



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Registration Division (H7505C)  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

EPA Reg. Number:  
72693-5

Date of Issuance:  
NOV 23 2011

Term of Issuance:  
Unconditional

Name of Pesticide Product:  
Bifenthrin 2EC

NOTICE OF PESTICIDE:

☒ Registration  
☐ Reregistration

(Under FIFRA as amended)

Name and Address of Registrant (include ZIP Code):

Universal Crop Protection Alliance, LLC  
1300 Corporate Center Curve  
Eagan, MN 55121

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

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

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

This product is **unconditionally** registered in accordance with FIFRA sec. 3(c)(5). Once a pesticide is registered, however, it is not regarded as permanently acceptable. Registration does not eliminate the need for continual reassessment of pesticides. If the Agency determines that, at any time, additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under FIFRA section (3).

1. You will make the following label changes before you release the product for shipment:

a) Revise the EPA Registration Number to read "EPA Reg. No.72693-5."

2. Please submit three (3) copies of your final printed labeling before releasing the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product bearing amended labeling constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records.

If you have any questions regarding this action, please contact BeWanda Alexander at [www.alexander.bewanda@epa.gov](mailto:www.alexander.bewanda@epa.gov) or (703) 305-7460.

Signature of Approving Official:

*BeWanda Alexander for*  
Richard Gebken Product Manager  
Insecticide Branch/Registration Division (7505P)

Date:

*November 23, 2011*

Enclosure



**Note to Reviewer:** Bracketed Text [ ] – Indicates Optional Marketing Statements

## 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.

### BIFENTHRIN 2EC

Insecticide/Miticide

[For use to control listed insects and mites on artichokes, brassicas, caneberries, canola, cilantro, citrus, coriander, corn, cotton, crambe, cucurbits, dried beans and peas, fruiting vegetables, grapes, head lettuce, hops, leafy brassicas, mayhaw, okra, peanuts, pears, rapeseed, root crops, soybeans, spinach, succulent peas and beans, tobacco, and tuberous and corm vegetables.]

[For use to control listed insect pests on Ornamentals and Trees (including Field and Container Grown Nursery Stock, Christmas Trees, Interiorscapes and Plantscapes, Lawns, Trees and Shrubs, and on Golf Courses and Sod Farms)]

[DO NOT APPLY THIS PRODUCT ON GOLF COURSES AND SOD FARMS IN NASSAU OR SUFFOLK COUNTY, NEW YORK.]

#### ACTIVE INGREDIENT:

% BY WT.

Bifenthrin: (2 methyl[1,1 -biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2, 2-dimethyl-cyclopropanecarboxylate\* .....25.0%

OTHER INGREDIENTS\*\* .....75.0%

**TOTAL**.....100.0%

\*Cis isomers 97% minimum, trans isomers 3% maximum.

\*\*Contains xylene range aromatic solvents.

This product contains 2 pounds active ingredient per gallon.

### KEEP OUT OF REACH OF CHILDREN WARNING-AVISO

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

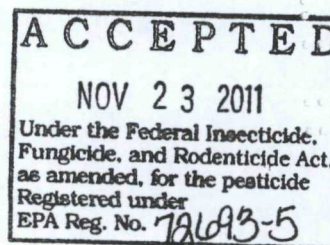
Refer to inside of label booklet for additional Precautionary Statements, First Aid Statements, Directions for Use, Worker Protection Statements, Storage and Disposal instructions and the Condition of Sale and Warranty.

EPA Reg. No. 72693-xx

EPA Est. No. XXXXX-XX-XXX

Net Contents: \_\_\_\_\_

Manufactured For:  
Universal Crop Protection Alliance, LLC  
1300 Corporate Center Curve  
Eagan, MN 55121  
(651) 239-1000





<b>FIRST AID</b>	
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>• Immediately call a poison control center or doctor.</li> <li>• Do not induce vomiting unless told to do so by a 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>
<b>IF IN EYES:</b>	<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>
<b>IF ON SKIN OR CLOTHING:</b>	<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>IF INHALED:</b>	<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>
<b>HOT LINE NUMBER</b>	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For 24 Hour Medical Emergency Assistance (Human or Animal) call 1-800-308-1241 or for Chemical Emergency Assistance (Spill, Leak, Fire or Accident) call CHEMTREC at 1-800-424-9300.	
<b>NOTE TO PHYSICIAN:</b> This product is a pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and should be avoided. This product contains a petroleum distillate; vomiting may cause aspiration pneumonia.	

### **PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS 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 inhaled or absorbed through skin. Avoid breathing vapor or spray mist. Avoid contact with skin. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

#### **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, or coveralls worn over short-sleeved shirt and short pants.
- Chemical-resistant gloves, such as barrier laminate, nitrile rubber, neoprene rubber, or viton
- Chemical-resistant footwear 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
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical resistant apron when mixing and loading and cleaning equipment

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 exist, 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.
- Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into 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 runoff 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 this product is prohibited in areas that may result in exposure of endangered species to bifenthrin. Prior to use in a particular county, contact local extension service for procedures and precautions to use to protect endangered species.

### **PHYSICAL OR CHEMICAL HAZARDS**

COMBUSTIBLE: 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 you 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 of this product that are covered by the Worker Protection Standard.

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

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

- Coveralls
- Chemical-resistant gloves, such as barrier laminate, nitrile rubber, neoprene rubber, or Viton
- Shoes plus socks



### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries and greenhouses.

Do not allow people or pets on treated areas until the spray has dried.

### RESISTANCE MANAGEMENT

Some insects are known to develop resistance to products use 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.

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 company representative or agricultural advisor for the best alternative method of control for your area.

### APPLICATION INSTRUCTIONS – FOOD CROPS

Application rates will vary according to pest pressure, timing of sprays, and field scouting. Use lower rates under light to moderate infestations and higher rates under heavy insect pressure and for mite control. Arid climates generally require higher rates.

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.

### CHEMIGATION USE DIRECTIONS

Apply this product only through sprinkler irrigation systems 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.

For LEPA irrigation, a minimum of 0.75 inch of water per acre is recommended. Where non-emulsified oils are used as the diluent, 1 to 2 pints per acre is recommended.

Results from utilizing chemigation have been variable and depend upon the set up and calibration of equipment. 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 manufacturer's, or other experts for consultation on the suitability of the equipment set up to obtain effective control of the target insect pests.

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

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 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.

This product should be applied continuously for the duration of the water application. This product should be diluted in sufficient volume to ensure accurate application over the area to be treated. When using chemigation, a minimum of 0.5 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.

## **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, permanent streams, marshes or natural ponds, estuaries; and commercial fish farm ponds).

Only apply products containing bifenthrin onto fields where a maintained vegetative buffer strip of at least 10 feet exists between the field and down gradient aquatic habitat.

For guidance, refer to the following publication for information on constructing and maintaining effective buffers:

- Conservation Buffers to Reduce Pesticide Losses. Natural Resources Conservation Services. USDA, NRCS. 2000 Fort Worth, Texas. 21 pp.  
<http://www.in.nrcs.usda.gov/technical/agronomy/newconbuf.pdf>.

### **Buffer Zone for Ground Application (groundboom, overhead chemigation, or airblast)**

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

### **Buffer Zone for ULV Aerial Application**

Do not apply within 450 feet of aquatic habitats (such as but not limited to, lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

### **Buffer Zone for Non-ULV Aerial Application**

Do not apply within 150 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

## **SPRAY DRIFT REQUIREMENTS**

### **Wind Direction and Speed**

Only apply this product if the wind direction favors on-target deposition.

Do not apply when wind velocity exceeds 15 mph.

### **Temperature Inversions**

Do not make aerial or ground applications into temperature inversions.

Inversions are characterized by stable air and increasing temperatures 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 coarse spray nozzles (for ground and non-ULV aerial application) according to ASAE (S572) definition for standard nozzles. In condition of low humidity and high temperature, applicators should use a coarser droplet size.



**Additional Requirements for Ground Application**

Wind speed must be measured adjacent to the application site of 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 Application**

The spray boom should be mounted on the aircraft so as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of 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 areas by adjusting the path of the aircraft upwind.

**ROTATIONAL CROPS**

Crops with existing bifenthrin tolerances may be rotated at any time. All other crops may be rotated 30 days following the final application of this product.

**TANK MIXTURES**

This product may be applied in tank mixtures with other products approved for use on registered crops. Observe all restrictions and precautions which appear on the labels of these products. Test for compatibility of products before mixing.

**FOOD CROP USE INSTRUCTIONS****ARTICHOKE**

Apply as directed at a rate of 6.4 fl. oz. (0.1 lb. ai) per acre.

PEST	APPLICATION INSTRUCTIONS
Artichoke Plume Moth Cribrate Weevil	<p>Apply when pest population reaches damaging threshold and repeat as necessary to maintain control, but not apply more often than 15 day intervals.</p> <p><b>Application by ground:</b> Apply a full cover spray in a minimum of 75 gallons of finished spray per acre.</p> <p><b>Application by air:</b> Apply specified rate in a minimum of 10 gallons per acre.</p>
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not exceed 0.5 lb. ai per acre per season.</li> <li>A 5-day preharvest interval must be observed.</li> </ul>	



**BRASSICA CROPS**

Apply as directed using the rates in the table below.

