

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

February 12, 2007

Gary Halvorson  
Agriliance LLC  
P.O. Box 64089  
St. Paul, MN 55164

Subject: Amendment – Revised label to be similar to basic's label  
Tundra EC  
EPA Reg. No. 1381-196  
Your submission dated August 8, 2006

Dear Mr. Halvorson:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, is acceptable subject to the comments listed below. Two (2) copies of the finished labeling must be submitted prior to releasing the product for shipment. A stamped copy of the label is enclosed for your records.

1. Under the warranty statement change "should" to "must" in second paragraph and add, "To the extent consistent with applicable law" to the beginning of the sentence, "The exclusive remedy of the user or buyer .... Etc".
2. Replace "Inert Ingredients" with "Other Ingredients" in the Ingredient statement.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

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If you have any questions regarding this action, please contact BeWanda Alexander of my team at (703) 305-7460.

Sincerely,

A handwritten signature in cursive script that reads "BeWanda Alexander for".

George T. LaRocca

Product Manager 13

Insecticide Branch

Registration Division (7505C)

Enclosure

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**RESTRICTED USE PESTICIDE**  
Toxic to fish and aquatic organisms.  
For retail sale to and use only by certified applicators, or persons under their direct supervision and only for the uses covered by the certified applicator's certification.



# TUNDRA™ INSECTICIDE

TUNDRA™ INSECTICIDE IS NOT FOR SALE OR USE IN CALIFORNIA.

Active Ingredient:	By Wt.
<b>Bifenthrin*</b> (2 methyl[1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate .....	25.1%
<b>Inert Ingredients**:</b> .....	74.9%
<b>TOTAL</b> .....	100.0%

\*Cis isomers 97% minimum, trans isomers 3% maximum.  
\*\*Contain xylene range aromatic solvents  
This product contains 2 pounds active ingredient per gallon.

## KEEP OUT OF REACH OF CHILDREN WARNING AVISO

This label must be in the possession of the user at the time of application.

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.)

FIRST AID	
If swallowed	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>Do not give any liquid to the person.</li> <li>Do not give anything by mouth to an unconscious person.</li> </ul>
If in eyes	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
If inhaled	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor for further treatment advice.</li> </ul>
If on skin or clothing	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>NOTE TO PHYSICIAN</b>	
This product is a pyrethroid. If large amounts have been ingested, the stomach and intestine should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided. Contains petroleum distillates. Vomiting may cause aspiration pneumonia.	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. <b>FOR EMERGENCY MEDICAL ASSISTANCE, CALL THE NATIONAL PESTICIDE INFORMATION CENTER 1-800-858-7378.</b>	

ACCEPTED  
with COMMENTS  
in EPA Letter Dated  
FEB 12 2007  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under EPA Reg. No.  
1381-196

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

EPA Reg. No. 1381-196

EPA Est. No. 5905-GA -1

Distributed By:  
Agrilience, LLC  
P.O. Box 64089  
St. Paul, MN 55164-0089

Net Contents:  
P120P 08/08/06

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

**WARNING.** May be fatal if swallowed. Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield or safety glasses). Harmful if absorbed through skin or inhaled. Avoid breathing spray mist. Avoid contact with skin. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.

**Personal Protective Equipment (PPE):**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category E on an EPA chemical resistance category selection chart.

**Handlers who may be exposed to the dilute through application or other tasks must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate, Nitrile rubber, neoprene rubber or Viton
- Shoes plus socks

**Handlers who may be exposed to the concentrate through mixing, loading, application or other tasks must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate, Nitrile rubber, neoprene rubber, or Viton
- 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 immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

**Environmental Hazards**

This pesticide is extremely toxic to fish and aquatic invertebrates. Use with care when applying in areas adjacent to any body of water. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not make applications when weather conditions favor drift from treated areas. Drift and run-off from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

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

The use of bifenthrin is prohibited in areas that may result in exposure of endangered species to bifenthrin. Prior to use in a particular county contact the local extension service for procedures and precautions to use to protect endangered species.

**Physical/Chemical Hazards**

Do not use or store near heat or open flame.

**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 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.

**Resistance:**

BIFENTURE is an insecticide. Any insect/mite population may contain individual insects that may develop resistance to a specific pesticide product used in consecutive generations to control these pests. Prediction of resistance development is uncertain. Appropriate resistance management strategies should be followed. Contact your local extension specialist or certified crop advisors for any additional pesticide resistance management and/or Integrated Pest Management recommendations for the specific site and pest problems in your area.

**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 of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during 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.
- Chemical-resistant gloves, such as barrier laminate or nitrile rubber or neoprene rubber or Viton.
- Shoes plus socks.

