

1381-187

9/18/2014

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460



OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

SEP 18 2014

Ms. Danielle Erding
Registration Specialist
Winfield Solutions, LLC
P.O. Box 64589
St. Paul, MN 55164-0589

Subject: Label Notification per PRN 2001-5 and PRN 98-10 – Addition of Resistance Management and MOA code to the Label
Product Name: Arctic @3.2 EC Insecticide
EPA Registration Number: 1381-187
Application Date: September 8, 2014
Decision Number: 495407

Dear Ms. Erding:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 2001-5 and PRN 98-10 for the above referenced product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 2001-5 and PRN 98-10 and finds that the action requested falls within the scope of PRN 2001-5 and PRN 98-10.

The label submitted with the application has been stamped "Notification" and will be placed in our records.

If you have any questions, you may contact Dani Daniel at 703 305-5409 or via email at daniel.dani@epa.gov.

Sincerely,

Richard J. Gebken, Product Manager 10
Insecticide Branch
Registration Division (7505P)
Office of Pesticide Programs

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<h1 style="margin:0;">EPA</h1>	United States Environmental Protection Agency Washington, DC 20460	<input type="checkbox"/> Registration <input type="checkbox"/> Amendment <input checked="" type="checkbox"/> Other	OPP Identifier Number
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NOTIFICATION

Application for Pesticide - Section I

1. Company/Product Number 1381-187	2. EPA Product Manager R. Gebken	3. Proposed Classification <input type="checkbox"/> None <input checked="" type="checkbox"/> Restricted
4. Company/Product (Name) ARCTIC 3.2 EC	PM# 10	SEP 18 2011 NOTIFICATION
5. Name and Address of Applicant (Include ZIP Code) Winfield Solutions, LLC P.O. Box 64589 St. Paul, MN 55164-0589 <input type="checkbox"/> Check if this is a new address	6. Expedited Review in accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No.: Product Name:	

Section II

<input type="checkbox"/> Amendment - Explain Below	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application
<input checked="" type="checkbox"/> Notification - Explain below	<input type="checkbox"/> Other - explain below

Explanation: Use additional page(s) if necessary. (For Section I and Section II). Notification of Addition of Resistance Management Recommendations and MOA code to label, consistent with PR Notice 2001-5, and per PR Notice 98-10. I believe this notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under section 12 and 14 of FIFRA.

Section III

1. Material This Product Will Be Packaged In:			
Child-Resistant Packaging <input type="checkbox"/> Yes* <input type="checkbox"/> No <small>*Certification must be submitted.</small>	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," Unit Package Wt. No. Per Container	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," Package Wt. No. Per Container	2. Type of Container <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) of Retail Container	5. Location of Label Directions <input type="checkbox"/> On Label <input type="checkbox"/> On Labeling accompanying product
6. Manner In Which Label Is Affixed To Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Other <input type="checkbox"/> Paper Glued <input type="checkbox"/> Stenciled			

Section IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)		
Name Danielle Erding	Title Registration Specialist	Telephone No. (Include Area Code) 651-375-7228
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		6. Date Application Received (Stamped)
2. Signature 	3. Title Registration Specialist	
4. Typed Name Danielle Erding	5. Date September 8, 2014	

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WINFIELD™

P 651-375-5205 P.O. BOX 64589, MS 5705, ST PAUL MN 55164
F 651-375-1158 SHIP TO 1080 COUNTY ROAD F WEST, MS 5705, SHOREVIEW MN 55126-2910

September 8, 2014

Mr. Richard Gebken, PM 10
Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Subject: EPA Reg. No. 1381-187, Arctic 3.2 EC
Notification of Label Amendment
Addition of Resistance Management Recommendation and MOA Code per PR Notice 2001-5

Dear Mr. Gebken:

Enclosed are a Notification Application and five copies of amended labeling for the subject product. The labeling incorporates an insecticide resistance management recommendation and MOA code, consistent with the guidance provided in the Agency's PR Notice 2001-5.

Please note that one copy of the enclosed labeling has been highlighted (in yellow), to point out the revisions. No other label changes are being made at this time.-

If there are questions concerning the enclosed, please do not hesitate to contact me.

Sincerely,

Danielle Erding

Danielle Erding
Registration Specialist
deering@landolakes.com

Enclosures

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NOTIFICATION 1

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RESTRICTED USE PESTICIDE SEP 18 2014
Due to Toxicity to Fish and Aquatic Organisms

For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified Applicator's certification

GROUP **3** INSECTICIDE

ARCTIC[®] 3.2 EC Insecticide

Active Ingredient:

Permethrin*..... 36.8%

Other Ingredients:** 63.2%

TOTAL 100.0%

NOTIFICATION

SEP 18 2014

*cis/trans ratio: Max. 58% (±) cis and min. 42% (±) trans

** Contains petroleum distillates.

Contains 3.2 pounds permethrin per gallon as an emulsifiable concentrate.

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID

IF SWALLOWED	<ul style="list-style-type: none"> • Immediately call a poison control center or doctor. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give any liquid to the person. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<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.
IF INHALED	<ul style="list-style-type: none"> • 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 center or doctor for further treatment advice.
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.
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. NOTE TO PHYSICIAN: Contains petroleum distillate – vomiting may cause aspiration pneumonia. For additional information in case of emergency call toll free 1-877-424-7452.</p>	

EPA Reg. No. 1381-187

EPA Est. No. 53883-TX-2, 70989-MIO-1

Distributed By:
Winfield Solutions, LLC
P.O. Box 64589
St. Paul, MN 55164-0589

NET CONTENTS: 1 Gal. (3.785 Liters)
4/444/3 1/0908/4

WINFIELD

AgriSOLUTIONSTM

PRECAUTIONARY STATEMENTS

Hazards to Humans & Domestic Animals

CAUTION. Harmful if swallowed, inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing vapors and spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protection Equipment (PPE)

Some materials that are chemical-resistant to this product are made of barrier laminate or viton. If you want more options, follow the instructions for category G on an EPA chemical-resistance category selection chart.