CROP	PEST/RATE	APPLICATION INSTRUCTIONS
Head and Stem Brassica Vegetables including:  Broccoli Chinese Broccoli (gai lon, White flowering broccoli) Brussels sprouts Cauliflower Cavalo broccoli Kohlrabi Cabbage Chinese Cabbage (napa) Chinese Mustard Cabbage (gai choy)	<b>PESTS:</b> Cutworms Corn Earworm Tobacco Budworm Saltmarsh Caterpillar Leafhoppers Flea Beetles Imported Cabbageworm Cucumber Beetles Whitefly Armyworms Loopers Stink Bugs Crickets Ground Beetles Thrips Wireworm (adults) Diamondback Moth  <b>RATE:</b> 2.1 to 6.4 fl. oz./acre (0.033 to 0.1 lb. ai/acre)	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.
	<b>PESTS:</b> Banks Grass Mite Twospotted Spider Mite Carmine Mite Pacific Spider Mite <i>Lygus</i> spp.  <b>RATE:</b> 5.12 to 6.4 fl. oz./acre (0.08 to 0.1 lb. ai/acre)	
	<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>Do not apply more than 0.5 lb. active ingredient (1 quart) per acre per season.</li><li>Do not make more than 5 applications after bloom.</li><li>Do not make applications less than 7 days apart.</li><li>Do not apply within 7 days of harvest.</li></ul>	



**CANEBERRIES**

Apply as directed using the rates in the table below.

CROP	PEST/RATE	APPLICATION INSTRUCTIONS
Caneberries including:  Blackberries Bingleberries Dewberries Lowberries Marionberries Olallieberries Youngberries Loganberries Raspberries	<b>PESTS:</b> Leafrollers Orange Tortrix Root Weevils	Apply by air or ground equipment using sufficient water to obtain full coverage of foliage (minimum of 10 gallons per acre by air and 50 gallons per acre by ground).
	<b>RATE:</b> 3.2 to 6.4 fl. oz./acre (0.05 to 0.1 lb. ai/acre)	One application may be made pre-bloom and a second application may be made post bloom.
	<b>PEST:</b> Spider Mites Raspberry Crown Borer	For Crown Borer, apply 0.1 lb. air per acre post-harvest (fall) or pre-bloom (spring) as a drench application directed at the crown of plants in a minimum of 200 gallons of water per acre. Greater efficacy is observed at higher water gallonages (up to 400 gallons) or in an application prior to a significant rainfall event. Do not make both pre-bloom foliar and pre-bloom drench applications.
	<b>RATE:</b> 6.4 fl. oz./acre (0.1 lb. ai/acre)	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>Do not apply within 3 days of harvest.</li><li>Do not exceed 0.2 lb ai per acre per season.</li></ul>		

**CANOLA, CRAMBE, RAPESEED**

Apply as directed at a rate of 2.1 to 2.6 fl. oz. (0.033 to 0.04 lb. ai) per acre.

PEST	APPLICATION INSTRUCTIONS
Aphids Armyworms Cutworms Diamondback Moth Loopers Other Lepidopterous Larvae Lygus Bugs Flea Beetle Flea Hopper Grasshoppers Plant Bugs Stink Bugs Seedpod Weevil Thrips Whitefly	Apply in a minimum of 2 gallons of finished spray per acre by air, or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.
<b>RESTRICTIONS:</b>	
<ul style="list-style-type: none"> <li>Do not apply more than 0.08 lb. active ingredient (5.12 ounces) per acre per season.</li> <li>Do not make applications less than 14 days apart.</li> <li>Do not apply within 35 days of harvest.</li> </ul>	



## CILANTRO, CORIANDER

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Beet Armyworm Cabbage Looper Cutworm Flea Beetle Grasshoppers Leafminer Saltmarsh Caterpillar Spotted Cucumber Beetle Thrips Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.1 lb. ai) per acre	Apply using sufficient water to obtain uniform coverage. Apply as needed. Apply with ground equipment using a minimum of 10 gallons of finished spray per acre or a minimum of 2 gallons per acre by aircraft.
Two Spotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.1 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>• Do not make applications less than 7 days apart.</li><li>• Do not apply more than 0.5 pound active ingredient per acre per season.</li><li>• Do not apply within 3 days of harvest.</li></ul>		

## CITRUS

The use of this product protects citrus tree roots from **Diaprepes** and other citrus root weevil feeding by creating a barrier. As citrus root weevil eggs hatch, the newly hatched larvae (neonates) fall to the soil surface beneath the tree and come into contact with this product as they attempt to burrow into the root zone. Disturbance of the soil beneath the tree should be minimized.

Timing of application is very important. Peak emergence of **Diaprepes** adults varies by citrus growing region, and environmental factors such as soil moisture can affect emergence. Usually, two peaks occur for **Diaprepes**, first in the spring then late summer or early fall. **Southern Blue-Green** and **Blue-Green Citrus Weevils** and **Fuller Rose Beetle** usually have a single emergence peak in the spring. **Brown** and **Little Leaf Notchers** usually have three emergence peaks, spring, summer and fall. Since emergence varies by region and season, the best way to time application is to observe the adults. By trapping adults when they are most active (in the morning and/or late afternoon) during the spring and summer emergence periods an estimation of numbers can be obtained. Eggs are laid 8 to 10 weeks following the adult emergence from the soil; larvae invasion into the soil will begin 2 to 3 weeks following adult emergence. Bifenthrin 2EC must be applied prior to the dropping of the neonates. Consult local university extension personnel for current information to protect citrus trees from **Citrus Root Weevils** and other pests.

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Diaprepes Root Weevil ( <i>Diaprepes abbreviates</i> ) Southern Blue Green Citrus Root Weevil ( <i>Pachnaeus litus</i> ), Blue green Citrus Root Weevil ( <i>Pachnaeus opalus</i> ), Brown Leaf Notcher ( <i>Epicaerus mexicanus</i> ),	16 to 32 fl. oz. (0.25 to 0.5 lb. ai) per acre	Apply this product by ground equipment to bare soil beneath citrus trees. This product must be uniformly applied from the trunk to the drip line of the tree, apply in a minimum of 40 gallons of dilute spray per acre. Greater spray volume should insure greater uniformity of coverage. A pre- and post-application irrigation may aid in the uniformity of coverage as well.  Apply to individual citrus resets, when not in



PEST	RATE	APPLICATION INSTRUCTIONS
Little Leaf Notcher ( <i>Artipus floridanus</i> )		solid planted rows, using hand-gun or shielded sprayer.
Fire Ant ( <i>Solenopsis</i> spp.), Asian Cockroach ( <i>Blattelia asahinae</i> )	6.4 to 16 fl. oz. (0.1 to 0.25 lb. ai) per acre	<p>Peak emergence of <b>Diaprepes Root Weevil</b> generally occurs in the spring. Depending on weather conditions, a minor emergence may also occur in the fall.</p> <p>If the citrus grove to be treated is in an area where weather conditions are conducive to primary emergence occurring in the spring, 32 fl. oz. formulated product should be used to obtain best results.</p> <p>If the citrus grove to be treated is in an area where weather conditions will promote more than one peak pest emergence, 16 fl. oz. formulated product can be applied early season and 16 fl. oz. formulated product can be applied later in the season.</p> <p>Follow spray drift precautions on this label.</p>
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply through irrigation systems.</li> <li>Do not allow any application of this product to contact fruit or foliage.</li> <li>Do not apply more than a total of 32 fl. oz. of this product (0.5 lb. ai) per acre per year.</li> <li>Apply the specified dosage in a minimum of 40 gallons of finished spray per acre.</li> <li>Ground application only. Do not apply by air.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

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

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Corn Rootworm Larvae (Northern, Southern, Western)	0.30 fl. oz. (0.0046 lb. ai) per 1,000 linear feet of row	Apply as a 5- to 7-inch T-band treatment over an open seed furrow. Position the spray nozzle behind the planter shoe in front of the press wheel centered over the row. Use the table below to determine the amount of this product per acre. Apply in a minimum of 3 gallons of finished spray per acre.
Army Cutworm Cutworm Species Grubs Seed Corn Beetle Seed Corn Maggot True Armyworm or Armyworm Species Wireworms	0.15 to 0.30 fl. oz. (0.0023 to 0.0046 lb. ai) per 1,000 linear feet of row	<p>Mix this product with water or fertilizer in the following manner. Fill the spray tank approximately one half full with water or liquid fertilizer, add the proper amount of this product, then add the rest of the water or fertilizer. Provide sufficient agitation during mixing and application to maintain a uniform spray mixture.</p> <p>Applications of this product alone or in recommended tank mixtures, in conjunction with in-furrow pop-up fertilizers may be used. A jar compatibility test should be performed with the appropriate ratio of this product and fertilizer to</p>



		ensure mixture will stay in solution. Constant agitation should be maintained during mixing and application.			
<b>RESTRICTIONS:</b>					
<ul style="list-style-type: none"><li>• Do not apply to soil where there is greater than 30% cover of crop residue remaining.</li><li>• Do not apply within 30 days of harvest.</li><li>• Do not graze livestock in treated area or cut treated crops for feed within 30 days of treatment.</li><li>• Do not apply more than 0.1 pound active per acre per season as an at-plant application.</li></ul>					
<b>Row Spacings (inches)</b>		<b>40</b>	<b>38</b>	<b>36</b>	<b>30</b>
Amount of this product (pounds ai per acre)		0.060	0.064	0.069	0.080
Amount of this product (formulated product ounces per acre)		3.9	4.1	4.4	5.12

