion AG products, LLC
1880 fall River Drive, Suite 100
Loveland, CO 80538

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA section 3(c)(7)(A). You must comply with the following conditions:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product under FIFRA when the Agency requires all registrants of similar products to submit such data.

Signature of Approving Official:

Richard Gebken, Product Manager 10
IVB 2
Registration Division (7505P)

Date:

3/1/19

2. You are required to comply with the data requirements described in the DCI identified below:
 - a. Novaluron GDCI-124002-1545

You must comply with all of the data requirements within the established deadlines. If you have questions about the Generic DCI listed above, you may contact the Chemical Review Manager in the Pesticide Reevaluation Division: <http://iaspub.epa.gov/apex/pesticides/f?p=chemicalsearch:1>

3. Be aware that proposed data requirements have been identified in a Work Plan or proposed DCI. For more information on these proposed data requirements, you may contact the Chemical Review Manager in the Pesticide Reevaluation Division: <http://iaspub.epa.gov/apex/pesticides/f?p=chemicalsearch:1>
4. Make the following label changes before you release the product for shipment:
 - Revise the EPA Registration Number to read, “EPA Reg. No. 89167-60.”
5. Submit one copy of the final printed label for the record before you release the product for shipment.

Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.


If you fail to satisfy these data requirements, EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 09/19/2018

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Decision No. 544500

If you have any questions, please contact Virna Stillwaugh by phone at 703-347-8506, or via email at Stillwaugh.Virna@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Gebken".

Richard Gebken
Product Manager 10
Invertebrate & Vertebrate Branch 2
Registration Division (7505P)
Office of Pesticide Programs

Enclosure:

[Note to reviewer: [Text] in brackets denotes optional or explanatory language]
[Note to reviewer: {Text} in braces denotes where in the final label text will appear]

NOVALURON	GROUP	15	INSECTICIDE
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AX-NOVAL

[Insecticide for use on Avocado*, Beans, Berries (Low-Growing), Bushberries, Carrot*, Cotton, Cucurbit Vegetables, Fruiting Vegetables, Head and Stem *Brassica*, Leafy *Brassica* Greens*, Ornamentals (Container Grown Ornamentals in Greenhouses, Shadehouses, Outdoor Nurseries), Peanuts*, Pears*, Pome Fruits, Potatoes / Sweet Potatoes, Sorghum*, Soybeans*, Stonefruits, Strawberry, Sweet Corn, Sugarcane*, Swiss Chard*, and Turnip Greens*.

*Not Registered For Use In California]

Active Ingredient:	(% by weight)
Novaluron (1-[3-chloro-4-(1,1,2-trifluoro-2-trifluoromethoxyethoxy)phenyl]-3-(2,6-difluorobenzoyl)urea)*.....	9.3%
Other Ingredients:	<u>90.7%</u>
Total	100.0%

*Contains 0.83 lbs. of novaluron per gallon.

KEEP OUT OF REACH OF CHILDREN WARNING - AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

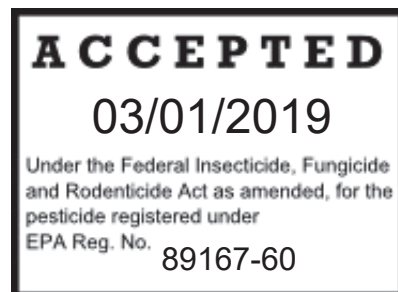
See inside label booklet for First Aid, Precautionary Statements and Directions for Use.

EPA Reg. No.: 89167-XX

EPA Est. No.:

Net Contents: ___ Gal

Manufactured For:
AXION AG PRODUCTS, LLC
1880 FALL RIVER DRIVE, SUITE 100
LOVELAND, CO 80538



091818

{LANGUAGE INSIDE BOOKLET}

FIRST AID	
IF IN EYES:	<ul style="list-style-type: none">• 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 center or doctor for treatment advice.
IF ON SKIN:	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For 24-Hour Medical Emergency Assistance (Human or Animal) Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident) Call 1-800-424-9300	

PRECAUTIONARY STATEMENTS **Hazards to Humans and Domestic Animals**

WARNING

Causes substantial but temporary eye injury. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Do not get in eyes or on clothing. Avoid contact with skin. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate or butyl rubber \geq 14 mils
- Shoes plus socks
- Protective eyewear

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 PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to freshwater and estuarine/marine invertebrates. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. This product may contaminate water through drift of spray in wind. This product has a potential for runoff for several days to weeks after application. Poorly draining soil with shallow water tables is more prone to produce runoff. A level, well maintained vegetative (grass) buffer strip between areas to which this product is applied and the surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination. In order to minimize the possibility of developmental effects on pollinator larvae, including honey bee brood, do not use **AX-NOVAL** on blooming crops.

Pollinator Advisory:

*Because of its mode of action as an insect growth regulator, and since it is not systemic, **AX-NOVAL** has no direct effect on fully developed adult stages, such as bees and other beneficial pollinators. However, in order to minimize the possibility of transient effects on honeybee brood development, do not use **AX-NOVAL** on blooming crops when bees are actively foraging.*

PHYSICAL OR CHEMICAL HAZARDS

Do not mix or allow to come in contact with oxidizing or reducing agents. Do not allow the ratio of product : water in field to exceed 1:1. Hazardous chemical reaction may occur.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that it will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

BUFFER ZONES

Vegetative Buffer Zones. Construct and maintain a minimum 25-foot vegetative filter strip of grass or other permanent vegetation between the field edge and down gradient aquatic habitat such as lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; and estuarine/marine habitats. Only apply products containing novaluron onto fields where a maintained vegetative buffer strip of at least 25-feet exists between the field and down gradient aquatic habitat. For guidance, refer to the following publication for information on constructing and maintaining effective buffers: *Conservation Buffers to Reduce Pesticide Losses*. Natural Resources Conservation Services. USDA, NRCS. 2000. Fort Worth, Texas. 21 pp.

<https://permanent.access.gpo.gov/lps9018/www.wcc.nrcs.usda.gov/water/quality/common/pestmgt/files/newconbuf.pdf>

Buffer Zone for Ground Application (All Crops). **DO NOT** apply within 75 feet of aquatic habitats such as lakes, reservoirs, rivers, permanent streams, natural ponds, and estuarine/marine habitats.