Applicators using ULV cold foggers and/or fog/mist generators in indoor spaces must wear:

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks, and
- Chemical-resistant headgear, if overhead exposure.

Applicators using ULV cold foggers or fog/mist generators in outdoor spaces must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks, for all handlers except for applicators using motorized ground equipment, pilots and flaggers, and
- Chemical-resistant gloves.

All other mixers, loaders, applicators, and other handlers must wear:

- Long-sleeve shirt and long pants,
 - Shoes plus socks,
 - Chemical-resistant gloves, and
 - Chemical-resistant apron for mixers/loaders, persons cleaning equipment, and persons exposed to the concentrate.
- See engineering controls for additional requirements.

Engineering Controls:

Pilots must use an enclosed cockpit that meet the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240 (d)(6))].

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing and other absorbent materials that have been drenched (except as required by directions for use) or heavily contaminated with this product's concentrate. Do not reuse them.

User Safety Recommendations

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 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 extremely toxic to aquatic organisms, including fish and invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean water mark. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash waters.

Under some conditions, it may also have a potential for transport into surface water in runoff (primarily adsorbed to suspended soil particles), for several months or more after applications. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, and areas overlying extremely shallow groundwater, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters and vegetated filter strips, and areas over-lying tile drainage systems that drain to surface waters.

This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product to allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

Physical/Chemical Hazards

Combustible. Do not use or store near heat or open flame.

DIRECTIONS FOR USE RESTRICTED FOR USE PESTICIDE

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

- Not for use in outdoor residential misting systems.
- Use in a handheld cold or thermal fogger is prohibited.
- For 4 hours following applications, do not allow any person to reenter treated areas.

~~Resistance: Some insects are known to develop resistance to products used repeatedly for control. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or state agricultural authorities for details.~~

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If resistance to this product develops in your area, this product, or other products with a similar mode of action may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and resistance is a reasonable cause, immediately consult your local agricultural advisor for the best alternative method of control for your area. **Editor's Note: Green highlighted has been moved under the following paragraph.**

Resistance Management Recommendations

ARCTIC 3.2 EC contains a Group 3 insecticide (or acaricide). Insect/mite biotypes with acquired resistance to Group 3 may eventually dominate the insect/mite population if Group 3 insecticides/acaricides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by ARCTIC 3.2 EC or other Group 3 insecticides/acaricides.

If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternative method of control in your area.

To delay insecticide (or acaricide) resistance consider:

- Avoiding the consecutive use of ARCTIC 3.2 EC or other group 3 insecticides/acaricides that have a similar target site of action, on the same insect/mite species.
- Using tank-mixtures or premixes with insecticides/acaricides from a different target site of action Group as long as the involved products are all registered for the same use and have different sites of action.
- Basing insecticides/acaricide use on a comprehensive IPM program.
- Monitoring treated insect/mite populations for loss of field efficacy.
- Contacting your local extension specialist, certified crop advisors, and/or Winfield Solutions, LLC representative for insecticides/acaricide resistance management and/or IPM recommendations for the specific site and resistant pest problems.

Do not apply this product in a way that 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.

Agricultural Use Requirements

Use this product only in accordance with its labeling and 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 on this product that are covered by Worker Protection Standard.

Do not enter or allow worker entry to 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,
- Shoes plus socks,
- Chemical-resistant gloves made of any waterproof material.

Chemigation

Apply this product only through the following types of sprinkler irrigation: 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. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water. For questions concerning calibration consult the equipment manufacturer or your local State Extension Service representative. A person knowledgeable of the chemigation system and responsible for its operation, or person under the supervision of the person responsible, shall shut the system down and make necessary adjustments should the need arise.

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 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.

ARCTIC 3.2 EC should be applied continuously for the duration of the water application. ARCTIC 3.2 EC should be diluted in sufficient volume to ensure accurate application of the area to be treated. When using chemigation, a minimum of 0.1 inch per acre of irrigation water is recommended. Agitation generally is not required when a suitable diluent is used. A diluent test should be conducted to ensure that phase separation will not occur during dilution and application. Failure to achieve a uniform dilution throughout the time of application may result in undesirable residues or less than desirable control.

Commercial Impregnation and Application on Dry Bulk Fertilizers

ARCTIC 3.2 EC may be impregnated on dry bulk fertilizers. When applied as directed, ARCTIC 3.2 EC/dry bulk fertilizer mixtures provide insect control equal to that provided by the same rates of ARCTIC 3.2 EC applied in water.

The ARCTIC 3.2 EC/fertilizer mixtures may be surface applied or shallow incorporated. The higher rate should be used if incorporation is used.

Impregnation: Apply using a minimum of 200 pounds of dry bulk fertilizer per acre and up to a maximum of 450 pounds per acre with the recommended amount of ARCTIC 3.2 EC per acre. Use a closed rotary-drum mixer or a similar type of closed blender equipped with suitable spray equipment. The spray nozzle(s) should be positioned to provide a uniform, fine spray pattern over the tumbling fertilizer for thorough coverage. The physical properties of fertilizers vary particularly in liquid absorption capacity. When absorptivity is sufficient, simply spray impregnation of the fertilizer with ARCTIC 3.2 EC provides a satisfactory, dry mixture. If the absorptive capacity is inadequate, the use of a highly absorptive powder is required to provide a dry, flowable mixture. Microcel E (Johnson Manville Product Corporation) is a recommended absorbent powder. Generally less than 2% by weight of Microcel E is required. DO NOT impregnate ARCTIC 3.2 EC onto straight coated fertilizers or straight limestone because these materials will not absorb the insecticide. Dry fertilizer blends containing mixtures of ammonium nitrate or limestone may be impregnated with ARCTIC 3.2 EC.