**FIELD CORN (GRAIN AND SILAGE), POPCORN, FIELD CORN GROWN FOR SEED  
(PRE-EMERGENT & PRE-PLANT INCORPORATED)**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Black Cutworm White Grub Wireworm Seedcorn Maggot Armyworm spp. Stalkborer	3 to 4 fl. oz. (0.047 to 0.062 lb. ai) per acre Pre-plant Incorporated (PPI)	The 3-4 oz/A rate must be applied as PPI and can be tank mixed and applied with PPI herbicides. Incorporation of this product should not be any deeper than the intended planting depth and no deeper than 3 inches. Incorporation depth should be close to the intended seed planting depth.
Black Cutworm Armyworm spp. Stalkborer	2.56 fl. oz. (0.040 lb. ai) per acre Pre-emergence (PRE)	The 2.56 oz/A rate may be applied PRE and can be tank mixed and applied with PRE herbicides.

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

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Army Cutworm Beet Armyworm Cereal Leaf Beetle Chinch Bug Common Stalk Borer Corn Earworm Corn Rootworm Adult Cucumber Beetle Adults Cutworm Species European Corn Borer Fall Armyworm Flea Beetle Grasshoppers Greenbug Japanese Beetle Adult Sap Beetle Southern Armyworm Southern Corn Leaf Beetle	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	<p>Apply in a minimum of 2 to 5 gallons of finished spray per acre by aircraft or in a minimum of 10 gallons per acre with ground equipment. To improve control by aircraft, use 5 gallons of finished spray per acre particularly when initial populations are heavier than normal. When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.</p> <p>Through coverage is essential to achieve control.</p> <p><b>To Control Ear-Attacking Pests:</b> Apply this product just before silking and repeat as necessary to maintain control but do not exceed maximum application rates and reapplication intervals listed elsewhere in this section.</p> <p><b>Southwestern Corn Borer, European Corn Borer:</b> Make application for corn borer control</p>



PEST	RATE	APPLICATION INSTRUCTIONS
Southwestern Corn Borer Stinkbugs Tarnished Plant Bug True Armyworm or Armyworm Species Webworms Western Bean Cutworm Yellowstriped Armyworm		with initial application at or shortly before egg hatch.  <b>For Control Of Other Insect Pests:</b> Apply when pests first appear and repeat as necessary but do not exceed maximum application rates and reapplication intervals listed elsewhere in this section.
Banks Grass Mite Carmine Mite Twospotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	Apply for <b>Banks Grass Mite</b> control when colonies first form prior to leaf damage or discoloration and before dispersal above the bottom third of the plant.  <b>For Twospotted Spider Mite and Carmine Mite</b> control, apply when colonies first form prior to leaf damage or discoloration and before widespread mite dispersal throughout the canopy. Higher rates will be necessary for heavier initial populations and corn under heat or drought stress. Field experience with dimethoate at 0.5 lb. active per acre in tank mixture has demonstrated good control under these conditions.  <b>For Mite Control In Texas, New Mexico, Oklahoma, and Arizona:</b> Apply in a minimum of 5 gallons of finished spray per acre by aircraft or in a minimum of 10 gallons per acre with ground equipment.
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.3 pound active ingredient per acre per season including pre and ppi, at-plant, plus foliar applications.</li> <li>Do not apply within 30 days of harvest.</li> <li>Do not graze livestock in treated areas or cut treated crops for feed within 30 days of the last application.</li> <li>Use of ultra low volume (ULV) application on corn is prohibited.</li> <li>Do not make aerial or ground applications to corn if heavy rainfall is imminent.</li> <li>Use of this product on corn is prohibited in all coastal counties.</li> </ul>		



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

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Corn Rootworm Larvae (Northern, Southern, Western)	0.30 fl. oz. (0.0046 lb. ai) Per 1,000 linear feet of row	Apply as a 5- to 7-inch T-band treatment over an open seed furrow. Position the spray nozzle behind the planter shoe, in front of the press wheel centered over the row. Use the table below to determine the amount of this product required per acre. Apply in a minimum of 3 gallons of finished spray per acre.
Army Cutworm Cutworm Species Grubs Seed Corn Beetle Seed Corn Maggot True Armyworm or Armyworm Species Wireworms	0.15 to 0.30 fl oz. (0.0023 to 0.0046 lb. ai) per 1,000 linear feet of row	Mix this product with water or fertilizer in the following manner. Fill the spray tank approximately one-half full with water or liquid fertilizer, add the proper amount of this product, then add the rest of the water or fertilizer. Provide sufficient agitation during mixing and application to maintain a uniform spray mixture.  Applications of this product alone or in recommended tank mixtures, in conjunction with in-furrow pop-up fertilizers may be used. A jar compatibility test should be performed with appropriate ratio of this product and fertilizer to ensure mixture will stay in solution. Constant agitation should be maintained during mixing and application.

**RESTRICTIONS:**

- Do not apply to soil where there is greater than 30% cover of crop residue remaining.
- Do not apply within 30 days of harvest.
- 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 pound active per acre per season as an at-plant application.

Row Spacings (inches)	40	38	36	30
Amount of this product (pounds per acre)	0.060	0.064	0.069	0.080
Amount of this product (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)**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
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	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.  <b>To Control Ear-Attacking Pests:</b> Apply this product when silking begins and repeat as



PEST	RATE	APPLICATION INSTRUCTIONS
Flea Beetle Grasshoppers Greenbugs 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		necessary to maintain control but do not exceed maximum application rates and reapplication intervals listed elsewhere in this section.  <b>Southwestern Corn Borer, European Corn Borer:</b> Make 2 applications for corn borer with the initial application at or shortly before egg hatch.  <b>For Control Of Other Insect Pests:</b> Apply when pests first appear and repeat as necessary but do not exceed maximum application rates and reapplication intervals listed elsewhere in this section.
Banks Grass Mite Carmine Mite Twospotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	Apply for <b>Banks Grass Mite</b> control when colonies first form prior to leaf damage or discoloration and before dispersal above the bottom third of the plant.  <b>For Twospotted Spider Mite and Carmine Mite</b> control, apply when colonies first form prior to leaf damage or discoloration and before widespread mite dispersal throughout the canopy.  Higher rates will be necessary for heavier initial populations and corn under heat or drought stress.

**RESTRICTIONS:**

- Do not apply more than 0.2 pound active ingredient (12.8 ounces formulated product) per acre per season.
- Do not apply within one day of harvest.
- Do not graze livestock in treated areas or cut treated crops for feed within 1 day of last application.
- Use of ultra low volume (ULV) application on corn is prohibited.
- Do not make aerial or ground applications to corn if heavy rainfall is imminent.
- Use of this product on corn is prohibited in all coastal counties.

**COTTON**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
European Corn Borer Soybean (Banded) Thrips Tobacco Thrips	1.3 – 6.4 fl. oz/acre  (0.02 – 0.10 lb. ai/acre)	Apply this product in water or refined vegetable oil (soybean/cottonseed).  <b>Application in Water:</b> Apply in a minimum of 5 gallons per acre with ground equipment or 1 gallon per acre by aircraft. When applying by air, 1 quart of emulsified oil may be substituted for one quart of water in the finished spray.
Boll Weevil Bollworm Cabbage Looper Cotton Aphid Cotton Fleahopper Cotton Leafperforator Cutworms Fall Armyworm Plant Bugs	2.6 -6.4 fl. oz./acre  (0.02 – 0.10 lb. ai/acre)	<b>ULV Application:</b> Apply the recommended rate of this product in refined vegetable oil in a minimum of 1 quart of finished spray per acre



PEST	RATE	APPLICATION INSTRUCTIONS
Saltmarsh Caterpillar Southern Garden Leafhopper Stink Bugs Tobacco Budworm Whitefly Yellowstriped Armyworm		with aircraft calibrated to give adequate coverage.  <b>To Control Boll Weevil:</b> Apply this product at an interval of 3 to 4 days until pest numbers are reduced to acceptable levels.
Beet Armyworm Carmine Spider Mite <i>Lygus</i> spp. Pink Bollworm Twospotted Spider Mite	3.8 – 6.4 fl. oz./acre  (0.06 – 0.10 lb ai/acre)	<b>To Control Mites and Aphids:</b> Apply when pests first appear. Repeat as necessary to maintain control but do not exceed maximum application rates and reapplication intervals listed elsewhere in this section. Higher rates will be required once a damaging threshold is established.
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.5 pound active ingredient per acre per season.</li> <li>Do not apply within 14 days of harvest.</li> <li>Do not graze livestock in treated areas or cut treated crops for feed.</li> <li>Do not make more than 10 synthetic pyrethroid applications (of one product or combinations of products) to a cotton crop in one growing season.</li> </ul>		

### CUCURBITS

Apply as directed using the rates in the table below.