**STORAGE AND DISPOSAL**

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

**Pesticide Storage:** Store above 40°F.

**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 of the nearest EPA Regional Office for guidance.

**Container Disposal:** Metal or Plastic Container: Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Do not cut or weld metal containers.

**Returnable, Refillable Containers:** Refillable/re-usable containers should be returned to the point of purchase for cleaning and refilling because the container must be thoroughly cleaned before refilling.

**Chemigation Use Directions**

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. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.

Use a minimum of 0.75 inch of water per acre for LEPA irrigation . Use 1 to 2 pints per Acre of non-emulsified oils when used as the diluent.

The set up and calibration of chemigation equipment are important to achieve control of target insect pests. . Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water. Contact your State Agricultural Extension Service specialists, equipment manufacturers or other experts for advice on the suitability of the equipment set up for optimum control of the target insect pests.

A person knowledgeable of the chemigation system and responsible for its operations, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise. Failure to cease application during a mechanical stoppage may result in undesirable residues to adjacent areas.

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.

Apply Tundra EC Agricultural Insecticide continuously for the duration of the water application. Dilute Tundra EC Agricultural Insecticide in sufficient volume to ensure accurate application over the area to be treated. Use a minimum of 0.5 inch per acre of irrigation water for application by chemigation. No agitation is required if a suitable diluent is used. Conduct a diluent test to check that phase separation will not occur during dilution and application. If uniform dilution is not achieved during the entire period of application, undesirable residues or less than desirable control may occur.

**Rotation Crop Restrictions**

Crops for which bifenthrin tolerances exist may be rotated at any time. All other crops may be rotated 30 days after the last application.

**Tank-Mixes**

Apply Tundra EC Agricultural Insecticide with other products registered for the same crops. Observe all applicable directions, restrictions, and precautions on the EPA-registered labels for other tank mix partners.

**Spray Drift Precautions**

Maintain and calibrate all aerial and ground application equipment using appropriate carriers.

WHEN SPRAYING IN THE VICINITY OF AQUATIC AREAS (LAKES, RESERVOIRS, RIVERS, PERMANENT STREAMS, MARSHES, NATURAL PONDS, ESTUARIES OR COMMERCIAL FISH FARM PONDS) OBSERVE THESE PRECAUTIONS:

- Do not apply by ground equipment within 25 feet, or by air within 150 feet of aquatic areas. The buffer zone must be increased to 450 feet when ultra low volume (ULV) application is made in cotton. Do not use ultra low volume (ULV) applications to corn and hops .
- When applied by air, mount the spray boom on the aircraft to minimize drift caused by rotor vortices or wingtip. Use the minimum practical boom length which must not exceed 75% of wing span or rotor diameter.
- Select the appropriate nozzle sizes to form the largest spray droplets that provide sufficient coverage and control. Minimize the formation of very small droplets by pointing the nozzles away from the air stream , and by avoiding excessive spray boom pressure.

Do not apply the spray at heights greater than 10 feet above the crop canopy, but at the lowest height to ensure pest control and flight safety.

Apply by air or ground when wind speed is between 3 and 10 mph, and not greater than 15 mph. Avoid application when wind gusts approach 15 mph.

- Do not apply when wind is blowing towards the aquatic area.
- Allow a 10 foot vegetative filter strip to grow between the aquatic areas and the treated crop.
- Do not spray during conditions of low humidity and high temperatures because of the increased likelihood of spray drift to aquatic areas.

Do not apply using aerial or ground applications during temperature inversions. An inversion can be identified by the presence of ground fog in humid areas or by lateral movement of smoke (under low wind conditions) from a ground source or a smoke generator. Do not make aerial or ground application to corn if heavy rainfall is imminent.

**Instructions for Application**

The following Directions for Use tables provide, in some cases, rate ranges. Use the lower application rates when insect pressure is light to moderate. Use the higher application rates when insect populations are high, when treating mites and when climate is arid.

Cultivation within 10 feet of a water body is prohibited to allow for the growth of a vegetated filter strip.

In New York State this product may not be applied within 100 feet (using ground equipment) to 300 feet (using aerial equipment) of coastal marshes or streams that drain into coastal marshes.