Buffer Zone for Aerial Application (Except Cotton). **DO NOT** apply within 150 feet of aquatic habitats such as lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, and estuarine/marine habitats.

Buffer Zone for Aerial Application in Cotton. **DO NOT** apply within 250 feet of aquatic habitats such as lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, and estuarine/marine habitats.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of **12 hours**.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate or butyl rubber \geq 14 mils
- Shoes plus socks
- Protective eyewear

USE INFORMATION:

AX-NOVAL 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 insect populations reach locally determined economic thresholds. 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 **AX-NOVAL** per **DIRECTIONS FOR USE**, to keep pest populations within threshold limits. Scout fields regularly to determine optimum application timing based on pest levels and stages of growth.

The primary mode of action is by disrupting cuticle formation and deposition occurring when listed insects molt, resulting in their death. Due to this mode of action, AX-NOVAL has no direct effect on adults.

Note: The compatibility of **AX-NOVAL** with concurrent releases of listed insects for biocontrol of plant pests has not been established. When used as directed, **AX-NOVAL** affects developing immature stages of listed insects by disrupting the molting process. Consequently, fully developed adult stages of pest and beneficial species are not affected.

Rotational Crops:

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

The use of novaluron on crops grown for food in greenhouses, except tomatoes and cucumbers, is prohibited.

SPRAY DRIFT:

Do not allow AX-NOVAL to drift on grapes as leaf spotting may occur.

For orchard airblast applications, turn off outward pointing nozzles at row ends and outer rows. Apply only when wind speed is \leq 10 mph at the application site as measured by an anemometer outside of the orchard on the upwind side. The applicator also must use all other measures necessary to control drift.

For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy and when wind speed is 10 mph or less at the application site as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles.

For aerial applications, the following measures must be adhered to:

- a. The distance of the outer-most nozzles on the boom mast must not exceed $\frac{3}{4}$ of the length of the wingspan or rotor.

- b. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.
- c. Use high flow nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- d. 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.
- e. Use the minimum number of nozzles that provide uniform coverage.
- f. Orient nozzles so that the spray is released parallel to the air stream. This produces larger droplets and minimizes potential drift. Significant deflection from the horizontal position will reduce droplet size and increase drift potential.
- g. Use a nozzle type that is designed for the intended application. With most nozzle types, such as low-drift nozzles, narrower spray angles produce larger droplets. Solid stream nozzles oriented straight back produce the largest droplets and the least drift.
- h. For some use patterns, reducing the effective boom length to less than $\frac{3}{4}$ of the wing span or rotor length may further reduce drift without reducing swath width.
- i. Do not make applications at a height greater than 10 feet above the top of the largest plants, unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.
- j. When applications are made with a cross wind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Increase the swath adjustment distance with increasing drift potential (higher wind, smaller drops, etc.).
- k. Drift potential is lowest with wind speeds between 2 – 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Do not apply when wind speed below 2 mph due to variable wind direction and high inversion potential. Local terrain can influence wind patterns. An applicator's familiarity with local wind patterns can minimize spray drift.
- l. Droplet evaporation is most severe when conditions are both hot and dry, therefore when making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation.
- m. Do not apply during a temperature inversion because drift potential is high. Temperature inversions are characterized by increasing temperatures with altitude, and are common on nights with limited cloud cover and light to no winds. 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 light variable winds common during inversions.
- n. Only apply pesticides 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 the wind is blowing away from the sensitive area).
- o. Ultra Low Volume (ULV) application is not permitted.

Mixing Instructions:

Prepare solution concentrations in a clean, empty spray tank. Use clean spray filters. Add water to 1/2 level of tank. Add the appropriate amount of **AX-NOVAL** to the tank and agitate to ensure proper mixture. Continue filling tank with water until desired dilution is achieved. Shake or re-agitate material in the sprayer before use if application is interrupted. Make up only the amount of application volume as required. Dispose of any unused spray material at the end of each day according to the instructions found in the **STORAGE AND DISPOSAL** section of this label.

Spray Coverage:

All parts of the crop must receive uniform spray coverage or else desired result may not occur. Higher water volumes and increased spray pressure generally provide better coverage. Consult your local agricultural specialist for specific information on the best rates, timings, and spray volumes for your region.

Orchard Spraying:

Make applications of **AX-NOVAL** by conventional ground sprayers that are calibrated to deliver no less than 75 gallons per acre on trees less than 10 feet tall, and 100 to 400 gallons per acre on trees greater than 10 feet tall.

Operate spray equipment at proper ground speeds, adequate spray 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.

Note: Do not use **AX-NOVAL** in alternate row middle application patterns since this method will result in off-timing application and poor performance.

Ground Application:

Apply required dosage by conventional ground sprayer equipment capable of delivering sufficient water 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 a minimum spray volume of 5 gallons per acre with ground spray equipment in cotton. Use a minimum of 10 gallons per acre in potatoes and vegetables. Higher gallonages will provide better coverage and performance. Use hollow cone, disc-core hollow cone or twin jet fan nozzles suitable for insecticide spraying.

Band Application (in Cotton Only):

Band applications may be appropriate early in the season when cotton is small. Proper nozzle selection, placement, boom orientation or shielding to compensate for windy conditions is critical to ensure adequate coverage.

When banding, determine the amount of chemical to use per acre by dividing the band width by the row width and multiplying by the appropriate broadcast rate:

$$\frac{\text{Band Width in Inches}}{\text{Row Width in Inches}} \times \text{Broadcast Rate} = \text{Amount needed per acre of field}$$

Aerial Application:

For aerial application apply in a total of 2 to 10 gallons per acre using a nozzle configuration that will provide a median droplet size of 200-300 microns. Use a minimum of 5 gallons of water per acre for potatoes. Higher gallonages 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 wing span and swath markers. Use flagging or GPS system during application. Make applications when wind speed is between 2 and 10 mph. Do not make applications when wind speed exceeds 10 mph. Under low humidity and high temperatures, adjust spray volume upward to compensate for evaporation of spray droplets.