CROP	PEST/RATE	APPLICATION INSTRUCTIONS
Chayote (fruit) Chinese waxgourd (Chinese preserving melon) Citron melon Cucumber Gherkin Gourd, edible (includes hyotan, 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.),	<b>PESTS:</b> Aphids Armyworms Cabbage Looper Corn Earworm Cucumber Beetles Cutworms Grasshoppers Leafhoppers Melonworms Pickleworms Plant Bugs Rindworms Squash Bugs Squash Vine Borer Stink Bugs Tobacco Budworm  <b>RATE:</b> 2.6 to 6.4 fl. oz. (0.04 to 0.1 lb. ai) per acre	Apply in a minimum of 5 gallons of finished spray per acre by air or in a minimum of 20 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.



CROP	PEST/RATE	APPLICATION INSTRUCTIONS
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>Citrullus</i> spp.).	<b>PESTS:</b> Whitefly Banks Grass Mite Twospotted Spider Mite Carmine Mite Lygus spp.  <b>RATE:</b> 5.12 to 6.4 fl. oz. (0.08 to 0.1 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.3 lb. active ingredient (19.2 ounces formulated product) per acre per season.</li> <li>Do not make more than two applications after bloom.</li> <li>Do not make applications less than 7 days apart.</li> <li>Do not apply within 3 days of harvest.</li> </ul>		

### DRIED BEANS AND PEAS

Apply as directed using the rates in the table below.

CROP	PEST	RATE	APPLICATION INSTRUCTIONS
<b>Dried cultivars of Beans (<i>Lupinus</i>) Beans (<i>Phaseolus</i>)</b> Field bean Kidney bean Lima bean (dry) Navy bean Pinto bean Tepary bean <b>Bean (<i>Vigna</i>)</b> Adzuk bean Blackeyed pea Catjang Cowpea Crowder pea Moth bean Mung bean Rice bean Southern pea Urd bean Broad bean (dry) Chickpea Guar Lablab bean Lentil <b>Peas (<i>Pisum</i>)</b> Field pea Pigeon pea	Aster Leafhopper Flea Beetle Grasshoppers Leafhoppers  Aphids Beet Armyworm Fall Armyworm Southern Armyworm Yellowstriped Armyworm Bean Leaf Beetle Cucumber Beetle Japanese Beetle (Adult) Sap Beetle Plant Bugs Stink Bugs Tarnished Plant Bug Alfalfa Caterpillar Cloverworm European Corn Borer Cutworms Western Bean Cutworm Corn Earworm Loopers Corn Rootworm (Adult) Thrips Webworms Pea Weevil Pea Leaf Weevil Whitefly	1.6 to 6.4 fl. oz. (0.025 to 0.10 lb ai) per acre  2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.



CROP	PEST	RATE	APPLICATION INSTRUCTIONS
	Imported cabbageworm Saltmarsh caterpillar Tobacco budworm Leafminer		
	Banks Grass Mite Twospotted Spider Mite Carmine Mite <i>Lygus</i> spp	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>• Do not apply more than 0.2 lb. active ingredient (12.8 ounces formulated product) to peas, or 0.3 lb. active ingredient (19.2 ounces formulated product) to beans per acre per season.</li><li>• Do not apply within 14 days of harvest.</li><li>• Do not make applications less than 7 days apart.</li></ul>			



**FRUITING VEGETABLES**

Apply as directed using the rates in the table below.

CROP	PEST	RATE	APPLICATION INSTRUCTIONS
Eggplant Pepper (Bell & Non-Bell) Groundcherry Pepino	Armyworms including Beet Armyworm, Fall Armyworm, Southern Yellowstriped Armyworm Cabbage Looper Colorado Potato Beetle Corn Earworm Cucumber Beetle Cutworms European Corn Borer Flea Beetle Leafminers Loopers Pepper weevil Plant Bugs Stink Bugs Thrips Tomato Hornworm Tomato Pinworm Vegetable Leafminer Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.
	Banks Grass Mite Broad Mite Carmine Mite <i>Lygus</i> spp Pacific Spider Mite Twospotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not make applications less than 7 days apart.</li> <li>Do not apply more than 0.2 lb. active ingredient (12.8 ounces formulated product) per acre per season.</li> <li>Do not apply within 7 days of harvest.</li> </ul>			
Tomato Tomatillo	Aphids Armyworms including Beet Armyworm, Fall Armyworm, Southern Armyworm, Yellowstriped Armyworm Bean Leaf Beetle Cabbageworm Carmine Mite Cloverworm Corn Earworm Cucumber Beetle Cutworms Diamondback Moth European Corn Borer Flea Beetles	2.1 to 5.2 fl. oz. (0.033 to 0.08 lb ai) per acre	Apply in water as necessary for insect control using a minimum of 15 gallons of finished spray per acre with ground equipment.  Thorough coverage is essential to achieve control.



CROP	PEST	RATE	APPLICATION INSTRUCTIONS
	Flea Hopper Grasshopper Japanese Beetle (Adult) Leafhoppers Loopers <i>Lygus</i> spp. Melonworm Pea Weevil Pea Leaf Weevil Pickleworm Plant Bug Rindworm Salt Marsh Caterpillar Sap Beetle Seedpod Weevil Squash Bugs Sting Bug species Tobacco Budworm Tarnished Plant Bug Thrips Whitefly		
	Twospotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>A maximum of 4 applications may be applied per season.</li> <li>Do not apply within 1 day of harvest.</li> </ul>			

### GRAPES

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Cutworms Eastern Grape Leafhopper Grape Berry Moth Japanese Beetles Adults Variegated Leafhopper Western Grape Leafhopper	3.2 to 6.4 fl. oz. (0.05 to 0.10 lb. ai) per acre	Apply in a minimum of 10 gallons of finished spray by air or in a minimum of 25 gallons of finished spray with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.
Black Vine Weevil Glassywinged Sharpshooter Twospotted Spider Mite	6.4 fl. oz. (0.10 lb. ai) per acre	Thorough coverage is essential to achieve control.  When pest pressure is moderate to severe, use higher rate.
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.10 lb. ai per acre per season.</li> <li>Do not apply within 30 days of harvest.</li> </ul>		



**HOPS**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Armyworms Cutworms Leafrollers Loopers	3.8 to 6.4 fl. oz. (0.06 to 0.1 lb. ai) Per acre	<b>Application by ground:</b> For best results, full coverage is essential. Early season – recommend 100-150 gallons of spray per acre. Late season – recommend 200-250 gallons of spray per acre.
Root Weevils	3.2 to 6.4 fl. oz. (0.05 to 0.1 lb. ai) per acre	For <b>Root Weevil</b> control, make a directed spray to the base of the plant. Spray up the vine 3 feet and the soil surface 1.5 to 2 feet on either side of the plant.
Twospotted Spider Mite	6.4 fl. oz. (0.1 lb. ai) per acre	<b>Application by air for late season control of Twospotted Spider Mites:</b> Apply no less than 6.4 oz (0.1 lb ai) per application in a minimum of 10 gallons per acre.  Use of ultra low volume (ULV) application on hops is prohibited.
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not exceed 0.1 lb. ai per acre per application.</li> <li>Do not exceed 0.3 lb. ai per acre per season.</li> <li>A spray interval of 21 days between applications must be maintained.</li> <li>A 14-day preharvest interval must be observed.</li> </ul>		

**LEAFY BRASSICAS**

Apply as directed using the rates in the table below.

CROP	PEST	RATE	APPLICATION INSTRUCTIONS
Broccoli Raab Bok Choy Collards Kale Mizuna Mustard Greens Mustard Spinach Rape Greens	Cutworms Corn Earworm Tobacco Budworm Saltmarsh Caterpillar Leafhoppers Flea Beetles Imported Cabbageworm Cucumber Beetles Aphids Whitefly Armyworms Loopers Stink Bugs Crickets Ground Beetles Thrips Wireworm (Adults) Diamondback Moth Japanese Beetles (Adult) Grasshoppers Aphids	2.1 to 6.4 fl. oz./acre (0.033 to 0.1 ai/acre)	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.