**INDEX TO CROPS LISTED ON THIS LABEL**

Artichokes  
Brassicas  
Caneberries  
Canola, Crambe, Rapeseed  
Citrus (Not for this use in Florida)  
Cotton  
Field Corn (Grain and Silage), Popcorn, Field Corn Grown for Seed (At Plant Use)  
Field Corn (Grain and Silage), Popcorn, Field Corn Grown for Seed (PRE & PPI)  
Field Corn (Grain and Silage), Popcorn, Field Corn Grown for Seed (Foliar Use)  
Sweet Corn (Grain and Silage), Sweet Corn Grown for Seed (At Plant Use)  
Sweet Corn (Grain and Silage), Sweet Corn Grown for Seed (Foliar Use)  
Cucurbits  
Eggplant  
Grapes  
Hops  
Lettuce, Head  
Pears  
Peppers, Bell and Non-Bell  
Spinach  
Succulent Peas and Beans  
Tomatoes



**ARTICHOKES**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Artichoke Plume Moth Cribrate Weevil	0.10 lb. ai (6.4 fl. oz. product)	<p>Begin applications when pest population reaches damaging levels And repeat as necessary to maintain control.</p> <p>Apply in water in a minimum of 75 gallons of spray/A by ground or in a minimum of 10 gallons/A by air.</p> <p>Do not make applications less than 15 days apart.</p> <p>Do not apply more than 0.5 lb. a.i. /A (one quart product) per season.</p>	5

**BRASSICAS**

CROP	PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Head and Stem Brassica Vegetables including: Broccoli Brussels Sprouts Cabbage Cauliflower Cavalo Broccolo Chinese Broccoli (gai lon, white flowering broccoli) Chinese Cabbage (napa) Chinese Mustard Cabbage (gai choy) Kohlrabi	Aphids Armyworms Corn Earworm Crickets Cucumber Beetles Cutworms Diamondback Moth Flea Beetles Ground Beetles Imported Cabbageworm Leafhoppers Loopers Saltmarsh Caterpillar Stink Bugs Thrips Tobacco Budworm Whitefly Wireworm (Adults)	0.033-0.10 lb. ai (2.1-6.4 fl. oz. product)	<p>Apply in water in a minimum of 10 gallons spray/A by ground or in a minimum of 2 gallons/A by air. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired when applying by air.</p> <p>For best control thorough coverage is necessary.</p> <p>Do not exceed 0.5 lb a.i. (1 quart product) per acre per season.</p> <p>Do not make more than 5 applications after bloom.</p> <p>Do not make applications less than 7 days apart.</p>	7
	Banks Grass Mite Carmine Mite Lygus spp. Pacific Spider Mite Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)		

**CANEBERRIES**

<b>CROP</b>	<b>PESTS CONTROLLED</b>	<b>RATE TUNDRA EC/ACRE</b>	<b>APPLICATION INSTRUCTIONS</b>	<b>PHI (days)</b>
Caneberries including: Bingleberries Blackberries Dewberries Loganberries Lowberries Marionberries Ollalieberries Raspberries Youngberries	Leafrollers Orange Tortrix Root Weevils	0.05-0.10 lb. ai (3.2-6.4 fl. oz. product)	Apply in water in a minimum of 50 gallons/A by ground or in a minimum of 10 gallons/A by air. For best control thorough coverage of foliage is necessary.  Make one prebloom application and if necessary one postbloom application.  Do not apply more than 0.2 lb. a.i. /A per season.	3
	Spider Mites	0.10 lb. ai (6.4 fl. oz. product)		

**CANOLA, CRAMBE, RAPESEED**

<b>PESTS CONTROLLED</b>	<b>RATE TUNDRA EC/ACRE</b>	<b>APPLICATION INSTRUCTIONS</b>	<b>PHI (days)</b>
Aphids Armyworms Cutworms Diamondback Moth Flea Beetle Flea Hopper Grasshopper Loopers Other Lepidopterous Larvae Plant Bug Seedpod Weevil Stink Bugs Thrips Whitefly	0.033-0.04 lb. ai (2.1-2.6 fl. oz. product)	Apply in water in a minimum of 10 gallons/A by ground or in a minimum of 2 gallons/A by air. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired when applying by air. For best control thorough coverage is necessary.  Do not apply more than 0.08 lb. a.i. (5.12 fl. oz. product) per acre per season. Do not make applications less than 14 days apart.	35

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**CITRUS**

(Not for use in Florida)