APPLICATION THROUGH IRRIGATION SYSTEMS - CHEMIGATION

AX-NOVAL may be applied through properly equipped chemigation systems for insect control in cotton, cranberries, potatoes, grain sorghum and sweet corn. Apply this product only through sprinkler (including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move) irrigation systems. 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.

In order to calibrate the irrigation system and injector to apply the mixture, determine the following: 1) Calculate the number of acres irrigated by the system; 2) Set the irrigation rate and determine the number of minutes for the system to cover the intended treatment area; 3) Calculate the total gallons of the mixture needed to cover the desired acreage. Divide the total gallons of mixture needed by the number of minutes to cover the treated area. This value equals the gallons per minute that the injector must deliver. Convert the gallons per minute to ounces per minute. Calibrate the injector pump with the system in operation at the desired irrigation rate. Calibrate the injector pump at least twice before operation, and the system must be monitored during operation.

If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers, or other experts.

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. 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.

CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS

If the chemigation system is connected to a public water supply, the following conditions must also be met:

- Public water systems 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, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from a 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 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 shutdown.
- 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.
- 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. Flush thoroughly with clean water.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

SPRINKLER CHEMIGATION

For continuously moving systems, the mixture containing **AX-NOVAL** 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.

Insecticide Resistance Management:

For resistance management, **AX-NOVAL** contains a Group 15 insecticide. Any insect population may contain individuals naturally resistant to **AX-NOVAL** and other Group 15 insecticides. The resistant individuals may dominate the insect population if Group 15 insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

To delay development of insecticide resistance, take the following steps:

- Rotate the use of **AX-NOVAL** or other Group 15 insecticides within a growing season, or among growing seasons with different groups that control the same pests.
- 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 mod 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 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, certified crop advisor, and/or manufacturer for insecticide resistance management and/or IPM recommendations for the specific site and resistant pest problems.

For further information or to report suspected resistance contact company representatives at AXION AG PRODUCTS.

PHYTOTOXICITY NOTICE

Carefully read this product label for crop specific instructions and precautions, as failure to do so may result in crop injury. **AX-NOVAL** has demonstrated some phytotoxic effects to new, expanding leaves, when mixed with products that are formulated as emulsifiable concentrates, systemic in nature, and/or intended to improve plant uptake, e.g. foliar nutrients/amendments, and/or petroleum/plant oil based products. Do not mix **AX-NOVAL** with oil based adjuvants intended for plant absorption. Crop injury is typically exhibited as, but may not be limited to, chlorosis or mottling of new, expanding leaves.

AVOCADO[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Lepidoptera larva including western avocado leafroller, avocado looper, omnivorous looper, orange tortrix	19.3	Use a minimum spray volume of 100 GPA
<ul style="list-style-type: none"> Repeat applications (up to 3), but not less than 14 days apart. Do not apply more than 57.9 fl. oz. per acre per calendar year (0.38 lb. of novaluron per acre per calendar year). Do not apply within 1 day of harvest. 		
[*Not registered for use in California.]		

BEANS:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Loopers Webworms	6 to 12	Apply when the majority of the target pest population is at egg hatch to early instars.
Bean leaf beetle Bean plataspid Cucumber beetle Mexican bean beetle	9 to 12	Apply when the majority of the target pest population is at egg hatch to early instars.
Lygus	12	Apply when plant bugs appear and oviposition is initiated.
Thrips Whiteflies	12	Apply when the majority of the target pest population is at egg hatch to early instars. Do not apply more than two applications against whiteflies or thrips per season.
<ul style="list-style-type: none"> Use higher rates and higher spray volumes when larvae are large or foliage canopy is tall or dense. Repeat applications as needed (up to 3) to protect new foliage growth, and fruit, but not less than 7 days apart. Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). Do not apply within 1 day of harvest. 		

BERRIES (LOW GROWING), Including:

Cranberry, Lingonberry, Muntries, Partridgeberry, Bearberry, Bilberry, Lowbush Blueberry, Cloudberry – EXCEPT Strawberry (see separate direction for Strawberries)

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Blackheaded fireworm Spotted fireworm	12	1 st generation larvae (May-June): Apply when the majority of overwintering eggs have hatched in early spring. 2 nd generation larvae (late June-July): Apply at the first sign of oviposition through early egg hatch.
Cranberry blossomworm Cranberry fruitworm Cranberry spanworm Gypsy moth Sparganothis fruitworm	12	Apply when the majority of the target pest population is at egg hatch to early instars.
Cranberry fleabeetle Cranberry tipworm Sap beetle	12	Apply when adults appear and prior to egg hatch. For adult control, tank mix with an adulticide.
Drosophila spp.[*] Including spotted wing drosophila	12	Apply when adults appear. For adult control, tank mix with an adulticide.
<ul style="list-style-type: none"> • Spray with a sufficient volume of water to ensure thorough coverage of fruit and leaf surfaces. • Repeat applications as needed to protect new foliage growth, and fruit, but not less than 7 days apart. • Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • Do not apply within 1 day of harvest. • For application to cranberries through irrigation systems, refer to the section entitled “APPLICATION THROUGH IRRIGATION SYSTEMS- CHEMIGATION” <p>[*Not registered for use in California.]</p>		

BUSHBERRIES, Including:

Blueberry (Highbush and Lowbush), Currant, Elderberry, Gooseberry, and Huckleberry

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Blueberry Flea Beetle (Larvae) Blueberry Spanworm Cranberry Fruitworm Oblique-banded Leafroller Sparganothis Fruitworm	20 to 30	Make application when the majority of the population is at egg hatch to the second instar.
Blueberry Maggot Fly Sap Beetle	20 to 30	Make application when adults are observed and prior to egg laying.
Plum Curculio (larvae)	20 to 30	Apply at pre-bloom to the newly expanded foliage and unopened blooms / buds, Adult females will deposit non-viable eggs after contact with, and feeding on, treated plants, providing control of eggs and larvae on early season harvested varieties. AX-NOVAL will not control adult stages. A subsequent post-bloom spray using an adulticide is recommended to achieve optimum control of all life stages.
Drosophila spp.[*] including spotted wing drosophila	20 to 30	Apply when adults appear. For adult control, tank mix with an adulticide.