CROP	PEST	RATE	APPLICATION INSTRUCTIONS
	Banks Grass Mite Twospotted Spider Mite Carmin Mite Pacific Spider Mite <i>Lygus</i> spp.	5.12 to 6.4 fl. oz./acre (0.08 to 0.1 lb. ai/acre)	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.4 lb. active ingredient per acre per season.</li> <li>Do not make applications less than 7 days apart.</li> <li>Do not apply within 7 days of harvest.</li> </ul>			

**LETTUCE, HEAD**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Armyworms Corn Earworms Cucumber Beetles Cutworms Diamondback Moth Flea Beetle Imported Cabbageworm Leafhoppers Loopers Salt marsh Caterpillar Stink Bug spp. Tobacco Budworm Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	Apply in water as necessary for insect control using a minimum of 15 gallons of finished spray per acre with ground equipment and 5 gallons per acre by air.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.
<i>Lygus</i> spp. Carmin Mite Twospotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not make applications less than 7 days apart.</li> <li>A maximum of 0.5 lb. active ingredient may be applied per acre per season.</li> <li>Do not apply within 7 days of harvest.</li> </ul>		

**MAYHAW**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Plum Curculio	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	Apply as a foliar treatment using at least 28 gallons per acre.
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not make applications less than 7 days apart.</li> <li>Do not apply more than 0.2 pound active ingredient per acre per season.</li> <li>Do not apply within 30 days of harvest.</li> </ul>		



**OKRA**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Armyworms Corn earworm Cucumber Beetles Cutworms European Corn Borer Flea Beetles Japanese Beetle (Adult) Leafminers Loopers Stink bugs Thrips Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.1 lb. ai) per acre	Apply using sufficient water to obtain uniform coverage. Apply as needed. Apply with ground equipment using a minimum of 10 gallons of finished spray per acre or a minimum of 2 gallons per acre by aircraft.
Lygus spp. Broad Mite Carmine Mite Two Spotted Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.1 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>• Do not make applications less than 7 days apart.</li><li>• Do not apply more than 0.2 pound active ingredient per acre per season.</li><li>• Do not apply within 7 days of harvest.</li></ul>		

**PEANUT**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Beet Armyworms Corn earworm Cucumber Beetles Cutworm species Fall Armyworm Grasshoppers Green cloverworm Leafhoppers Lesser Cornstalk Borer Loopers Rednecked Peanut Worm Southern Armyworm Southern Corn Rootworm Stink Bugs Threecornered Alfalfa Hopper Velvetbean Caterpillar Yellowstriped Armyworm	2.1 to 6.4 fl. oz. (0.033 to 0.1 lb. ai) per acre	Apply foliar treatments in at least 10 gallons per acre at the rate of 6.4 fl. oz. (0.1 lb. active ingredient) per acre at a minimum of 14 day intervals.
Aphids Spider Mites Thrips Whitefly	5.12 to 6.4 fl. oz. (0.08 to 0.1 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>Do not feed green immature plants and peanut hay to livestock.</li><li>Do not apply more than 0.5 pound active ingredient per acre per season.</li><li>Do not apply within 14 days of harvest.</li></ul>		



**PEARS**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Aphids Codling Moth Cutworms Green Fruitworm Leafhopper Leafminer Leafroller <i>Lygus</i> spp. Plant Bugs Plum Curculio San Jose Scale (Crawlers) Stink Bugs Tarnished Plant Bug	2.6 to 12.8 fl. oz. (0.04 to 0.2 lb. ai) per acre	<b>Application 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 in sufficient water to provide thorough coverage.  <b>Application by air:</b> Apply the specified dosage in a minimum of 10 gallons per acre by air.  Apply as necessary to maintain control using a minimum of 30 day spray interval.  Apply up to 14 days prior to harvest.
Twospotted Spider Mite Yellow Mite	3.8 to 12.8 fl. oz. (0.06 to 0.2 lb. ai) per acre	
European Red Mite	5.12 to 12.8 fl. oz. (0.08 to 0.2 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>Do not apply more than 0.5 pound active ingredient per acre per season with no more than 0.45 pound active per acre applied after petal fall.</li><li>Do not graze livestock in treated orchards or cut treated cover crops for feed.</li></ul>		



**ROOT CROPS**

Apply as directed using the rates in the table below.

CROP	PEST	RATE	APPLICATION INSTRUCTIONS
Burdock, edible Carrot Celeriac Chervil, turnip rooted Chicory Ginseng Horseradish Parsley, turnip rooted Parsnip Radish Radish, oriental Rutabaga Salsify Salsify, black Salsify, Spanish Skirret Turnip	Aphids Beet Armyworm Celery leaf-tier Corn Earworm Cross-Striped Cabbageworm Cutworms Diamondback moth European Corn Borer Fall Armyworm Fire Ants Flea Beetles Green Cloverworms Hornworms Imported Cabbageworm Loopers Southern Armyworm Spider Mites Tobacco Budworm Velvetbean Caterpillar Whitefly Yellowstriped Armyworm	5.12 to 6.4 fl. oz./acre (0.08 to 0.10 lb. ai) per acre	Apply foliar treatments in at least 25 gallons per acre.

**RESTRICTIONS:**

- Do not make applications less than 7 days apart.
- Do not apply more than 0.5 lb. active ingredient per acre per season.
- Do not apply within 21 days of harvest.

Garden Beet	Aphids Fire Ants Flea Beetles Lepidopterous Larvae Spider Mites Whitefly	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	Apply foliar treatments in at least 25 gallons per acre.
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**RESTRICTIONS:**

- Do not make applications less than 7 days apart.
- Do not apply more than 0.4 lb. active ingredient per acre per season.
- Do not apply within 1 day of harvest.



**SOYBEAN**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Soybean Aphid	2.1 to 6.4 fl. oz. (0.033 to 0.1 lb. ai) per acre	Apply as a foliar treatment using at least of 10 gallons per acre at the rate of 6.4 fl. oz. (0.1 lb.) per acre at a minimum of 30 day intervals
Spider Mite	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>• Do not apply more than 0.3 pound active ingredient per acre per season.</li><li>• Do not apply within 18 days of harvest.</li></ul>		

**SPINACH**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Armyworms Colorado Potato Beetle Corn Earworm Cucumber Beetles Cutworms European Corn Borer Flea Beetles Leafminers Loopers Pepper Weevil Thrips Tomato Pinworm Tomato Hornworm Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	Apply the specified dosage in 5-50 gallons of finished spray per acre by air or 10-50 gallons of finished spray per acre by ground.  For control of <b>Whiteflies</b> , apply foliar treatments of this product by ground or air at rates of up to 0.4 pt. (0.1 lb active) per acre at minimum 7-day intervals up to a maximum of 4 applications.  For control of <b>Fire Ants</b> , apply this product to the soil (at planting) or as a foliar treatment by ground or air at rates up to 0.4 pt. (0.1 lb. active) per acre at minimum 7-day intervals up to a maximum of 4 applications.
Broad Mite Banks Grass Mite Twospotted Spider Mite Carmine Mite Pacific Spider Mite <i>Lygus</i> spp. Fire Ants	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>Do not make applications less than 7 days apart.</li><li>Do not apply more than 0.4 pound active ingredient per acre per season.</li><li>Do not apply within 40 days of harvest.</li></ul>		



**SUCCULENT PEAS AND BEANS**

Apply as directed at the table rates below.

CROP	PEST	RATE	APPLICATION INSTRUCTIONS
<b>Peas</b> ( <i>Pisum</i> spp.) including: Dwarf pea Edible-pod pea English pea Garden pea Green pea Snow pea Sugar snap pea Pigeon pea <b>Bean</b> ( <i>Phaseolus</i> spp.) including: Broadbean (succulent), Lima bean (green), Runner bean, Snap bean, Wax bean <b>Bean</b> ( <i>Vigna</i> spp.) Including: Asparagus bean, Blackeyed pea, Chinese longbean, Cowpea, Moth bean, Southern pea, Yardlong bean, Jackbean, Soybean (immature seed), Sword bean	Flea Beetle Grasshoppers Aster Leafhoppers Leafhoppers	1.6 to 6.4 fl. oz. (0.025 to 0.10 lb. ai) per acre	Apply in a minimum of 2 gallons of finished spray per acre by air or in a minimum of 10 gallons per acre with ground equipment.  When applying by air, 1 to 2 quarts of emulsified oil may be substituted for 1 to 2 quarts of water in the finished spray.  Thorough coverage is essential to achieve control.
	Aphids Beet Armyworm Fall Armyworm Southern Armyworm Yellowstriped Armyworm Bean Leaf Beetle Cucumber Beetle Japanese Beetle Adult Sap Beetle Plant Bugs Stink Bugs Tarnished Plant Bug Alfalfa Caterpillar Clover Worm European Corn Borer Cutworms Western Bean Cutworm Corn Earworm Loopers Corn Rootworm Adult Thrips Webworms Pea Weevil Pea Leaf Weevil Whitefly	2.1 to 6.4 fl. oz. (0.033 to 0.10 lb. ai) per acre	
	Banks Grass Mite Twospotted Spider Mite Carmine Mite <i>Lygus</i> spp.	5.12 to 6.4 fl. oz. (0.08 to 0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not apply more than 0.2 lb. active ingredient (12.8 ounces formulated product) per acre per season.</li> <li>Do not apply within 3 days of harvest.</li> </ul>			



**TOBACCO**

Apply as directed using the rates in the table below.