The amount of ARCTIC 3.2 EC actually required in the preparation of individual fertilizer mixtures should be determined carefully for each production operation. This is necessary to ensure that the amount of pesticide actually contained in the mixture applied to the soil represents the correct rate of use. Bulk fertilizer impregnated with ARCTIC 3.2 EC should be applied immediately, not stored.

All individual state regulations relating to bulk dry fertilizer blending, registration, labeling and application of the mixtures are the responsibility of the individual and/or company selling the fertilizer and ARCTIC 3.2 EC mixture.

SPRAY DRIFT REQUIREMENTS

Wind Direction and Speed

Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 15 mph.

Temperature Inversion

Do not make aerial or ground applications into temperature inversions.

Inversions are characterized by stable air and increasing temperature with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

Droplet Size

Use only medium or coarser spray nozzles (for ground and non-ULV aerial application) according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Additional Requirements for Ground Applications

Wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.

For ground boom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

For airblast applications, turn off outward pointing nozzles at row ends and when spraying the outer two rows. To minimize spray loss over the top in orchard applications, spray must be directed into the canopy.

Additional Requirements for Aerial Applications

The spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of the wing span or 80% rotor diameter.

Flight speed and nozzle orientation must be considered in determining droplet size.

Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.

When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

BUFFER ZONES

Vegetative Buffer Strip

Construct and maintain a minimum 10-foot-wide vegetative filter strip of grass or other permanent vegetation between the field edge and down gradient aquatic habitat (such as, but not limited to, lakes; reservoirs; rivers; streams; marshes or natural ponds; estuaries; and commercial fish farm ponds).

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- Potatoes
- Tomatoes, Tomatillos
- Tree Fruit and Nuts
 - Almonds
 - Apples
 - Cherries
 - Filberts (Hazelnuts)
 - Papaya (Florida Only)
 - Peaches and Nectarines
 - Pistachios
 - Pears
 - Walnuts
- Other Crops
 - Alfalfa
 - Corn (Field), Field Corn Grown for Seed, Popcorn
 - Pre-emergent Use
 - Foliar Use
 - Corn (Field), Field Corn Grown for Seed, Popcorn
 - At Plant Use
 - Mushrooms
 - Range Grass (New Mexico Only)
 - Soybeans
- Ornamentals
 - Chrysanthemum
 - Conifers (Container and Field Grown)
 - Ornamental Nursery Stock (Field Grown)
 - Pine Seed Orchards
 - Roses (Field Grown)
 - Roses (Greenhouse)
- Other Uses
 - Premises Spray
 - Treatment of Preconstruction Lumber and Logs

VEGETABLE CROPS

ARTICHOKE			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Artichoke	Artichoke plume moth Leafminers	4 – 12 (0.1 – 0.3)	Maximum single application rate is 0.3 lb. ai/A (12 fl. oz./A). Do not apply more than 0.9 lb ai/A (36 fl. oz/A) per season. Retreatment interval is 10 days.
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Applications may be made up to harvest. 			

ASPARAGUS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Asparagus	Asparagus beetle Cutworms	2 – 4 (0.05 – 0.1)	Maximum single application rate is 0.1 lb. ai/A (4 fl. oz/A). Do not apply more than 0.4 lb. ai/A (16 fl. oz/A) per season. Retreatment interval is 7 days. Post harvest application only. Apply to the fern stage of the asparagus plant after spear harvest when larval and adult stages are present. *Not for control of this insect in California
	Asparagus beetle Japanese beetle (Adult stage)* Lygus bugs Tarnished plant bug	4 (0.1)	
<ul style="list-style-type: none"> Apply by ground in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Do not apply within 1 day of harvest. 			

AVOCADO			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS

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Avocado	Avocado caterpillar Avocado lace bug Avocado leafhopper Avocado leafroller Avocado looper Avocado tree girdler Avocado whitefly Brown soft scale Mirids Omnivorous looper Orange tortrix Scale crawlers Spanworm Thrips Twig borers	8 (0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Minimum retreatment interval is 7 days. Apply when insects first appear and repeat at 7 to 10 day intervals as needed to provide control.
Apply by ground equipment in 25-400 gallons of finished spray per acre. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Do not apply within 7 days of harvest.			

COLE CROPS – Brassica Leafy Vegetables			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Broccoli, Chinese Broccoli (gai lan, white flowering broccoli), Cavalo broccolo, Cabbage, Chinese Cabbage (napa, tight-headed varieties only), Kohlrabi	Cabbage looper Armyworm spp. Imported cabbageworm Diamondback moth Plant bugs Thrips Cabbage aphid*	2 – 8 (0.05 – 0.2)	Apply when insects first appear and repeat at 5-day intervals as needed to provide control. Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.4 lb. ai/A (16 fl. oz/A) per season (except Hawaii) for cabbage. In Hawaii do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season for cabbage. Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season for broccoli. Retreatment interval is 5 days.
Brussels Sprouts, Cauliflower	Diamondback moth Southern white butterfly Armyworm spp. Cutworms Flea beetles	2 – 4 (0.05 – 0.1) 2 – 4 (0.05 – 0.1)	Apply when insects first appear and repeat at 5 to 10 day intervals as needed to provide control. Maximum single application rate is 0.1 lb. ai/A (4 fl. oz/A). For Brussels Sprouts, do not apply more than 0.4 lb. ai/A (16 fl. oz/A) per season. For Cauliflower, do not apply more than 0.4 lb. ai/A (16 fl. oz/A) per season everywhere except Hawaii. In Hawaii do not apply more than 0.6 lb. ai/A (24 fl. oz/A) per season for Cauliflower. Minimum retreatment interval is 5 days.