Continued

- Some phytotoxic symptoms to foliage in the form of mottled chlorosis may be observed when **AX-NOVAL** 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.
 - Use higher rates and higher spray volumes when larvae are large, or foliage canopy is tall or dense.
 - Repeat applications as needed to protect new foliage growth, and fruit, but not less than 10 days apart.
 - Do not apply more than 90 fl. oz. per acre per calendar year (0.58 lb. novaluron per acre per calendar year).
 - Do not apply within 8 days of harvest.
- [*Not registered for use in California.]**

CARROT[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
carrot weevil root weevil white grub wireworm	12.3	Use a minimum spray volume of 20 GPA.
<ul style="list-style-type: none"> • Repeat applications (up to 3), but not less than 7 days apart. • Do not apply more than 36.9 fl. oz. per acre per calendar year (0.24 lb. of novaluron per acre per calendar year). • Do not apply within 3 days of harvest. 		
[*Not registered for use in California.]		

COTTON:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Plant bugs (Tarnished, clouded, and Western tarnished) Stink bug nymphs (Green, Brown, Southern green)	9 to 12 6 to 9 (If used with a knockdown insecticide)	Begin application when plant bugs, stink bugs or fleahoppers appear and oviposition is initiated. Repeat at 7 to 14 day intervals as needed to maintain control. AX-NOVAL will not control adults. For adult control, tank mix with an adulticide.
Cotton fleahopper	6 to 9	
Tobacco budworm Cotton bollworm	12 to 14 6 to 9 (If used with a knockdown insecticide)	Apply when the majority of eggs are in the blackhead stage and up to 1/8- inch larval length. Use higher rates and higher spray volumes when larvae are more than ¼ inch long, the target pest population is 2X or more above state threshold level or foliage canopy is tall or dense and larvae are present in the lower part of the canopy. Reapplication on a 7 to 14 day interval will be required to protect new growth. Scout fields twice weekly for the most effective control.
Beet armyworm Fall armyworm Other foliage feeding caterpillars such as loopers, cotton leaf perforator and saltmarsh caterpillar	6 to 12	Apply at egg hatch stage or when first signs of feeding occur. Use higher rates and higher spray volumes when larvae are more than ¼ inch long, the target pest population is 2X or more above state threshold level or foliage canopy is tall or dense and larvae are present in the lower part of the canopy. Under heavy infestations or continuous oviposition, reapplication on a 7 to 14 day interval will be required to protect new growth. Scout fields twice weekly for the most effective control.
Whiteflies (Suppression)	6 to 12	Begin application when whitefly adults appear and once oviposition is initiated. A second application at 14 days may be necessary to achieve acceptable suppression. Do not apply more than two applications against whiteflies per season.
Thrips (Suppression)	9 to 14	Begin application when thrips adults appear and once oviposition is initiated. Repeat at 14 days later if needed. AX-NOVAL will not control adult thrips. For adult control, tank mix with an adulticide. Do not apply more than two applications against thrips per season.
<ul style="list-style-type: none"> Do not apply more than four applications per season minimum 7 days apart (see separate restrictions for whiteflies and thrips). Do not apply more than 42 fl. oz. per acre per calendar year (0.27 lb. of novaluron per acre per calendar year). Do not apply within 30 days of harvest. For application to cotton through irrigation systems, refer to the section entitled "APPLICATION THROUGH IRRIGATION SYSTEMS- CHEMIGATION" 		

CUCURBIT VEGETABLES, Including:

Balsam Apple, Balsam Pear, Chayote (Fruit), Cantaloupe, Cucumber, Chinese Cucumber, Gherkin (West Indian), Edible Gourd, Melon, Citron Melon, Muskmelon, Bittermelon, Pumpkin, Squash, Summer Squash, Winter Squash, Watermelon, and Chinese Waxgourd

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Cucumber beetles Leafminers (Lepidopteran) Loopers	9 to 12	Apply when the majority of the population is at egg hatch to the second instar.
Leafminers (Dipteran) Melonworm Pickleworm Sap beetles Squash bugs Thrips Whiteflies	12	Apply at the first sign of egg lay or egg hatch. For adult control, tank mix with an adulticide. Do not apply more than two applications against whiteflies or thrips per season.
<ul style="list-style-type: none"> • Apply sufficient spray volume to ensure full coverage of foliage, and flower buds. • Repeat applications as needed to protect new foliage growth, and fruit, but not less than 14 days apart. Use higher rates and higher spray volumes when larvae are large, or foliage canopy is tall or dense. • Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • The use of novaluron on crops grown for food in greenhouses, except tomatoes and cucumbers, is prohibited. • Do not apply within 1 day of harvest. 		

FRUITING VEGETABLES (FIELD GROWN), Including:

Tomatoes (Including Bush, Currant, and Tree Tomatoes), Peppers, Eggplants (Including African, Pea, and Scarlet Eggplants), Tomatillo, Groundcherry, Pepino, Okra, Cocona, Goji Berry, Garden Huckleberry, Martynia, Naranjilla, Roselle, and Sunberry

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Colorado potato beetle European corn borer Foliage feeding caterpillars Leafminers (Lepidopterous) Loopers Tomato fruitworm Tomato hornworm Tomato pinworm	9 to 12	Apply when the majority of the population is at egg hatch to the second instar. For Colorado potato beetle, do not apply more than twice to a single generation and do not apply to successive generations.
Pepper weevil	9 to 12	Apply at initial flowering stage.
Leafminers (Dipteran) Stink Bugs Thrips Whiteflies	12	Apply when the majority of the target pest population is at egg hatch to early instars. Do not apply more than two applications against whiteflies or thrips per season.

Continued

- Use higher rates and higher spray volumes when populations are heavy, larvae are large, or foliage canopy is tall or dense.
- Repeat applications as needed to protect new foliage growth, and fruit, but not less than 7 days apart.
- Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year).
- The use of novaluron on crops grown for food in greenhouses, except tomatoes and cucumbers, is prohibited.
- Do not apply within 1 day of harvest.