<b>PESTS CONTROLLED</b>	<b>RATE TUNDRA EC/ACRE</b>	<b>APPLICATION INSTRUCTIONS</b>	<b>PHI (days)</b>
<p>Asian Cockroach  <i>Diaprepes</i> Root Weevil (<i>Diaprepes abbreviatus</i>)            Fire Ants</p>	<p>0.25-0.50 lb. ai            (16-32 fl. oz. product)</p>	<p>Use a hand-gun or shielded sprayer to apply to individual citrus resets, when not in solid planted rows.</p> <p><i>Diaprepes</i> Root Weevil: If peak emergence is expected in the spring, use 32 fl. oz. formulated product to obtain the longest residual control.</p> <p>If more than one peak of emergence is anticipated, apply 16 fl. oz. formulated product in the spring and 16 fl. oz. formulated product in the fall.</p> <p>Do not apply using any type of chemigation.</p> <p>Direct the spray to the base of tree to prevent contact with fruit or foliage.</p> <p>Do not apply more than a total of 0.5 lb ai (32 fl. oz. product) per acre per year.</p> <p>Apply by ground only in a minimum of 30 gallons/acre of finished spray.</p> <p>Do not apply by air.</p>	<p>1</p>

## COTTON

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
European Corn Borer Soybean (Banded) Thrips Tobacco Thrips	0.02-0.10 lb. ai (1.3-6.4 fl. oz. product)	Apply Tundra EC in water or refined soybean/cottonseed oil.  Apply in water in a minimum of 5 gallons/A by ground or a minimum of 1 gallon/A by air. Substitute 1 quart of emulsified oil for 1 quart water if desired when applying by air.	14
Boll Weevil Bollworm Cabbage Looper Cotton Aphid Cotton Fleahopper Cotton Leafperforator Cutworms Fall Armyworm Plant Bugs Saltmarsh Caterpillar Southern Garden Leafhopper Stink Bugs Tobacco Budworm Whitefly Yellow Striped Armyworm	0.04-0.10 lb. ai (2.6-6.4 fl. oz. product)	<b>ULV Application:</b> Apply in refined vegetable oil in a minimum of 1 quart/A with aircraft calibrated to give adequate coverage.  <b>Boll Weevil:</b> Apply Tundra EC every 3 to 4 days until control is acceptable. <b>Mites and Aphids:</b> Apply when pests first appear. Repeat as necessary to maintain control. Use the higher rates once a damaging threshold is established.  Apply no more than 0.5 lb. a.i. per acre per season.	
Beet Armyworm Carmine Spider Mite Lygus spp. Pink Bollworm Twospotted Spider Mite	0.06-0.10 lb. ai (3.8-6.4 fl. oz. product)	No more than 10 synthetic pyrethroid applications (of one product or combination of products, including Ambush <sup>®</sup> , Ammo <sup>®</sup> , Asana <sup>®</sup> XL, Baythroid <sup>®</sup> , Capture <sup>®</sup> , Danitol <sup>®</sup> , Karate <sup>®</sup> , Mustang <sup>®</sup> , and Scout X-TRA <sup>®</sup> ) may be made to a cotton crop in one growing season.  Do not graze livestock in treated areas or cut treated crops for feed.	

**FIELD CORN (GRAIN AND SILAGE), POPCORN, FIELD CORN GROWN FOR SEED  
(AT PLANT USE)**

<b>PESTS CONTROLLED</b>	<b>RATE TUNDRA EC</b>	<b>APPLICATION INSTRUCTIONS</b>	<b>PHI (days)</b>
Corn Rootworm, Larvae Northern Southern Western	0.0046 lb ai (0.30 fl. oz. product) per 1,000 linear feet of row	Apply as a 5 to 7 inch T-band at planting over the open seed furrow. The table below describes the amount of Tundra EC needed per acre. Apply in water in a minimum of 3 gallons/A.  When using Tundra EC with fertilizers, check to be sure all components are compatible. For mixture with water or fertilizer, use the following procedure. Fill the spray tank approximately one-half full with water or liquid fertilizer; add the proper amount of Tundra EC; then add the rest of the water or fertilizer. Sufficient agitation during mixing and application is required to ensure a uniform mixture.	30
Army Cutworm Cutworm Species Grubs Seed Corn Beetle Seed Corn Maggot True Armyworm or Armyworm Species Wireworm	0.0023 – 0.0046 lb ai (0.15 - 0.30 fl. oz. product) per 1,000 linear feet of row	Only apply to soil when there is less than 30% cover of crop residue remaining.  Do not graze livestock in treated area or cut treated crops for feed within 30 days of treatment.  Do not apply more than 0.1 lb. active per acre per season at planting.	