PEST	RATE	APPLICATION INSTRUCTIONS
Cutworm spp. Tobacco Flea Beetle (larvae) White Grubs Wireworms Mole Crickets Armyworm spp. Stalkborers	4.0 to 6.4 fl. oz. (0.0625 to 0.10 lb. ai) per acre	<b>Pre-Transplant Soil Application:</b> Apply 0.0625 to 0.1 pound active ingredient in a minimum of 10 gallons per acre to control soil pests. Use of suitable equipment to incorporate into top 4" of the soil is required to control below ground pests.  <b>At-Plant Water Treatment Application:</b> Apply 0.0625 to 0.1 pound active ingredient in a water treatment application volume of 10 to 200 gallons per acre.
Aphid spp. Armyworm spp. Flea Beetle (Adult) Chinch bugs Stink bugs Japanese Beetles Grasshoppers Cutworm spp. Tarnished Plant Bugs Green Bugs Thrips Whiteflies	2.56 to 6.4 fl. oz. (0.04 to 0.10 lb. ai) per acre	<b>Foliar Application:</b> Apply 0.04 to 0.1 pound active ingredient per foliar application up to and including layby in a minimum of 10 gallons per acre.
Spider Mites <i>Lygus</i> spp.	6.4 fl. oz. (0.10 lb. ai) per acre	
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"><li>• Do not apply later than layby.</li><li>• Do not apply more than 0.2 pound active ingredient per acre per season.</li><li>• May be tank mixed with other herbicides labeled for tobacco use.</li><li>• Do not make more than 2 foliar applications per season.</li></ul>		



**TUBEROUS AND CORM VEGETABLES**

Apply as directed using the rates in the table below.

CROP	PEST	APPLICATION INSTRUCTIONS
Potato Sweet potato Arracacha Arrowroot Chinese artichoke Jerusalem artichoke Edible canna Cassava (bitter & sweet) Chayote (root) Chufa Dasheen (taro) Ginger Leren Tanier Turmer Yam bean True yam	Corn wireworm Tobacco wireworm Southern potato wireworm Japanese beetle grubs June beetle Sweetpotato flea beetle Cucumber beetle Sweetpotato Weevil Banded Cucumber Beetle Black flea beetle Whitefringed beetle White grub Sugarcane beetle Rootworms	<p><b>In-Furrow At Planting Application:</b> Apply this product to control <b>wireworms</b>, <b>rootworms</b>, and <b>white grubs</b>. Apply at the rate of 0.3 pound active ingredient (19.2 ounces formulated product) per acre as an in-furrow or T-band spray at planting time.</p> <p><b>Lay-By Application:</b> Apply this product to control <b>wireworms</b>, <b>rootworms</b> and <b>white grubs</b>. Apply to the drill area and cover with soil utilizing cultivation equipment set to throw soil to the drill area. Apply at the rate of 0.05 to 0.15 pound active ingredient (3.2 to 9.6 ounces formulated product) in 10 gallons per acre of spray.</p> <p><b>Foliar Application:</b> Apply this product to control the adult life stages of <b>flea beetles</b>, <b>click beetles (wireworms)</b>, <b>cucumber beetles (rootworms)</b>, <b>Whitefringed beetles</b> and <b>May/June beetle (White grubs)</b>. Apply at the rate of 0.1 pound active ingredient (6.4 ounces formulated product) per acre in 10 gallons of spray by ground equipment and 3 gallons of spray by air.</p>
<b>RESTRICTIONS:</b> <ul style="list-style-type: none"> <li>Do not make more than 2 foliar applications per season no sooner than 21 days apart.</li> <li>Do not apply more than 0.5 lb. active ingredient per acre per season, including soil application.</li> <li>Do not apply within 21 days of harvest.</li> </ul>		

**APPLICATIONS INSTRUCTIONS – ORNAMENTALS**

For use on plants intended for aesthetic purposes or climatic modifications and being grown in interior landscapes and on outdoor ornamentals, Christmas trees, nurseries, lawns, sod farms and golf courses.

**USE INSTRUCTIONS**

This product mixes with water and other aqueous carriers to control a broad assortment of insects and mites on trees, shrubs, foliage plants, non-bearing fruit and nut trees, and flowers in interiorscapes, including hotels, shopping malls, office buildings, etc. and outdoor landscapes such as, but not limited to, nurseries, residential dwellings, parks, institutional buildings, recreational areas, athletic fields, golf courses, sod farms, and home lawns. Non-bearing crops are perennial crops that will not produce a harvestable raw agricultural commodity during the season of application.

This product may be tank-mixed with other products, including insect growth regulators. When tank mixing with other products observe all precautions and limitations on each separate product label. The addition of spreader stickers is not necessary. The physical compatibility of this product may vary with different sources of pesticide products, and local cultural practices. Any tank mixture which has not been previously tested should be prepared on a small scale (pint or quart jar), using the proper proportions of chemicals and water to ensure the physical compatibility of the mixture.



The following procedure is recommended for preparation of a new tank mix, unless specified otherwise in label directions:

1. Add wettable powders to tank water
2. Agitate
3. Add fluids and flowables
4. Agitate
5. Add emulsifiable concentrates
6. Agitate

If a mixture is found to be incompatible following the order of addition, try reversing the order of addition, or increase the volume of water. **Note:** If the tank mixture is found to be compatible after increasing the amount of water then the sprayer will need to be recalibrated for a higher volume application. Do not allow tank mix to stand overnight. When using tank mixes, observe all restrictions and precautions which appear on the labels of these products. Provide constant agitation to keep the mixture in solution.

## APPLICATION RECOMMENDATIONS

### TRUNK SPRAYS TO ORNAMENTAL TREES (including Christmas trees)

#### For Control of Bark Beetles and Boring Beetles

Refer to the table below. Application rates and timing differ according to the target pest and other factors specific to each local situation. Consult your local State Extension specialist or other qualified expert for recommendations. **Note:** Do not apply more than 12.8 fl. oz. (0.2 lbs. AI) per acre of this product to trees. Repeat application may be necessary if reinfestation is likely.

PEST	RATE	SPRAY VOLUME	USE INSTRUCTIONS
<b>Dandroctonus bark beetles</b> such as mountain pine beetle, southern pine beetle, western pine beetle, and black turpentine beetle.	16 – 32 fl. oz. per 100 gallons (0.25 – 0.5 lb. AI per 100 gallons)	Use 1 – 4 gallons of finished spray per tree.	Make applications to the trunk of the tree with a hydraulic sprayer in the early spring or prior to adult beetle flight and tree infestation.
Engraver beetle ( <i>Ips</i> spp.)	16 -32 fl. oz. per 100 gallons (0.25 – 0.5 lb. AI per 100 gallons)	Use 10-14 gallons of finished spray per tree.	Apply spray directly to the main trunk from the base of the tree to at least half-way into the live crown. Spray until the bark is thoroughly wet.
<b>Other bark beetles</b> such as ambrosia beetles, elm bark beetles, and metallic wood borers such as emerald ash borer.	16 – 32 fl. oz. per 100 gallons (0.25 – 0.5 lb. AI per 100 gallons)	Use 2-5 gallons of finished spray per tree.	Make applications of a spray mixture to the trunk, scaffolding and limbs of the tree with a hydraulic sprayer in the early spring or prior to adult beetle flight and tree infestations. Spray until the bark is thoroughly wet.
<b>Clearwing moth borers</b> such as ash borer, banded ash clearwing, dogwood borer, lesser peachtree borer, lilac borer, oak borer, peachtree borer, rhododendron borer  <b>Coleopteran borers</b> such as bronze birch borer, flatheaded apple tree borer	6.4 – 12.8 fl. oz. per 100 gallons (0.1 – 0.2 lb. AI per 100 gallons)	Use 1-4 gallons of finished spray per tree.	Apply to the branches and trunks prior to adult emergence. Spray until the bark is thoroughly wet. For maximum residual control, use highest recommended rate.



### Treatment of Infested Trees to Control Emerging Brood

Make applications of a spray mixture containing 2.0 pints of this product per 100 gallons of water to trees that still have beetles in the bark. Apply spray directly to the main trunk from the base of the tree to at least half-way into the live crown. Spray until the bark is thoroughly wet (usually 1 to 4 gallons of spray per tree). Do not apply more than 0.2 lbs. AI (12.8 fl. oz.) of this product to trees per acre.

Trees on which all needles have turned brown generally have been vacated and should not be sprayed unless infestation is confirmed. To confirm an infestation, scrape off the outer bark to determine if trees are still infested. If live infestations remain in the trunks, fell the trees and cut into sections. Spray the trunk and large limbs and turn sections so that all of the surface can be treated. Do not apply more than 0.2 lbs. AI (12.8 fl. oz.) of this product to trees per acre.