HEAD AND STEM BRASSICA VEGETABLES, Including:

Broccoli, Chinese Broccoli, Brussel Sprouts, Cabbage, Cavalo Broccolo, Cauliflower, Chinese Broccoli (Gai Lon), Chinese Cabbage (Napa), Chinese Mustard (Gai Choy), and Kohlrabi

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Alfalfa Looper Armyworms Cabbage Loopers Cabbage Webworm Corn Earworm Cucumber Beetles Diamondback Moth Imported Cabbageworm Leafminers (Lepidopteran) Southern Cabbageworm	6 to 12	Apply when the majority of the population is at egg hatch to the second instar. Use higher rates and higher spray volumes when larvae are large, when target pests populations are 2X or more above state threshold level or foliage canopy is tall or dense. Repeat applications as needed to protect new foliage growth, and fruit, but not less than 7 days apart
Bagrada Bugs Leafminers (Dipteran) Lygus Bugs Stink Bugs Thrips Vegetable Weevil Whiteflies	12	
<ul style="list-style-type: none"> • Do not apply more than two applications against whiteflies or thrips per season • Do not apply more than 24 fl. oz. per acre per calendar year (0.16 lb. of novaluron per acre per calendar year). • Do not apply within 7 days of harvest. 		

LEAFY BRASSICA GREENS[*], Including:

Broccoli Raab, Chinese Cabbage (Bok Choy), Collards, Kale, Mizuna, Mustard Greens, Mustard Spinach, and Rape Greens

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Alfalfa Looper Armyworms Cabbage Loopers Cabbage Webworm Corn Earworm Cucumber Beetles Diamondback Moth Imported Cabbageworm Leafminers (Dipteran and Lepidopteran) Southern Cabbageworm	6 to 12	Apply when the majority of the population is at egg hatch to the second instar. Use higher rates and higher spray volumes when larvae are large, when target pests populations is 2X or more above state threshold level or foliage canopy is tall or dense. Repeat applications as needed to protect new growth, but not less than 7 days apart.
Bagrada Bugs	12	

Lygus Bugs Stink Bugs Thrips Vegetable Weevil Whiteflies		
<ul style="list-style-type: none"> Do not apply more than 2 applications against whiteflies per season. Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). Do not apply within 7 days of harvest. <p>[*Not registered for use in California.]</p>		

ORNAMENTALS (Container Grown Ornamentals in Green-Houses, Shade-Houses, and Outdoor Nurseries):

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Whiteflies (Greenhouse, Silverleaf, Sweet potato) Thrips (Citrus, Flower, Gladiolus, Western Flower) Leafminers (Citrus, Serpentine) Armyworms (Beet, Fall, Lawn, Southern, Yellow Striped)	3.0 oz. to 12.0 oz. in 100 gallons of water	<p>Apply by compressed air, hydraulic, or handheld sprayers. Do not apply with boom sprayers, high volume airblast sprayers, or by aircraft. Minimize drift and movement to non-target areas by directing spray to foliage.</p> <p>Apply as a spray to the foliage through conventional spray equipment. One gallon of finished spray will treat 200 sq. ft. of greenhouse bench area.</p> <p>When pest population pressure is high, use the higher label rates. Consult your local AX-NOVAL agricultural specialist for information about tank mixing AX-NOVAL with agrochemical products registered for use on the treated crop.</p> <p>Plant Tolerance: Neither the manufacturer nor the seller has determined whether AX-NOVAL can be used safely on all ornamental plants. Before any large-scale application, determine the safety of AX-NOVAL by testing a small number of the type of plants to be treated at the required rates and under the desired growing conditions. Observe the treated plants for symptoms of phytotoxicity, which may occur as interveinal chlorosis and/or marginal necrosis on sensitive plants.</p>
<ul style="list-style-type: none"> Do not apply AX-NOVAL more than once every 30 days. Do not make more than two (2) applications of AX-NOVAL per crop per calendar year. Do not apply more than 52 fl. oz. of AX-NOVAL per acre per calendar year per crop (0.34 lb. of novaluron per acre per calendar year). Do not apply to poinsettias. 		

PEANUTS[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Green cloverworm Mexican bean beetle Velvet bean caterpillar	6 to 8	Make applications when larvae are small (< 0.5 inches) to give greater control and minimum insect damage to leaves. Repeat application if damaging numbers reappear. Use higher rates and higher spray volumes when the target pest population is 2X or more above state threshold level, or foliage canopy is tall, or dense and larvae are present in the lower part of the canopy, or if greater residual control is desired.
Armyworms, including: Beet armyworm Fall armyworm Southern armyworm Yellow-striped armyworm Lesser cornstalk borer Soybean looper Thrips (suppression)	6 to 12	Apply at egg-hatch stage or when first signs of feeding occur. Use higher rates and higher spray volumes when larvae are more than ¼ inch long, the target pest population is 2X or more above state threshold level, or foliage canopy is tall or dense and larvae are present in the lower part of the canopy. Repeat application if damaging numbers reappear to protect new growth.
Grasshoppers (nymphs only)	9 to 12	Apply when the majority of infesting grasshoppers are in the early nymphal stages of development. If a large influx from neighboring fields should occur, a tank mix with a knockdown insecticide may be necessary to reduce the population to minimize extensive foliage feeding.
<p>Aerial Application: Apply in sufficient water (3 to 10 gallons per acre) to achieve uniform coverage of foliage.</p> <p>Ground Application: Apply in 9 to 35 gallons of water per acre to give uniform coverage.</p> <ul style="list-style-type: none"> • Do not exceed 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • Reapplication on a 7 (minimum) to 14 day interval may be required (refer to Grasshopper Application Instructions for more information). • Do not harvest within 28 days of application. • Do not feed treated peanut hay or vines to livestock. <p>[* Not registered for use in California.]</p>		

PEARS (GROUP 11-10 pear; Asian pear)[*]:

[For use only in Colorado, Michigan, New York, Pennsylvania, Washington and Oregon]