Row spacings	40 in.	38 in.	36 in.	30 in.
Tundra EC (lb. a.i. per acre)	0.060	0.064	0.069	0.080
Tundra EC (formulated product, ounces per acre)	3.9	4.1	4.4	5.12

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**FIELD CORN (GRAIN AND SILAGE), POPCORN, FIELD CORN GROWN FOR SEED  
Pre-Plant Incorporated (PPI) and Pre-Emergence (PRE)**

<b>PESTS CONTROLLED</b>	<b>RATE TUNDRA EC</b>		<b>APPLICATION INSTRUCTIONS</b>
Armyworm spp. Black Cutworm Seedcorn Maggot Stalkborer White Grub Wireworm	0.047 to 0.062 lb. a.i./A (3-4 fl. oz./A product) Pre- Plant Incorporated (PPI)		Incorporate Tundra EC close to the expected depth of the seed, but no deeper than 3 inches. PPI: Use the 3-4 oz./A rate only. Apply alone or with PPI herbicides as a tank mix. PRE: Use the 2.56 oz/A rate when tankmixing and applying with PRE herbicides.
Armyworm spp. Black Cutworm Stalkborer	0.040 lb. a.i./A (2.56 fl. oz./A product) Pre- emergence (PRE)		

**FIELD CORN (GRAIN AND SILAGE), POPCORN, FIELD CORN GROWN FOR SEED  
(FOLIAR USE)**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Army Cutworm Beet Armyworm Cereal Leaf Beetle Chinch Bug Common Stalk Borer Corn Earworm Corn Rootworm Adults Cucumber Beetle Adult Cutworm Species European Corn Borer Fall Armyworm Flea Beetle Grasshoppers Greenbug Japanese Beetle Adult Sap Beetle Southern Armyworm Southern Corn Leaf Beetle Southwestern Corn Borer Stinkbugs Tarnished Plant Bug True Armyworm or Armyworm Species Webworms Western Bean Cutworm Yellowstriped Armyworm	0.033-0.10 lb ai (2.1-6.4 fl. oz. product)	<p>Apply in water in a minimum of 10 gallons/A by ground or in a minimum of 2-5 gallons/A by air. For heavy infestations, use 5 gallons of finished spray per acre by aircraft. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired. For best control thorough coverage is necessary.</p> <p><b>Ear-Attacking Pests:</b> Apply Tundra EC just before silking.</p> <p><b>Southwestern Corn Borer, European Corn Borer:</b> Apply at or shortly before egg hatch.</p> <p><b>Other Insect Pests:</b> Apply when insects first appear. Repeat as needed.</p> <p><b>Banks Grass Mites:</b> Apply f when colonies first form before leaf damage or discoloration and prior to movement above the bottom third of the plant.</p> <p><b>Twospotted Spider Mite and Carmine Mite:</b> Apply when colonies first form before leaf damage or discoloration and before wide-spread mite movement throughout the canopy. Use the higher rates if heavier insect pressure is noted and corn is under heat or drought stress. Tank mixtures with dimethoate at 0.5 lb. a.i. per acre are effective under these conditions.</p> <p><b>Mite Control in Texas, New Mexico, Oklahoma, and Arizona:</b> Apply in water in a minimum of 10 gallons/A ground or in a minimum of 5 gallons/A by air.</p>	30
Banks Grass Mite Carmine Mite Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)	<p>Repeat applications as necessary to maintain control, but do not apply more than 0.3 lb. active ingredient per acre per season including PRE &amp; PPI, at plant plus foliar applications.</p> <p>Do not graze livestock in treated areas or cut treated crops for feed within 30 days of the last application.</p> <p>Do not apply by ultra low volume (ULV) application on corn.</p> <p>If heavy rainfall is imminent, do not make aerial or ground applications to corn.</p> <p>Use of Tundra EC Agricultural Insecticide on corn is prohibited in all coastal counties.</p>	

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**SWEET CORN (GRAIN AND SILAGE)  
SWEET CORN GROWN FOR SEED  
(AT PLANT USE)**

PESTS CONTROLLED	RATE TUNDRA EC	APPLICATION INSTRUCTIONS	PHI (days)
Corn Rootworm, Larvae Northern Southern Western	0.0046 lb. ai (0.30 fl.oz. product) per 1,000 linear feet of row	Apply at planting over the open seed furrow. The table below describes the amount of Tundra EC needed per acre. Apply in a minimum of 3 gallons of finished spray per acre.  When using Bifenthrin EC with fertilizers, check to be sure all components are compatible. For mixture with water or fertilizer, use the following procedure. Fill the spray tank approximately one-half full with water or liquid fertilizer; add the proper amount of Tundra EC; then add the rest of the water or fertilizer. Sufficient agitation during mixing and application is required to ensure a uniform mixture.	30
Army Cutworm Cutworm Species Grubs Seed Corn Beetle Seed Corn Maggot True Armyworm or Armyworm Species Wireworm	0.0023 - 0.0046 lb. ai (0.15 - 0.30 fl.oz. product) per 1,000 linear feet of row	Only apply to soil where there is less than 30% cover of crop residue remaining.  Do not graze livestock in treated area or cut treated crops for feed within 30 days of treatment.  Do not apply more than 0.1 lb. active per acre per season at planting.	