Apply by air or ground equipment, except for collards (ground application only). By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
 Do not apply within 1 day of harvest.
 * Aids in the suppression only

COLLARDS and TURNIPS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS

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Collards (AR, AZ, GA, IL, NC, OK, SC, and TX only)	Beet armyworm Cabbage looper Corn earworm Cutworms Diamond back moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer Aphids*	2 - 6 (0.05 - 0.15)	Apply with ground equipment only. Apply when insects first appear and repeat at 3-day intervals as needed to provide control. Do not exceed 8 applications. Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A). Do not apply more than 0.45 lb. ai/A (18 fl. oz/A) per season. Retreatment interval is 3 days.
Turnips (FL, GA, IL, IN, OK, SC, TX, and WA only)	Beet armyworm Cabbage looper Corn earworm Cutworms Diamond back moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer Aphids*	2 - 6 (0.05 - 0.15)	Apply with ground equipment only. Apply when insects first appear and repeat at 3-day intervals as needed to provide control. Do not graze treated areas or feed crop refuse to livestock. Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A). Do not apply more than 0.45 lb. ai/A (18 fl. oz/A) per season. Retreatment interval is 3 days.

- Apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 1 day of harvest.

* Aids in the suppression only

CORN, SWEET

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Corn, Sweet	Corn earworm Corn rootworm beetles* Cutworms European corn borer Fall armyworm Flea beetle Hop vine borer Leafhoppers Southern armyworm Stalk borers	4 - 8 (0.1 - 0.2)	Apply when insects first appear and repeat at 3 to 5-day intervals as needed to provide control. Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Minimum retreatment interval is 3 days. *Pest does not occur on this crop in California.

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 1 day of harvest.

CORN, SWEET (FLORIDA ONLY)

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS

Corn, Sweet	Aster leafhopper Corn earworm Cutworm European corn borer Fall armyworm Southern armyworm	4 – 8 (0.1 – 0.2)	Apply when insects first appear and repeat at 3 to 5-day intervals as needed to provide control. Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Minimum retreatment interval is 3 days.
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Do not apply within 1 day of harvest. 			

CUCURBIT VEGETABLES

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Cucurbit vegetables*	Aphids Leafminers Squash bugs	8 (0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 1.2 lb. ai/A (48 fl. oz/A) per season on everything except cantaloupe.
	Cabbage looper Cucumber beetle (adult) Cutworms Leafhoppers Melonworm Pickleworm Plant bugs (including Lygus and Stink bugs) Rindworms Squash vine borer	4 – 8 (0.1 – 0.2)	On Cantaloupes do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. On Cantaloupes in Hawaii do not apply more than 1.2 lb. ai/A (48 fl. oz/A) per season. Retreatment interval is 7 days.
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 4 gallons of water per acre. By ground, apply in a minimum of 20 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Applications may be made up to harvest. 			

* Cucurbit vegetables include: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon, Cucumber, Gherkin, Gourd (edible) (includes hyotan, cucuzza), Luffa spp. (includes hechima, Chinese okra), Momordica spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), Muskmelon (hybrids and/or cultivars of Cucumia melo, including true cantaloupe, cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, and snake melon), Pumpkin; Summer Squash (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), Winter Squash (includes butternut squash, calabaza, hubbard squash, C. mixta, C. pepo, acorn squash, spaghetti squash), Watermelon (includes hybrids and/or varieties of Citrullus spp.)

EGGPLANT

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Eggplant	Colorado potato beetle	6 (0.15)	Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A). Do not apply more than 0.6 lb. ai/A (24 fl. oz/A) per season except in Hawaii. In Hawaii do not apply more than 1.0 lb. ai/A (40 fl oz/A). Retreatment interval is 7 days.
	Cabbage looper Flea beetles Vegetable leafminer	6 (0.15)	Apply when insects first appear and repeat at 7-day intervals as needed to provide control. Use sufficient water to obtain uniform coverage.

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 3 days of harvest.

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HORSERADISH			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Horseradish	Imported crucifer weevil (Baris lepidii)	0.1% active solution (2 pt, 1 oz per 100 gallons)	As a spring preplant dip, soak sets for 30 minutes and air-dry before planting.
		6 (0.15)	For foliar application, apply with ground equipment in a minimum spray volume of 20 gallons finished spray per acre. Make up to 3 foliar applications as needed to control weevil adults during oviposition.

Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A).
Do not apply more than 0.45 lb. ai/A (18 fl. oz/A) per season.
Retreatment interval is 10 days.
Do not apply within 30 days of harvest.

LEAFY VEGETABLES (except Brassica)

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Leafy vegetables*	Aphids Beet armyworm Corn earworm Cutworms European corn borer Fall armyworm Green cloverworm Leafminers Southern armyworm Tobacco budworm	4 - 8 (0.1 - 0.2)	Apply when insects first appear and repeat, at 7-day intervals for celery and lettuce and 3-day intervals for all other listed leafy vegetables, as needed to provide control. Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). For celery do not apply more than 1.0 lb. ai/A (40 fl oz/A) per season except in Hawaii. In Hawaii do not apply more than 1.2 lb. ai/A (48 fl oz/A). For spinach do not apply more than 0.6 lb. ai/A (24 fl. oz/A) per season. For lettuce do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season except in Hawaii. In Hawaii do not apply more than 1.2 lb. ai/A (48 fl. oz/A). For all leafy vegetable crops (except brassica, celery, lettuce and spinach): • The maximum number of applications is 10.
	Alfalfa looper Cabbage looper Leafhoppers	2 - 8 (0.05 - 0.2)	

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 1 day of harvest.