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Codling moth	20 to 32	Begin applications prior to egg deposition or shortly thereafter to prevent codling moth damage to fruit. However, best protection is achieved when application is initiated at the beginning of oviposition.
Leafrollers (Oblique-banded, Pandemis)	20 to 32	Initiate applications at cluster bud timing up to "Pear turn down" stage of development.
Pear Psylla	20 to 32	Set the timing to occur during dormant through pear turn-down stage with the initiation of pear psylla oviposition.
<ul style="list-style-type: none"> • If your growing region uses a Degree Day (DD) or Biofix model, or no model is available, consult the local cooperative extension, professional consultants, or qualified advisories to ensure the proper timing for the intended target pest. • One repeat application can be made to protect new foliage growth, but not less than 10 days after the first application. • Phytotoxicity: Do not apply after initiation of pear turn-down, or fruit injury may result. Given the right set of environmental conditions phytotoxicity may occur when applied after pear turn-down. Factors increasing the probability of crop injury are: <ol style="list-style-type: none"> 1. varietal sensitivity; 2. excessive rainfall, high temperatures and/or drought, and; 3. incompatibility with other products (e.g., oils or strobilurin fungicides). • Do not apply more than 96 fl. oz. per acre per calendar year (0.62 lb. of novaluron per acre per calendar year). • Do not apply within 14 days of harvest. <p>[* Not registered for use in California.]</p>		

FRUIT, POME, GROUP 11-10 EXCEPT PEARS (see separate directions for PEARS) (Apple; azarole; crabapple; loquat; mayhaw; medlar; quince; Chinese quince; Japanese quince ; tejocote; cultivars, varieties, and/or hybrids of these):

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Budmoths (Eyespotted, Tufted apple)	20 to 40	For each generation, make an application at the beginning of egg hatch.
Codling moth	20 to 40 (Eastern USA) 20 to 50 (Western USA)	For all generations, best protection is achieved when applications are initiated at the beginning of oviposition. AX-NOVAL must be applied prior to egg deposition or shortly thereafter to prevent codling moth damage to fruit. Apply AX-NOVAL at the following timings: First Generation: Begin applications at 50 – 100 DD from Biofix, or 225 – 275 DD from January 1. Note: Biofix is defined as the date of first sustained adult catch in pheromone traps – typically five months in three traps in a seven-day period. Second Generation: Begin applications at 1000 DD from Biofix, or 1175 DD from January 1. Follow with subsequent applications at approximately 14 to 17 day intervals, if sustained moth pressure is high.
Lacanobia Fruitworm	20 to 50	Begin applications when the majority of eggs have hatched and larvae are in the first to third instar stages.
Leafminers (Spotted tentiform, Western tentiform)	15 to 40	Application timing for leafminers varies between species and geographic locations. Monitor the moth flights and treat at egg hatch for each generation.
Leafrollers (European, Fruittree, Redbanded, Variegated)	20 to 40	For control of the surface or foliar feeding leafroller larval complex, application can be made at any time larvae are feeding. However, most effective crop protection results from application made at the initiation of egg hatch.
Leafrollers (Oblique-banded, Pandemis)	20 to 50 (Eastern USA) 30 to 50 (Western USA)	Apply AX-NOVAL treatments at the following timings: First Generation: Begin applications during pink to petal fall period. Second Generation: Begin application targeting 20% egg hatch.
Oriental fruit moth	20 to 40	Begin applications before egg hatch of each generation to prevent larval penetration of the fruit.
Plant bug, White apple leafhopper	20 to 50	Populations of immature stages of plant bugs and/or white apple leafhopper may be suppressed with applications of AX-NOVAL . AX-NOVAL will not control adults of these pests due to its mode of action.
Stink bug spp.[*] Including Brown marmorated stink bug	20 to 30	Apply when adults are first detected. For adult control, tank mix with an adulticide

Continued

- The Degree Days (DD) listed in the above Application Instructions are based on Biofix dates for specific target pests. If your growing region uses a different DD or Biofix model, or no model is available, consult the local cooperative extension, professional consultants, or qualified advisories to ensure the proper timing for the intended target pest.
- Best protection is achieved when applications are initiated at the beginning of egg oviposition.
- **AX-NOVAL** will provide up to 14 days of protection depending on the application rate and rate of foliage growth and fruit expansion.
- Repeat applications as needed to protect new foliage growth, and fruit, but not less than 10 days apart.
- Use the higher rates and shorter application intervals for heavy infestations or under continuous pest pressure.
- For situations of heavy infestations and continuous moth flight and egg oviposition, and where it is difficult to obtain thorough coverage, use the highest labeled rate and maintain coverage with timely reapplications at 10 to 14 day intervals.
- Do not apply more than 150 fl. oz. per acre per calendar year (0.97 lb. of novaluron per acre per calendar year).
- Do not apply within 14 days of harvest.
- **AX-NOVAL** may be alternated or tank mixed with other insecticides targeted against the same pest as long as the application interval does not exceed the period of effectiveness of the alternate product.

[*Not registered for use in California.]

POTATOES/ SWEET POTATOES:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Colorado potato beetle European corn borer Foliage feeding caterpillars Loopers Potato tuberworm Sweet potato leafminer	6 to 12	Apply when the majority of the population is at egg hatch to the second instar. Use higher rates and higher spray volumes when larvae are large, or foliage canopy is tall or dense. Repeat applications as needed to protect new foliage growth, but not less than 7 days apart.
Whiteflies	12	
Potato psyllid[*]	12	Apply on a preventative basis or when first evidence of zebra chip disease and/or live psyllids are detected in the growing area. Repeat application at 7-14 day interval or alternate with an adulticide product for optimum control.

- Do not apply to successive generations of Colorado potato beetle.
- Do not apply more than two applications against whiteflies per season
- Do not apply more than 24 fl. oz. per acre per calendar year (0.16 lb. of novaluron per acre per calendar year).
- Do not apply within 14 days of harvest.
- For application to potatoes through irrigation systems, refer to the section entitled “**APPLICATION THROUGH IRRIGATION SYSTEMS- CHEMIGATION**”

[*Not registered for use in California.]