Row Spacings	40 in.	38 in.	36 in.	30 in.
Tundra EC (lb. a.i. per acre)	0.060	0.064	0.069	0.080
Tundra EC (formulated product, ounces per acre)	3.9	4.1	4.4	5.12



SWEET CORN (GRAIN AND SILAGE)  
 SWEET CORN GROWN FOR SEED  
 (FOLIAR USE)

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Army Cutworm Beet Armyworm Cereal Leaf Beetle Chinch Bug Common Stalk Borer Corn Earworm Corn Rootworm Adults Cucumber Beetle Adult Cutworm Species European Corn Borer Fall Armyworm Flea Beetle Grasshoppers Greenbug Japanese Beetle Adult Sap Beetle Southern Armyworm Southern Corn Leaf Beetle Southwestern Corn Borer Stinkbugs Tarnished Plant Bug True Armyworm or Armyworm Species Webworms Western Bean Cutworm Yellowstriped Armyworm	0.033-0.10 lb. ai (2.1-6.4 fl. oz. product)	<p>Apply in water in a minimum of 10 gallons/A by ground or in a minimum of 2-5 gallons/A by air. For heavy infestations by aircraft, use 5 gallons of finished spray per acre. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired.</p> <p>For best control, thorough coverage is necessary.</p> <p><b>Ear-Attacking Pests:</b> Apply Tundra EC just before silking.</p> <p><b>Southwestern Corn Borer, European Corn Borer:</b> Apply twice, with the first application at or shortly before egg hatch.</p> <p><b>Other Insect Pests:</b> Apply when insects first appear. Repeat as needed.</p> <p><b>Banks Grass Mite:</b> Apply when colonies first form before leaf damage or discoloration and prior to movement above the bottom third of the plant.</p> <p><b>Twospotted Spider Mite and Carmine Mite:</b> Apply when colonies first form before leaf damage or discoloration and prior to widespread mite movement throughout the canopy.</p>	1
Banks Grass Mite Carmine Mite Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)	<p>Use the higher rates if heavier insect pressure is noted and corn is under heat or drought stress.</p> <p>Repeat applications as necessary, but do not apply more than 0.2 lb. a.i. (12.8 fl. oz. product) per acre per season.</p> <p>Do not graze livestock in treated areas or cut treated crops for feed within 1 day of the last application.</p> <p>Do not apply by ultra low volume (ULV) on corn.</p> <p>If heavy rainfall is imminent, do not make aerial or ground applications to corn.</p> <p>Use of Tundra EC on corn is prohibited in all coastal counties.</p>	

CUCURBITS

CROP	PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
<p>Chayote (fruit)            Chinese waxgourd            (Chinese preserving melon)            Citron melon            Cucumber            Gherkin            Gourd, edible            (includes hyloan, cucuzza), (<i>Luffa</i> spp.) (includes hechima, Chinese okra), (<i>Momordica</i> spp.) (includes balsam apple, balsam pear, bitter melon, Chinese cucumber)            Muskmelon (hybrids and/or cultivars of <i>Cucumis melo</i>) (includes 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 (<i>Cucurbita</i> spp.)            Squash, summer            (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini)            Squash, winter            (includes butternut squash, calabaza, hubbard squash (<i>C. mixta</i>; <i>C. pepo</i>), includes acorn squash, spaghetti squash)            Watermelon            (includes hybrids and or varieties of <i>Citrullis</i> spp.)</p>	<p>Aphids            Armyworms            Cabbage Looper            Corn Earworm            Cucumber Beetles            Cutworm            Grasshopper            Leafhoppers            Melonworm            Pickleworm            Plant Bug            Rindworm            Squash Bugs            Squash Vine Borer            Stink Bugs            Tobacco Budworm</p>	<p>0.04-0.10 lb. ai            (2.6-6.4 fl. oz. product)</p>	<p>Apply in water in a minimum of 20 gallons/A by ground or in a minimum of 5 gallons/A by air. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired.            For best control thorough coverage is necessary.            Do not apply more than 0.3 lb. a.i. (19.2 fl. oz. product) per acre per season.            Do not apply more than twice after bloom.            Do not make applications less than 7 days apart.</p>	<p>3</p>
	<p>Carmine Mite            Banks Grass Mite            Lygus spp            Twospotted Spider Mite            Whitefly</p>	<p>0.08-0.10 lb. ai            (5.12-6.4 fl. oz. product)</p>		