* Leafy vegetables: Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Cardoon, Celery, Chinese celery, Celtuce, Chervil, Chrysanthemum (edible-leaved and garland), Corn salad, Garden Cress, Upland Cress (yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Florence fennel (finocchio), Head and Leaf Lettuce, Orach, Parsley, Garden Purslane, Winter Purslane, Radicchio (red chicory), Rhubarb, Swiss chard, Spinach (including New Zealand and vine, Malabar spinach, Indian spinach).

ONIONS, BULB and GARLIC

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Onion, bulb Garlic	Amyworms Onion thrips	Onion 6 - 12 (0.15 - 0.3)	Begin applications when pest appear and repeat as necessary to maintain control. Use the higher label rates as onion thrips population increases and avoid rescue situations.
	Cutworms Leafminers Onion maggots (adults) Stink bugs	Garlic 6 - 8 (0.15 - 0.2)	Onion: Maximum single application rate is 0.3 lb. ai/A (12 fl. oz/A). Do not apply more than 1.0 lb. ai/A (40 fl. oz/A) per season. Retreatment interval is 7 days. Garlic: Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Retreatment interval is 10 days.

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- Apply by air or ground equipment. By air, apply in a minimum of 5 gallons of water per acre. By ground, apply in a minimum of 20 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 1 day of harvest.

PEPPERS, BELL

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Peppers, bell	Cabbage looper Corn earworm Cutworms Flea beetle Pepper weevil Vegetable leafminer	4 – 8 (0.1 – 0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Retreatment interval is 5 days.
	European corn borer	8 (0.2)	

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- Do not apply within 3 days of harvest.

POTATOES

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Potatoes	Aster leafhopper Beet armyworm Cabbage looper Colorado potato beetle Cutworms European corn borer Potato aphid Potato flea beetle Potato leafhopper Potato psyllid Potato tuberworm Tarnished plant bug	4 – 8 (0.1 – 0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Retreatment interval is 10 days.

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- ARCTIC 3.2 EC also may be applied using refined non-volatile vegetable oil for control of listed pests. ARCTIC 3.2 EC should be diluted with oil and applied in a minimum of one quart total volume per acre using equipment calibrated to give adequate coverage. Use sufficient spray volume to obtain full coverage.
- Do not apply within 14 days of harvest.

TOMATOES, TOMATILLOS

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Tomatoes Tomatillos	Beet armyworm Cabbage looper Colorado potato beetle Granulate cutworm Hornworms Southern armyworm Tomato fruitworm Tomato pinworm Vegetable leafminers	2 – 8 (0.05 – 0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.6 (24 fl. oz/A) per season except in Hawaii. In Hawaii, do not apply more than 0.8 lb. ai/A (32 fl. oz/A) per season. Retreatment interval is 7 days. Do not apply to cherry tomatoes or other varieties which produce fruit less than one inch in diameter.

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- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
- May be applied up until harvest.

TREE FRUIT AND NUTS

ALMONDS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Almonds	Navel orangeworm Peach twig borer	8 - 10 (0.2 - 0.25)	Apply when insects appear and repeat at 10-day intervals to maintain control. Apply by air or ground equipment. By air, apply in a minimum of 15 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre.
	Ants	8 - 10 (0.2 - 0.25)	Apply by ground equipment only in a minimum of 15 gallons of water per acre. Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.
<p>Maximum single application rate is 0.25 lb. ai/A (10 fl. oz/A). Do not apply more than 0.75 lb. ai/A (30 fl. oz/A) per season. Retreatment interval is 10 days. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Do not apply within 7 days of harvest.</p>			

APPLES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Apples	Green fruitworm Oblique banded leafroller Plum curculio Redbanded leafroller Rosy apple aphid Spotted tentiform leafminer Tarnished plant bug White apple leafhopper	4 - 10 (0.1 - 0.25)	Maximum single application rate is 0.25 lb. ai/A (10 fl. oz/A). Do not apply more than 0.5 lb. ai/A (20 fl. oz/A) per season. Retreatment interval is 10 days. Apply when insects appear and repeat at 10-day intervals to maintain control. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock.
<ul style="list-style-type: none"> • Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. • Do not apply after petal fall. 			

CHERRIES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Cherries (includes Sweet Cherries and Tart Cherries)	Green fruitworm Lesser peach tree borer Plum curculio Redbanded leafroller Rose chafer Tarnished plant bug	4 - 8 (0.1 - 0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.6 lb. ai/A (24 fl. oz/A) per season. Retreatment interval is 10 days. Apply when insects first appear. East of the Rockies: Do not exceed 6 applications per season, with no more than 4 applications after petal fall. West of the Rockies: Do not apply more than 4 applications per season, with no more than 3 applications after petal fall.

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- Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre.
- Do not graze livestock in treated areas.
- Do not feed cover crops from treated areas to livestock.
- Do not apply within 3 days of harvest.

FILBERTS (HAZELNUTS)

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Filberts(Hazelnuts)	Filbertworm Oblique banded leafroller	8 - 10 (0.2 - 0.25)	Do not apply more than 0.75 lb. ai/A (30 fl. oz/A) per season. Apply when insects appear. Do not make applications less than 10 days apart. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock.
<ul style="list-style-type: none"> • Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. • Do not apply within 14 days of harvest. 			

PAPAYA (Florida Only)

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Papaya	Aphids Brown soft scale Mealybug Papaya fruit fly Papaya webworm Papaya whitefly Scale crawlers	6 (0.15)	Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A). Do not apply more than 0.75 lb. ai/A (30 fl. oz/A) per season. Retreatment interval is 10 days. Spray to wet all foliage. Apply when insects first appear and repeat at 10 day intervals as needed to provide control. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock.
<ul style="list-style-type: none"> • Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. • Do not apply within 7 days of harvest. 			