GRAIN SORGHUM[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Cutworm Sorghum midge Beet armyworm Armyworms Fall armyworm Falls chinch bug True armyworm Webworm Stinkbugs	6 to 12	Apply when the majority of the population is at egg hatch to the second instar. Use higher rates and higher spray volumes when larvae are large or foliage canopy is tall or dense. Reapplication on a 7(minimum) to 14 day interval will be required to protect new growth. For the most effective control, scout fields twice weekly.
<ul style="list-style-type: none"> Do not apply more than 3 applications per crop per season. Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). Do not apply within 7 days of harvest for grain sorghum forage, and within 14 days of harvest for grain sorghum and stover. For application to grain sorghum through irrigation systems, refer to the section entitled “APPLICATION THROUGH IRRIGATION SYSTEMS- CHEMIGATION” 		
[* Not registered for use in California.]		

SOYBEANS[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Green cloverworm Mexican bean beetle Saltmarsh caterpillar Velvet bean caterpillar	6 to 10	Make applications when larvae are small (< 0.5 inches) to give greater control and minimum insect damage to leaves. Repeat application if damaging numbers reappear. Use higher rates and higher spray volumes when the target pest population is 2X or more above state threshold level, or foliage canopy is tall, or dense and larvae are present in the lower part of the canopy, or if greater residual control is desired. AX-NOVAL may be applied at the lower rate (6 fl. oz.) to prevent velvet bean caterpillar build-up when the vegetative growth of soybeans is completed and as pod formation begins. Consult local Extension Service regarding infestation levels requiring treatment.
Beet armyworm Cabbage looper Corn earworm Fall armyworm Soybean looper Stink bug nymphs Tobacco budworm	6 to 12	Apply at egg-hatch stage or when first signs of feeding occur. Use higher rates and higher spray volumes when larvae are more than ¼ inch long, the target pest population is 2X or more above state threshold level, or foliage canopy is tall or dense and larvae are present in the lower part of the canopy. Repeat application if damaging numbers reappear to protect new growth.
Grasshoppers (nymphs only)	9 to 12	For best results, apply when the majority of infesting grasshoppers are in the early nymphal stages of development. If a large influx from neighboring fields should occur, a tank mix with a knockdown insecticide may be necessary to reduce the population to minimize extensive foliage feeding.
<ul style="list-style-type: none"> Aerial Application: Apply in sufficient water (3 to 10 gallons per acre) to achieve uniform coverage of foliage. Ground Application: Apply in 9 to 35 gallons of water per acre to give uniform coverage. Do not exceed 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). Reapplication on a 10 (minimum) to 14-day interval may be required. Do not harvest within 30 days of application. Do not feed treated soybean forage to livestock. 		
[* Not registered for use in California.]		

STONE FRUITS (capulin; black cherry; Nanking cherry; sweet cherry; tart cherry; cultivars, varieties, and/or hybrids of these; nectarine; peach; cultivars, varieties, and/or hybrids of these; apricot; Japanese apricot; Chinese jujube; plum; American plum; beach plum; Canada plum; cherry plum; Chickasaw plum; Damson plum; Japanese plum; Klamath plum; prune plum; plumcot; sloe; cultivars, varieties, and/or hybrids of these):

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Fruit Flies (Cherry, W. Cherry, <i>Drosophila</i> spp. including <i>Spotted Wing Drosophila</i> [*])	20 to 40	Begin applications when adults are detected in the orchard, or after 950 degree days (DD) from March 1st. Adult females will deposit non-viable eggs after contact with, and feeding on, treated foliage and fruit, providing control of eggs and larvae. For adult control, tank mix with an adulticide. Thorough coverage is needed to achieve optimum effect. Do not use spray volumes below 100 GPA. Do not make alternate row treatments.
Leafrollers (Oblique-banded, Pandemis)	20 to 50 (Eastern USA) 30 to 50 (Western USA)	Control of leafrollers is best when applications are timed against early (first to fourth) instar larvae. Apply AX-NOVAL at the following timings: First Generation: Begin applications during the pink to petal fall period. Second Generation: Begin application targeting 20% egg hatch.
Leafrollers (European, Fruittree, Redbanded, Variegated)	20 to 40	For control of the surface or foliar feeding leafroller larval complex, application can be made at any time larvae are feeding. However, most effective crop protection results from application made at the initiation of egg hatch.
Lesser peachtree borer[*]	20	In southeast, apply in a tank mix with either a pyrethroid or phosmet after April 1st, and again in 2 to 4 weeks.
Oriental Fruit Moth	20 to 40	Begin applications before egg hatch of each generation to prevent larval penetration of the fruit.
Peachtree borer[*]	20	In southeast, apply in pre-harvest applications to cultivars ripening after July 1.
Peach Twig Borer	20 to 40	Dormant/Delayed dormant: Apply AX-NOVAL with 4 to 6 gallons per acre of narrow range oil. Always use the higher rates if the orchard has a history of heavy populations. In-Season: Monitor orchard from bloom onward for shoot strikes at the end of each generation. Shoot strikes first appear when the degree-day accumulation from moths in traps approaches 400 DD50 but more will be evident around 700- 800 DD50. If larvae or their damage are observed at this time, make application in sufficient spray volume for thorough coverage.
Sap beetle	20	Apply in a tank mix with adulticides to help effect egg hatch.
Stink bugs[*] including Brown Marmorated (immature)	20 to 40	Apply when thresholds are reached. For adult control, tank mix with an adulticide.

Continued

- The Degree Days (DD) listed in the above Application Instructions are based on timing for specific target pests. If your growing region uses a different DD or Biofix model, or no model is available, consult the local cooperative extension, professional consultants, or qualified advisories to ensure the proper timing for the intended target pest. Best protection is achieved when applications are initiated at the beginning of egg oviposition.
- **AX-NOVAL** will provide up to 14 days of protection depending on the application rate and rate of foliage growth and fruit expansion.
- Repeat applications as needed to protect new foliage growth and fruit, but not less than 7 days apart.
- Use the higher rates and shorter application intervals for heavy infestations or under continuous pest pressure.
- For situations of heavy infestations and continuous moth flight and egg oviposition, and where it is difficult to obtain thorough coverage, use the highest labeled rate and maintain coverage with timely reapplications at 10 to 14 day intervals.
- Do not apply more than 150 fl. oz. per acre per calendar year (0.97 lb. of novaluron per acre per calendar year). Do not apply within 8 days of harvest.
- **AX-NOVAL** may be alternated or tank mixed with other insecticides targeted against the same pest as long as the application interval does not exceed the period of effectiveness of the alternate product.