### FOLIAR SPRAYS TO ORNAMENTALS AND TREES

(Including Field and Container Grown Nursery Stock, Christmas Trees, Interiorscapes and Plantscapes, Lawns, Trees and Shrubs, and on Golf Courses and Sod Farms)

For applications to ornamentals (including but not limited to) trees, shrubs, ground covers, bedding plants and foliage plants, conifers (field and container grown), Christmas Trees and pine seed orchards) apply 0.04 to 0.32 fl. oz. of this product per 1,000 sq. ft. or 1.8 to 14.4 fl. oz. per 100 gallons. This product may be diluted and applied in various volumes of water providing that the maximum label rate (0.32 fl. oz. per 1,000 sq. ft. or 14.4 fl. oz. per 100 gallons) is not exceeded. This product may be applied through low volume application equipment by dilution with water or other carriers and providing that the maximum label rate (0.32 fl. oz. per 1,000 sq. ft. or 14.4 fl. oz. per 100 gallons) is not exceeded.

**Calculating Dilution Rates.** Using the following steps to determine the appropriate dilution of this product required to control the specific pests:

1. Find the least susceptible target pest (the pest that requires the highest application rate for control).
2. Select an application rate in terms of fluid ounces of this product.
3. Find your application volume and how much spray you want to prepare.
4. Use the **Ornamental Dilution Chart** to determine the appropriate volume of this product that must be mixed in your desired volume of water.

For example, to control black vine weevil adults on rhododendron, the **Ornamental Application Rates** table shows that 0.08 to 0.16 fl. oz. of this product should be applied per 1,000 sq. ft. You select an application rate of 0.16 fl. oz. per 1,000 sq. ft. because maximum residual control is desired. Your application volume is approximately 300 gallons per acre which is equivalent to 6.9 gallons per 1,000 sq. ft. Consulting the **Ornamental Dilution Chart** shows that you should dilute 0.24 fl. oz. of this product in 10 gallons of water.

ORNAMENTAL DILUTION CHART							
Application Rate	Fluid Ounces (mL) of Bifenthrin 2EC diluted to the Volumes of Finished Spray						
	1 Gallon		5 Gallons		10 Gallons		100 Gallons
Fl. oz./1,000 sq. ft.	Fl. oz.	mL	Fl. oz.	mL	Fl. oz.	mL	Fl. oz.
0.04	0.018	0.5	0.09	2.6	0.18	5.3	1.8
0.08	0.036	1.1	0.18	5.3	0.36	10.6	3.6
0.16	0.072	2.1	0.36	10.6	0.72	21.3	7.2
0.32	0.144	4.3	0.72	21.3	1.44	42.6	14.4

$$\frac{(7.9)(\text{Fl. Oz. of Bifenthrin 2EC added to tank})}{(\text{gallons of finished spray mix})(128)} = \text{Percent Active Ingredient of Spray Mix}$$

### ORNAMENTAL AND TREE FOLIAR APPLICATION RATES

The application rates listed in the following table will provide excellent control of the noted pests under typical conditions. However, at the discretion of the applicator, this product may be applied at up to 0.32



fl. oz. per 1,000 sq. ft. (14.4 fl. oz. per 100 gallons) to control each of the pests listed in this table. The higher application rates should be used when maximum residual control is desired.

PEST	RATES	USE INSTRUCTIONS
Bagworms <sup>1</sup> Cutworms Elm Leaf Beetles Fall Webworms Gypsy Moth Caterpillars Lace Bugs Leaf Feeding Caterpillars Tent Caterpillars Tussock moth	0.04 – 0.08 fl. oz. per 1,000 sq. ft.  (1.8 – 3.8 fl. oz. per 100 gallons)	<sup>1</sup> Bagworms: For best results, apply when larvae begin to hatch and spray larvae directly. Applications when larvae are young will be most effective.  <sup>2</sup> Beetles, Scale Crawlers, Twig Borers, and Weevils: May treat trunks, stems and twigs in addition to plant foliage.  <sup>3</sup> Spider Mites: This product provides optimal twospotted spider mite control when applied during spring to mid-summer. Higher application rates and/or more frequent treatments may be required for acceptable twospotted spider mite control during mid- to late-summer. The addition of a surfactant or horticultural oil may increase the effectiveness of this product. Combinations of this product with other registered miticides have also proven effective. Alternatively, applications of this product may be rotated with those of other products that have different modes of action in control programs that are designed to manage resistance by twospotted spider mites. Consult your local Cooperative Extension Service for resistance management recommendations in your region.
Adelgids Ants Aphids Bees Beet Armyworm Beetles <sup>2</sup> Black Vine Weevil (Adults) Scales, such as Brown Soft Scales California Red Scale (Crawlers) <sup>2</sup> Elongated Hemlock Scale Pine Needle Scales (crawlers) <sup>2</sup> San Jose Scales (Crawlers) <sup>2</sup> Broad Mites Budworms Cicadas Citrus Thrips Clover Mites Crickets Earwigs European Red Mite Flea Beetles Fungus Gnats (Adults) Glassywinged Sharpshooter Grasshoppers Japanese Beetle (Adult) Leafhoppers Leafrollers Mealybugs Mites Mosquitoes Nantucket Pine Tip Moth Pillbugs Pine sawflies Plant Bugs (including <i>Lygus</i> spp.) Phyllids Scorpions Spider Mites <sup>3</sup> Spiders Spittlebugs Thrips Tip Moths Treehoppers	0.08 – 0.16 fl. oz. per 1,000 sq. ft.  (3.6 – 7.2 fl. oz. per 100 gallons)	



PEST	RATES	USE INSTRUCTIONS
Twig Borers <sup>2</sup> Wasps Weevils <sup>2</sup> such as White Pine Weevil Pales Weevil Diaprepes adults Orchard Weevil White flies Zimmerman pine moths		
Imported Fire Ants** Leafminers Pecan Leaf Scorch Mite Pine Shoot Beetle (Adults) Spider Mites <sup>3</sup>	0.16 – 0.32 fl. oz. per 1,000 sq. ft.  (7.2 – 14.4 fl. oz. per 100 gallons)	**For foraging ants

**BROADCAST SPRAYS TO TURFGRASS (including lawns, golf courses, sod farms, parks, etc).**

Apply this product as a broadcast treatment. Use higher volumes up to 10 gallons of carrier per 1,000 square feet to get uniform coverage when treating dense grass foliage.

For low water volume usage, less than 2 gallons/1,000 square feet, addition of a non-ionic or silicone based surfactant (0.25% v/v) is recommended. Irrigation to treated area within a few hours following application can improve efficacy to sub-surface pests including mole crickets.

**Restrictions:**

**In New York State, this product may NOT be applied to any grass or turf area within 100 feet of a water body (lake, pond, river, stream, wetland, or drainage ditch).**

**In New York State, do make a single repeat application of this product if there are signs of renewed insect activity, but not sooner than two weeks after the first application.**



### Turfgrass Application Rates

The application rates listed in the following table will provide excellent control of the respective pests under typical conditions. However, at the discretion of the applicator, this product may be applied at up to 0.32 fl. oz. per 1,000 square feet to control each of the pests listed in this table. The higher application rates should be used when maximum residual control is desired or heavy pest populations occur.

PEST	RATES
Armyworms <sup>1</sup> Cutworms <sup>1</sup> Sod Webworm <sup>1</sup>	0.05 to 0.08 fl. oz. per 1,000 sq. ft.
Annual Bluegrass Weevil ( <i>Hyperodes</i> )(Adult) <sup>2</sup> Banks Grass Mite <sup>6</sup> Billbugs (Adult) <sup>3</sup> Black Turfgrass Ataenius (Adult) <sup>4</sup> Crickets Earwigs Fleas (Adult) Grasshoppers Mealybugs Mites	0.08 to 0.16 fl. oz. per 1,000 sq. ft.
Ants Chinch Bugs <sup>5</sup> Fleas (Larvae) <sup>7</sup> Imported Fire Ants <sup>8</sup> Japanese Beetle (Adult) Mole Cricket (Adult) <sup>9</sup> Mole Cricket (Nymph) <sup>10</sup> Ticks <sup>11</sup>	0.16 to 0.32 fl. oz. per 1,000 sq. ft.

<sup>1</sup>**Armyworms, Cutworms and Sod Webworms:** To ensure optimum control, delay watering (irrigation) or mowing for 24 hours after application. If the grass area is being maintained at a mowing height of greater than 1 inch, then higher application rates (up to 0.32 fluid oz. per 1,000 square feet) may be required during periods of high pest pressure.

<sup>2</sup>**Annual Bluegrass Weevil (*Hyperodes*) adults:** Applications should be timed to control adult weevils as they leave their overwintering sites and move into grass areas. This movement generally begins when Forsythia is in full bloom and concludes when flowering dogwood (*Cornus florida*) is in full bloom. Consult your State Cooperative Extension Service for more specific information regarding application timing.

<sup>3</sup>**Billbug adults:** Applications should be made when adult billbugs are first observed during April and May. Degree day models have been developed to optimize application timing. Consult your State Cooperative Extension Service for information specific to your region. In temperate regions, spring applications targeting billbug adults will also provide control of over-wintered chinch bugs.