PEACHES and NECTARINES

CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Peaches Nectarines	Green fruitworm Lesser peach tree borer Oriental fruit moth Peach twig borer Plum curculio Rose chafer Tarnished plant bug	4 - 10 (0.1 - 0.25)	Maximum single application rate is 0.25 lb. ai/A (10 fl. oz/A). Do not apply more than 0.75 lb. ai/A (30 fl. oz/A) per season. Retreatment interval is 10 days. Spray to wet all foliage. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock.
<ul style="list-style-type: none"> • Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. • Do not apply within 14 days of harvest. 			

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PISTACHIOS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Pistachios	Leaffooted bugs Naval orangeworm Peach twig borer Plant bugs Stink bugs	8 - 12 (0.2 - 0.3)	Use sufficient water to obtain full coverage of foliage.
	Ants	12 (0.3)	Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.
<p>Maximum single application rate is 0.3 lb. ai/A (12 fl. oz/A). Do not apply more than 0.9 lb. ai/A (36 fl. oz/A) per season. Retreatment interval is 10 days.</p> <ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Do not apply after 10 percent hull split. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. May be applied up until harvest. 			

PEARS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Pears (Dormant through Delayed Dormant)	Pear psylla	8 - 16 (0.2 - 0.4)	May be combined with 2 to 8 gallons of spray oil per acre. Apply during the dormant through delayed dormant growth periods only.
Pears (Pre-Bloom)	Codling moth Green fruitworm Pear psylla	10 (0.25)	Pre-bloom sprays can be applied from dormant through bud burst stages.
<p>Dormant: Maximum single application rate is 0.4 lb. ai/A (16 fl. oz/A). Pre-bloom: Maximum single application rate is 0.25 lb. ai/A (10 fl. oz/A). Do not apply more than 0.65 lb. ai/A (26 fl. oz/A) per season. Retreatment interval is 10 days.</p> <ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Use sufficient water to obtain uniform coverage. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. 			

WALNUTS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Walnuts	Codling moth Navel orangeworm Walnut husk fly	10 (0.25)	<p>Apply when insects appear.</p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p> <p>Maximum single application rate is 0.25 lb. ai/A (10 fl. oz/A). Do not apply more than 0.75 lb. ai/A (30 fl. oz/A) per season. Retreatment interval is 10 days.</p>
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Use sufficient water to obtain uniform coverage. Do not apply within 1 day of harvest. 			

OTHER CROPS

ALFALFA			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Alfalfa: lucerne, sainfoin, holy clover, esparcet, birdsfoot trefoil and varieties and/or hybrids of these. Alfalfa grown for seed	Alfalfa caterpillar Armyworms Blue alfalfa aphid Cutworms Green cloverworm Green peach aphid Loopers Pea aphid Spotted alfalfa aphid Velvetbean caterpillar Webworms	2 - 8 (0.05 - 0.2)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.2 lb. ai/A (8 fl. oz/A) per cutting. Retreatment interval is 30 days. Use higher recommended dosage for increased pest pressure or for increased residual pest control. Avoid application when bees are actively foraging by applying during the early morning or during the evening hours.
	Alfalfa weevil Cucumber beetle Egyptian alfalfa weevil Meadow spittlebug Plant bugs (including <i>Lygus</i> spp.) Potato leafhopper Stink bugs	4 - 8 (0.1 - 0.2)	
<ul style="list-style-type: none"> Apply only to fields planted to pure stands of alfalfa. Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use higher gallonage, 5-10 gallons by air or 20 by ground, of finished spray per acre when foliage is dense and/or when pest populations are high. May be applied up until harvest when rates of 0.1 pound per active per acre or less are used. When rates greater than 0.1 pound active per acre are used, do not apply within 14 days of harvest. 			

CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Field Corn, Field corn grown for seed, Popcorn (Pre-emergent Use)	Armyworm Cutworm Stalk borers	4 - 6 (0.1 - 0.15) as a broadcast spray OR 0.3 - 0.6 oz per 1000 linear feet row (based on a 4" band and 40" row spacing)	May be applied as a preplant incorporated, pre-emergence, or at planting time application. Apply in the time period from 5 days prior to planting up to emergence of the crop. Apply as a broadcast spray by ground or air or 4-15 inch band using sufficient spray volume to achieve adequate coverage. Linear row calculations should be used proportional to the standard Band Width/Row Width formula to adjust rates for different band widths or row spacings. Use higher rates of ARCTIC 3.2 EC when incorporating into the soil without exceeding the recommended dosage. When using tank mixes, observe all restrictions and precautions which appear on the labels of these products. Provide constant agitation during mixing and application to keep the mixture in solution.

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Field Corn, Field Corn Grown for Seed, Popcorn (Foliar Use)	Armyworm (including Fall Armyworm) Corn borer European, Southwestern Corn earworm Corn rootworm beetles Cutworm Flea beetle Hop vine borer Stalk borers Webworms	4 – 6 (0.1 – 0.15)	When treating for stalk borers, ARCTIC 3.2 EC must be applied when or shortly before the stalk borer larvae are moving into the corn from surrounding weeds and grasses. Mowing or burndown herbicide is suggested to initiate movement. For control of corn earworm, apply just before silking and continue as necessary to maintain control.
	Western bean cutworm	2 – 4 (0.05 – 0.1)	

- Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
 - Do not apply within 30 days of harvest of grain or fodder (stover).
 - Forage may be harvested on the day of application.
- Maximum single application rate is 0.15 lb. ai/A (6 fl. oz/A).
Do not apply more than 0.45 lb. ai/A (18 fl. oz/A) per cutting.
Retreatment interval is 7 days.

CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Field Corn, Field corn grown for seed, Popcorn (At Plant Use)	Armyworm Cutworm Seed corn maggot* Wireworm*	0.3 oz per 1000 linear feet of row	Apply as an in furrow, band or T-band treatment using a minimum 4" band. Use table below to determine the ARCTIC 3.2 EC needs for each acre. * Not for use in California
Row Spacings (inches)		40 30 20	
ARCTIC 3.2 EC (ounces per acre)		4.0 6.0 8.0	
ARCTIC 3.2 EC (pounds ai per acre)		0.10 0.15 0.20	

MUSHROOMS (Mushroom Houses and Adjacent Premise Areas)			
CROP	TARGET PESTS	RATE OZ (LBS AI)	REMARKS
Mushrooms (Mushroom houses and adjacent premise areas)	Mushroom flies (Sciarid and Phorid adults)	2 – 2.5 (0.05 – 0.0625)	Preparation of the building prior to fogging: (1) Close all doors, windows, and ventilators, (2) Lock or barricade all entrances, turn off pilot lights, post warning signs, and take precautions to prevent persons and animals from entering the area. Use prior to filling the house, during cool-down, during spawning, up to pinning, and between breaks. Do not use when mushrooms are present. Treat once daily as needed when flies appear. Do not make more than 20 applications prior to pinning of first break; apply no more than two applications between each break. Do not apply more than 30 applications total per crop of 5 breaks. Length of exposure time should be limited to 1 hour; then ventilate the house. Use fans to ventilate in houses that do not have forced air circulation. Wear a respirator with either an organic vapor-removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
<ul style="list-style-type: none"> • Apply in 30 ounces of water or suitable diluent. Use 1 quart of solution per standard double house (35,000 cu. ft.: 8000 sq. ft.). • Apply as a fogging or aerosol treatment. Use of high pressure hand wand is prohibited in mushroom houses. • Do not apply within 3 days of harvest. 			

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RANGE GRASS (New Mexico Only)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Range Grass (New Mexico only)	Range caterpillar	0.4 (0.01)	Apply when insects first appear. Do not apply more than once per year. Cattle may be present during application.
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of finished spray per acre. Use sufficient volume to obtain uniform coverage. Do not harvest or feed hay to livestock. 			

SOYBEANS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Soybeans	Bean leaf beetle Cabbage looper Corn rootworm beetle Cutworms Flea beetle Green cloverworm Japanese beetle Mexican bean beetle Potato leafhopper Saltmarsh caterpillar (Woollybear caterpillar) Thistle caterpillar Velvetbean caterpillar	2 - 4 (0.05 - 0.1)	Maximum single application rate is 0.2 lb. ai/A (8 fl. oz/A). Do not apply more than 0.4 lb. ai/A (16 fl. oz/A) per cutting. Retreatment interval is 10 days. Do not graze treated areas or feed soybean forage or hay.
	Beet armyworm Corn earworm Soybean looper Webworms	4 - 8 (0.1 - 0.2)	
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. ARCTIC 3.2 EC may also be applied using refined non-volatile vegetable oil for control of listed pests. ARCTIC 3.2 EC should be diluted with oil and applied in a minimum of 1 quart total volume per acre using equipment calibrated to give adequate coverage. When applying in water by aircraft, 1 quart of oil may be substituted for 1 quart of water per gallon of finished spray. Do not apply within 60 days of harvest. 			

ORNAMENTALS

CHRYSANTHEMUMS			
CROP	TARGET PESTS	RATE OZ (LBS AI)	REMARKS
Chrysanthemums	Liriomyza leafminer flies	20 (0.5) per 100 gallons of water (1 teaspoon per gallon)	Avoid spraying the blooms. May be applied on a weekly schedule.
<ul style="list-style-type: none"> Caution: ARCTIC 3.2 EC has demonstrated excellent plant safety; however, not all cultivars have been tested. Before treating large numbers of plants of a particular cultivar, treat a few plants and observe prior to full-scale application. 			

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CONIFERS (Container and Field Grown)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Conifers (container and field grown)	Nantucket pine tip moth	4 – 8 (0.1 – 0.2)	Begin application when the adults appear and repeat at 5 to 7 day intervals or as needed throughout the season.
<ul style="list-style-type: none"> • ARCTIC 3.2 EC may be diluted in a non-volatile vegetable oil or water in a minimum of 1 gallon of finished spray per acre using equipment calibrated to give adequate coverage. 			
Conifers, Nursery (Alabama, Arkansas, Florida, Georgia, Mississippi, South Carolina, Tennessee, Texas, Virginia)	Regeneration weevil	64 fl. oz./1-1/4 acres (1.6 lbs ai/1-1/4 acres)	Apply to 100,000 trees (approximately 1-1/4 acres) in enough water to achieve thorough coverage.

ORNAMENTAL NURSERY STOCK (Field Grown)			
CROP	TARGET PESTS	RATE FL OZ (LBS AI)	REMARKS
Ornamental nursery stock (field grown)	Bagworm Beet armyworm Cabbage looper Citrus thrips Lace bug Leafhoppers Leafminers Whiteflies	4 – 8 (0.1 – 0.2) per 100 gallons of water	ARCTIC 3.2 EC may be used to control specified pests on non-edible ornamentals and non-bearing plants of fruiting species.
<ul style="list-style-type: none"> • Caution: Marginal leaf burn may occur on Salvia, Dieffenbachia and Pteris Fern. Application to blooming plants may cause browning of petals. • ARCTIC 3.2 EC has demonstrated excellent plant safety; however, not all species and cultivars have been tested. Before treating large numbers of plants of a particular variety, treat a few plants and observe prior to full-scale application. 			