[* Not registered for use in California.]

STRAWBERRY:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Corn Earworm Loopers Lygus Thrips Webworms	9 to 12	Apply when the majority of the population is at egg hatch to the second instar. For lygus, apply when adults are observed in the field and just prior to egg hatch. Optimum control will be achieved with the 12 fl. oz./A rate.
Thrips (Western flower, chili, etc.) spp.[*]	6 to 12	Apply when thrip populations begin to build. For adult control, tank mix with an adulticide.
Asian Cockroach[*] Sap beetles[*]	6 to 12	Apply when adults appear and prior to egg hatch. For adult control of all life stages, tank mix with an adulticide.
<ul style="list-style-type: none"> • Spray with a sufficient volume of water to ensure thorough coverage of fruit and leaf surfaces. • Repeat applications as needed to protect new foliage growth, and fruit, but not less than 7 days apart. Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • Do not apply within 1 day of harvest. 		

[* Not registered for use in California.]

SUGARCANE[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Sugarcane Borer (<i>Diatrea saccharalis</i>)	9 to 12	Begin applications when live larvae infestations in the leaf sheath reach 5% threshold as defined by the LSU AgCenter or Cooperative Extension Service. Use higher rates and higher spray volumes when infestation levels are high. Make repeat applications when threshold levels are again exceeded. Required spray volume is 2-5 gallons per acre for aerial applications and a minimum of 10 gallons per acre for ground applications. Use higher spray volumes when treating Mexican rice borer infestations. For the most effective control, scout fields. Reapplication on a 10 (minimum) to 14 day interval may be required.
Mexican rice borer (<i>Eoreuma Loftini</i>)	12	
<ul style="list-style-type: none"> Do not apply more than 60 fl. oz. per acre per calendar year (0.39 lb. of novaluron per acre per calendar year). Do not apply more than 5 applications per season. Do not apply within 14 days of harvest. Only registered crops may be rotated in a treated field within 30 days of the final application. 		
[* Not registered for use in California.]		

SWEET CORN:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Corn earworms European corn borers Foliage feeding caterpillars Grasshoppers[*] (nymphs only)	9 to 12	Pre-tassel timing: Apply when adult activity is first observed or when the majority of the immature population is at egg hatch to second instar. For optimum corn earworm and corn borer control, tank mix with a knockdown and/or adulticide. Silking / post-tassel timing: Apply when adult activity is first observed or when eggs begin to hatch. Apply only in a tank mix with knockdown or adulticide products.
Sap beetle[*] Cucumber beetle[*]	6 to 12	Apply when adults first appear and prior to egg hatch.
<ul style="list-style-type: none"> Apply in sufficient volume to ensure full coverage of foliage and developing ears. Use higher rates and higher spray volumes when larvae are large or foliage canopy is tall or dense. Repeat applications as needed to protect new growth, but not less than 7 days apart. Do not apply more than 60 fl. oz. per acre per calendar year (0.39 lb. of novaluron per acre per calendar year). Do not apply within 1 day of harvest. The retreatment of sweet corn with novaluron is prohibited (i.e., only 1 application is allowed at a rate of 0.078 lb. a.i./A) in CA and other arid areas which receive less than 20 inches of precipitation per year. For application to sweet corn through irrigation systems, refer to the section entitled “APPLICATION THROUGH IRRIGATION SYSTEMS- CHEMIGATION”. 		
[*Not registered for use in California.]		

SWISS CHARD[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Armyworms Cucumber beetle Loopers	9 to 12	Apply when the majority of the population is at egg hatch to the early instars. Use the higher rates and higher spray volumes when larvae are large or foliage canopy is tall or dense.
Beet webworm	12	Apply during oviposition through early instar stages. Use higher spray volumes and increased pressure to ensure complete coverage and penetration to immature leaves at the base of the plant.
<ul style="list-style-type: none"> • Repeat applications as needed to protect new foliage growth, but not less than 7 days apart. • Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • Do not apply within 1 day of harvest. 		
[* Not registered for use in California.]		

TURNIP GREENS[*]:

Target Pests	Rates (Fl. Oz./A)	Application Instructions
Alfalfa Looper Armyworms Cabbage Loopers Cabbage Webworm Corn Earworm Cucumber Beetles Diamondback Moth Imported Cabbageworm Leafminers (Dipteran and Lepidopteran) Southern Cabbageworm	6 to 12	Apply when the majority of the population is at egg hatch to the second instar. Use higher rates and higher spray volumes when larvae are large, when target pest populations is 2X or more above state threshold level or foliage canopy is tall or dense. Repeat applications as needed to protect new growth, but not less than 7 days apart.
Lygus Bugs Stink Bugs Thrips Vegetable Weevil Whiteflies	12	
<ul style="list-style-type: none"> • Do not apply more than 2 applications against whiteflies per season. • Do not apply more than 36 fl. oz. per acre per calendar year (0.23 lb. of novaluron per acre per calendar year). • Do not apply within 7 days of harvest. • Do not apply to turnips harvested for the root. Do not feed turnip tops to livestock. 		
[* Not registered for use in California.]		

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

PESTICIDE STORAGE: Keep this product in its tightly closed original container. Store in a cool, dry (preferably locked) area that is inaccessible to children and animals. Do not store near food or feed. Keep above freezing.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

CONTAINER HANDLING:

Nonrefillable Container (< 5 gallons): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures allowed by State and local authorities.

Nonrefillable Container (> 5 gallons): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling, if available or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures allowed by State and local authorities.

Refillable Container: Refillable container. Refill this container with novaluron only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling, if available or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures allowed by State and local authorities.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather, presence of other materials or other influencing factors in the use of the product, which are beyond the control of AXION AG PRODUCTS LLC or Seller, TO THE EXTENT CONSISTENT WITH APPLICABLE LAW All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold AXION AG PRODUCTS LLC and Seller harmless for any claims relating to such factors.

AXION AG PRODUCTS LLC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or AXION AG PRODUCTS LLC, and TO THE EXTENT CONSISTENT WITH

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