## EGGPLANT

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Armyworms Colorado Potato Beetle Corn Earworm Cucumber Beetle European Corn Borer Flea Beetle Cabbage Looper Plant Bug Stink Bug Thrips Tomato Pinworm Tomato Hornworm Vegetable Leafminer Whitefly	0.033-0.10 lb. ai (2.1-6.4 fl. oz. product)	Apply in water in a minimum of 10 gallons/A by ground or in a minimum of 2 gallons/A by air. Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired. For best control thorough coverage is necessary. Do not make applications less than 7 days apart. Do not apply more than 0.2 lb. a.i. (12.8 fl. oz. product) per acre per season.	7
Banks Grass Mite Carmin Mite Lygus spp. Pacific Spider Mite Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)		

## GRAPES

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Eastern Grape Leafhopper Variegated Leafhopper Western Grape Leafhopper	0.05-0.10 lb. ai (3.2 to 6.4 fl. oz. product)	Apply in a minimum of 25 gallons/A by ground or in a minimum of 10 gallons/A by air.	30
Black Vine Weevil Glasswinged Sharpshooter Twospotted Spider Mite	0.10 lb. ai (6.4 fl. oz. product)	Substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired. For best control thorough coverage is necessary.  Use the higher rate when insect pressure is moderate to severe. Do not apply more than 0.10 lb. a.i. per acre per season.	

## HOPS

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Armyworms Cutworms Leafrollers Loopers	0.06-0.1 lb. ai (3.8-6.4 fl. oz. product)	Do not apply more than 0.1 lb. a.i. per acre per application. Do not apply more than 0.3 lb. a.i. per acre per season.  Do not make applications less than 21 days apart.	14
Root Weevils	0.05-0.1 lb. ai (3.2-6.4 fl. oz. product)	<b>By ground:</b> Full coverage is necessary for best results. For early season, use 100-150 gallons of spray per acre. For late season, use 200-250 gallons of spray per acre.	

Twospotted spider mite	0.1 lb. ai (6.4 fl. oz. product)	<p><b>Root Weevil:</b> direct the spray to the base of the plant. Spray 3 feet up the vine and the soil surface 1.5 to 2 feet around the plant.</p> <p><b>Twospotted spider mites, for late season control:</b> Apply at least 6.4 fl. oz. (0.1 lb. a.i.) per application in a minimum of 10 gallons per acre by air.</p> <p>Do not apply by ultra low volume (ULV) application to hops.</p>
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**LETTUCE, HEAD**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Armyworms Corn Earworm Cucumber Beetles Cutworms Diamondback Moth Flea Beetles Imported Cabbageworm Leafhoppers Loopers Salt Marsh Caterpillar Stink Bug spp. Tobacco Budworm Whitefly	0.033-0.10 lb. ai (2.1-6.4 fl. oz. product)	Apply in water in a minimum of 15 gallons/A by ground equipment or in 5 gallons/A by air. For air application, substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired. For best control thorough coverage is necessary. .Do not make applications less than 7 days apart. Do not apply more than 0.5 lb. a.i. per acre per season.	7
Carmine Mite Lygus, spp. Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)		

**PEARS**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Coddling Moth Cutworms Green Fruitworm Leafhoppers Leafminers Leafrollers Lygus spp. Plant Bugs Plum Curculio San Jose Scale (Crawlers) Stink Bugs Tarnished	0.04-0.2 lb. ai (2.6 to 12.8 fl. oz. product)	<p><b>By ground:</b> Apply as a dilute (minimum of 200 gallons of finished spray per acre) or concentrate (minimum of 50 gallons of finished spray per acre) spray. For best control thorough coverage is necessary.</p> <p><b>By air:</b> Apply in a minimum of 10 gallons per acre.</p> <p>Do not apply more than 0.5 lb. active per acre per season with no more than 0.45 lb. active per acre applied after petal fall.</p> <p>Apply as necessary to maintain control and repeat applications at 30 day intervals</p> <p>Do not graze livestock in treated orchards or cut treated cover crops for feed.</p>	14

Plant Bugs			
Twospotted Spider Mite	0.06-0.2 lb. ai (8.8 to 12.8 fl. oz. product)		
Yellow Mite			
European Red Mite	0.08-0.2 lb. ai (5.12 to 12.8 fl. oz. product)		