PINE SEED ORCHARDS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI)	REMARKS
Pine seed orchards	Coneworms Seed bugs	Ground: 8 – 16 (0.2 – 0.4)	For low and high volume applications, use a final carrier solution of 25-400 gals. depending on the type of sprayer system being used. Make up to 3 applications per season.
		Air: 24 (0.6)	Apply in a minimum of 5 gals. of finished spray per acre. Apply once per season.
<p>To control webbing coneworm – make first application within 1 week of female flower closure or peak pollen flight. To control other coneworms and seed bugs – make first application within 30 days following female flower closure. Repeat applications at 4 week intervals.</p> <ul style="list-style-type: none"> • Harvesting of conifer seed is prohibited within 30 days of application. • Do not graze livestock in treated areas. • Do not feed cover crops from treated areas to livestock. 			

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ROSES (Field Grown)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	REMARKS
Roses (field grown)	Heliothis spp.	4 - 8 (0.1 - 0.2)	
<ul style="list-style-type: none"> Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of finished spray per acre. 			

ROSES (Greenhouse)			
CROP	TARGET PESTS	RATE OZ (LBS AI)	REMARKS
Roses (greenhouse)	Beet armyworm Cabbage looper Omnivorous leafroller	8 (0.2) per 100 gallons of water	Use a pump spray or power spray. ULV and/or mist or fogging equipment is permitted.
<ul style="list-style-type: none"> ARCTIC 3.2 EC is not phytotoxic to the following varieties of greenhouse roses: Ballena, Bettina, Cara Mia, Coquette, Excitement, Forever Yours, G. Wave, Jack Frost, Jr. Bridesmaid, Matador, Paul's Pink, Samantha, Seventeen, Sonia, Town Crier, Tropicana and Visa. Other varieties may vary in their sensitivity to ARCTIC 3.2 EC, and a small number of plants should be treated under local conditions to determine plant safety prior to commercial use. 			

OTHER USES

PREMISES SPRAY (For Agricultural Use Only)			
SITE	TARGET PESTS	RATE OZ	REMARKS
For Application In: Dairies, Barns, Feedlots, Stables, Poultry houses, Swine and Livestock houses	House flies, Stable flies and other manure breeding flies Also aids in the reduction of Cockroaches, Mosquitoes and Spiders	4 to 12.5 gallons of water Sprayer: apply 1 gallon per 750 sq. ft. of space	Spray directly to walls and ceiling as residual surface treatment only. Re-treat as necessary, but not more often than once every 2 weeks. Do not treat manure or litter.
<ul style="list-style-type: none"> The use of any residual fly spray should be supplemental with proper manure management and general sanitation to reduce or eliminate fly breeding sites. Do not apply directly to livestock or poultry. Avoid contamination of feed and water. When applied in dairy barns or facilities, close milk bulk tank lids to prevent contamination. 			

TREATMENT OF PRECONSTRUCTION LUMBER AND LOGS

General Information

ARCTIC 3.2 EC should be diluted with water. To prepare the spray, dilute ARCTIC 3.2 EC as shown in the following spray dilution chart:

GALLONS OF SPRAY MIXTURE DESIRED	GALLONS OF ARCTIC 3.2 EC FOR 0.5% SOLUTION	GALLONS OF ARCTIC 3.2 EC FOR 0.75% SOLUTION	GALLONS OF ARCTIC 3.2 EC FOR 1.0% SOLUTION
40	1/2	3/4	1
80	1	1 1/2	2
200	2 1/2	3 3/4	5
400	5	7 1/2	10
800	10	15	20

Directions for Application

To protect unseasoned lumber and logs from wood destroying insects, such as Termites, Carpenter Ants and Beetles (Ambrosia, Powder-post, Old house borers and others), totally treat wood with a 0.5% to 1.0% solution of ARCTIC 3.2 EC. This solution can be applied by various methods including spraying, brushing, dipping, and pressure treatment. Frequent monitoring of dip and pressure systems are necessary to insure that the desired level of ARCTIC 3.2 EC is maintained. Wood can be handled after treatment when dry.

1. For dip treatments, the wood should be totally submersed in the solution until thoroughly wet and then allowed to dry in a suitable location. Dipping solutions to which ARCTIC 3.2 EC has been added should be agitated before use if left unused for long periods of time. Sediment, debris and other deposits should be periodically cleaned from the tank.
2. For pressure treatments the wood should be placed in the treatment chamber, the ARCTIC 3.2 EC solution added and the system pressurized up to 250 psi for up to one hour depending on the density and type of wood treated. After the pressure is released and the system drained, the wood should be placed in a suitable location for drying.
3. For spray treatments, the wood should be sprayed thoroughly including back and ends.
4. For brush treatments, all parts of wood surfaces should be thoroughly treated.

Application Restrictions for Preconstruction Termiticide Applications

The treatment site must be covered prior to a rain event in order to prevent run-off of the pesticide into non-target areas.

The applicator must either cover the soil himself or provide written notification of the above requirement to the contractor on site and to the person commissioning the application (if different from the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under FIFRA to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application, the treated soil is covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

Do not treat soil that is water-saturated or frozen.

Do not treat when raining.

Do not allow treatment to run off from the target area.

Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).

Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

PESTICIDE STORAGE

Store at temperatures above 40°F (5°C).

If feasible, shake container well before using. If crystals form, warm to room temperature by placing container in a room at ambient temperature 70°F (21°C) until crystals dissolve.

Do not use or store near heat, open flame or hot surfaces.

Keep out of reach of children and animals.

Store in a dry place and avoid excess heat in storage. Store in original containers only.

Carefully open containers. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers.

In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. To confine spill, dike surrounding area or absorb with sand, cat litter, commercial clay or gel absorbents. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

PESTICIDE DISPOSAL

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Use label language appropriate for container size and type.

Nonrefillable containers. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying.

Nonrefillable container equal to or less than 5 gallons. 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.

Nonrefillable container greater than 5 gallons. 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.

Refillable container. Refill this container with pesticide 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.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call
CHEMTREC 1-800-424-9300

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