**PEPPERS, BELL AND NON-BELL**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Armyworms Corn Earworm Cucumber Beetles Cutworms European Corn Borer Flea Beetles Leafminers Loopers Pepper Weevil Thrips Whitefly	0.033-0.1 lb. ai (2.1-6.4 fl. oz. product)	Apply in water in a minimum of 10 gallons/A by ground or a minimum of 2 gallons/A by air.  Do not make applications less than 7 days apart. Apply as needed, but do not apply more than 0.20 lb. a.i. per acre per season.	7
Broad Mite Carmine Mite Lygus spp. Twospotted Spider Mite	0.08-0.1 lb. ai (5.12-6.4 fl. oz. product)		

**SPINACH**

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Armyworms Colorado Potato Beetle Corn Earworm Cucumber Beetles Cutworms European Corn Borer Flea Beetles Leafminers Loopers Pepper Weevil Tomato Pinworm Tomato Hornworm Thrips Whitefly	0.033 to 0.10 lb. ai  (2.1-6.4 fl. oz. product)	<b>Whiteflies:</b> make up to 4 foliar treatments of Tundra EC by ground or air at rates of up to 0.4 pt. (0.1 lb. active) per acre Repeat applications at 7 day intervals. <b>Fire ants:</b> make up to 4 applications of Tundra EC to the soil at planting or as a foliar treatment by ground or air at rates of up to 0.4 pt. (0.1 lb. active) per acre. Do not make applications less than 7 days apart. Apply in water at 10-50 gallons/A by ground or 5-50 gallons /A by ground.  Repeat application at 7 day intervals.	40
Broad Mite Banks Grass Mite Carmine Mite Fire Ants Lygus spp. Twospotted Spider Mite Pacific Spider Mite	0.08-0.10 lb. ai (5.12 to 6.4 fl. oz. product)	Do not exceed 0.4 lb. a.i. per acre per season.	

SUCCULENT PEAS AND BEANS

CROP	PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Pea (Pisum spp.) Dwarf pea Edible-pod pea English pea Garden pea Green pea Snow pea Sugar snap pea Pigeon pea Bean (Phaseolus spp.): Broadbean (succulent) Lima bean (green) Runner bean Snap bean Wax bean Bean (Vigna spp.): Asparagus bean Blackeyed pea Chinese longbean Cowpeas Moth bean Southern pea Yardlong bean Jackbean Soybean (immature seed) Sword bean	Flea Beetle Grasshoppers Aster Leafhopper Leafhoppers	0.025-0.10 lb. ai (1.6-6.4 fl. oz. product)	Apply in a minimum of 10 gallons/A by ground or in a minimum of 2 gallons/A by air. When applying by air, substitute 1-2 quarts of emulsified oil for 1-2 quarts water if desired. For best control thorough coverage is necessary.	3
	Alfalfa Caterpillar Aphids Bean Leaf Beetle Beet Armyworm Cloverworm Corn Earworm Corn Rootworm (Adult) Cucumber Beetles Cutworms European Corn Borer Fall Armyworm Japanese Beetle (Adult) Loopers Pea Leaf Weevil Pea Weevil Plant Bug Sap Beetle Southern Armyworm Stink Bugs Tarnished Plant Bug Thrips Webworms Western Bean Cutworm Yellowstriped Armyworm Whitefly	0.033-0.10 lb. ai (2.1-6.4 fl. oz. product)	Do not apply more than 0.2 lb. a.i. (12.8 fl. oz. product) per acre per season.	
	Banks Grass Mite Carmine Mite Lygus spp. Twospotted Spider Mite	0.08-0.10 lb. ai (5.12-6.4 fl. oz. product)		

TOMATOES

PESTS CONTROLLED	RATE TUNDRA EC/ACRE	APPLICATION INSTRUCTIONS	PHI (days)
Aphids Armyworms – Including: Beat Armyworm, Fall Armyworm, Southern Yellowstriped Armyworm Bean Leaf Beetle Cabbageworm Carmine Mite Cloverworm Corn Earworm Corn Rootworm Cucumber Beetles Cutworms Diamondback Moth European Corn Borer Flea Beetles Flea Hopper Grasshopper Japanese Beetle (Adult) Leafhoppers Loopers Lygus spp. Melonworm Pea Weevil Pea Leaf Weevil Pickleworm Plant Bug Rindworm Salt Marsh Caterpillar Sap Beetle Seedpod Weevil Squash Bugs Stink Bug spp. Tobacco Budworm Tarnished Plant Bug Thrips Two Spotted Spider Mite Whitefly	0.033-0.08 lb. ai (2.1-5.2 fl. oz. product)	Apply in water using a minimum of 15 gallons/A by ground.  For best control, thorough coverage is necessary.  Repeat applications at 10 day intervals.  Apply as needed but do not make more than 4 applications per season.	1

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