<sup>4</sup>**Black Turfgrass Ataenius adults:** Applications should be made during May and July to control the first and second generation of black turfgrass ataenius adults, respectively. The May application should be timed to coincide with the full bloom stage of Vanhoutte spiraea (*Spiraea vanhouttei*) and horse chestnut (*Aesculus hippocastanum*). The July application should be timed to coincide with the blooming of Rose of Sharon (*Hibiscus syriacus*).

<sup>5</sup>**Chinch Bugs:** Chinch Bugs infest the base of grass plants and are often found in the thatch layer. Irrigation of the grass area before treatment will optimize the penetration of the insecticide to the area where the chinch bugs are located. Use higher volume applications if the thatch layer is excessive or if a relatively long mowing height is being maintained. Chinch bugs can be one of the most difficult pests to control in grasses and the higher application rates (up to 0.32 fluid oz. per 1,000 square feet) may be required to control populations that contain both nymphs and adults during the middle of the summer.

<sup>6</sup>**Mites:** To ensure optimal control of eriophyid mites, apply in combination with the labeled application



rate of a surfactant. A second application, five to seven days after the first, may be necessary to achieve acceptable control.

<sup>7</sup>**Flea larvae:** Flea larvae develop in the soil of shaded areas that are accessible to pets or other animals. Use a higher volume application when treating these areas to ensure penetration of the insecticide into the soil. Note: If the lawn area is being treated with this product at 0.08 fluid oz., per 1,000 square feet for adult flea control, then the larval application rate may be achieved by increasing the application volume two- to four-fold.

<sup>8</sup>**Imported Fire Ants:** Control will be optimized by combining broadcast applications that will control foraging workers and newly mated fly-in queens with mound drenches that will control existing colonies. If the soil is not moist, then it is important to irrigate before application or use a high volume application. Broadcast treatments should apply 0.32 fluid oz. per 1,000 square feet. Mounds should be treated by diluting 0.05 fluid oz. of this product per gallon of water and applying 1 to 2 gallons of finished spray per mound. The mounds should be treated with sufficient force to break their apex and allow the insecticide solution to flow into the ant tunnels. A four foot diameter circle around the mound should also be treated. For best results, apply in cool weather (65 - 80°F) or in early morning or late evening hours. Note: a spray rig that is calibrated to apply 0.32 fluid oz. per 1,000 square feet of this product in 5 gallons per 1,000 square feet contains the approximate dilution (0.05 fluid oz per gallon) that is required for fire ant mound drenches in the spray tank.

<sup>9</sup>**Mole Cricket adults:** Achieving acceptable control of adult mole crickets is difficult because preferred grass areas are subject to continuous invasion during the early spring by this extremely active stage. Applications should be made as late in the day as possible and should be watered in with up to 0.5 inches of water immediately after treatment. If the soil is not moist, then it is important to irrigate before application to bring the mole crickets closer to the soil surface where contact with the insecticide will be maximized. Grass areas that receive pressure from adult mole crickets should be treated at peak egg hatch to ensure optimum control of subsequent nymph populations (see below).

<sup>10</sup>**Mole Cricket nymphs:** Grass areas that received intense adult mole cricket pressure in the spring should be treated immediately prior to peak egg hatch. Optimal control is achieved at this time because young nymphs are most susceptible to insecticides and they are located near the soil surface where the insecticide is most concentrated. Control of larger, more damaging nymphs later in the year may require both higher application rates and more frequent applications to maintain acceptable control. Applications should be made as late in the day as possible and should be watered in with up to 0.5 inches of water immediately after treatment. If the soil is not moist, then it is important to irrigate before application to bring the mole crickets closer to the soil surface where contact with the insecticide will be maximized.

<sup>11</sup>**Ticks (Including ticks that may transmit Lyme Disease and Rocky Mountain Spotted fever):** Do not make spot applications. Treat the entire area where exposure to ticks may occur. Use higher spray volumes when treating areas with dense ground cover or heavy leaf litter. Ticks may be reintroduced from surrounding areas on host animals. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed activity. Repeat application should be limited to no more than once per seven days.

**Deer ticks (*Ixodes spp.*)** have a complicated life cycle that ranges over a two year period and involves four life stages. Applications should be made in the late fall and/or early spring to control adult ticks that are usually located on brush or grass above the soil surface and in mid to late spring to control larvae and nymphs that reside in the soil and leaf litter.

**American dog ticks** may be a considerable nuisance in suburban settings, particularly where homes are built on land that was previously field or forest. These ticks commonly congregate along paths or roadways where humans are likely to be encountered. Applications should be made as necessary from mid-spring to early fall to control American dog tick larvae, nymphs and adults.



LAWN DILUTION CHART								
Application Volume: Gallons/1000 sq. ft.	Application Rate: Fl. Oz./1000 sq. ft.	Fluid Ounces (mL) of this product diluted to the Volumes of Finished Spray						
		1 Gallon		5 Gallons		10 Gallons		100 Gallons
		Fl. oz.	mL	Fl. oz.	mL	Fl. oz.	mL	Fl. oz.
1	0.05	0.05	1.48	0.25	7.39	0.50	14.8	5.00
1	0.08	0.08	2.37	0.40	11.83	0.80	23.7	8.00
1	0.16	0.16	4.73	0.80	23.66	1.60	47.3	16.00
1	0.32	0.32	9.46	1.60	47.32	3.20	94.6	32.00
2	0.05	0.025	0.74	0.13	3.70	0.25	7.4	2.50
2	0.08	0.040	1.18	0.20	5.91	0.40	11.8	4.00
2	0.16	0.080	2.37	0.40	11.83	0.80	23.7	8.00
2	0.32	0.160	4.73	0.80	23.66	1.60	47.3	16.00
3	0.05	0.017	0.49	0.08	2.46	0.17	4.9	1.67
3	0.08	0.027	0.79	0.13	3.94	0.27	7.9	2.67
3	0.16	0.053	1.58	0.27	7.89	0.53	15.8	5.33
3	0.32	0.107	3.15	0.53	15.77	1.07	31.5	10.67
4	0.05	0.013	0.37	0.06	1.85	0.13	3.7	1.25
4	0.08	0.020	0.59	0.10	2.96	0.20	5.9	2.00
4	0.16	0.040	1.18	0.20	5.91	0.40	11.8	4.00
4	0.32	0.080	2.37	0.40	11.83	0.80	23.7	8.00
5	0.05	0.010	0.30	0.05	1.48	0.10	3.0	1.00
5	0.08	0.016	0.47	0.08	2.37	0.16	4.7	1.60
5	0.16	0.032	0.95	0.16	4.73	0.32	9.5	3.20
5	0.32	0.064	1.89	0.32	9.46	0.64	18.9	6.40
10	0.05	0.005	0.15	0.03	0.74	0.05	1.5	0.50
10	0.08	0.008	0.24	0.04	1.18	0.08	2.4	0.80
10	0.16	0.016	0.47	0.08	2.37	0.16	4.7	1.60
10	0.32	0.032	0.95	0.16	4.73	0.32	9.5	3.20

**Attention:**

- Do not apply to pets, crops, or sources or electricity.
- Firewood is not to be treated.
- Do not allow spray to contact food, foodstuffs, food contacting surfaces, food utensils or water supplies.
- Do not apply this pesticide in livestock buildings (barns).
- Keep children and pets off treated areas following application until the spray has dried.
- Do not apply by air.
- Do not use in greenhouses.
- Do not apply this product through any type of irrigation system. Do not apply when a temperature inversion exists.
- Do not apply for surface feeding pests if rain is expected within 12 hours (or whatever time is necessary for the spray to dry).
- For turf treatment, apply with nozzles not more than 2 feet above the grass.
- Do not apply within 25 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.
- Do not apply when grass areas are water logged or the soil is saturated with water (i.e., will not accept irrigation).
- Vinyl and Aluminum Siding: Do not spray directly onto vinyl or aluminum siding. If this product inadvertently contacts vinyl and aluminum siding (particularly lightly colored, aged, weathered or otherwise damaged), it may result in staining, bleaching or discoloration. Wash off thoroughly



with detergent and water. Factors such as extreme heat and direct sunlight can promote damage when using emulsifiable concentrates. Avoid application to vinyl or aluminum siding while exposed to direct sunlight or during the heat of the day.

### STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE AND SPILL PROCEDURES:** Keep out of reach of children and animals. Store in original containers only, in a cool, dry place and avoid excess heat. Do not freeze. Do not store below 40°F. Carefully open containers. If crystals are observed, warm material to above 60°F by placing container in warm location. Shake or roll container periodically to re-dissolve solids. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

In case of spill, avoid contact, isolate area, and keep out animals and unprotected persons. Confine spills.

**To confine spill:** If liquid, dike surrounding area or absorb with sand, cat litter, or commercial clay. 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 using 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:

**Nonrefillable Container (five gallons or less):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If container is burned, stay out of smoke.

**Nonrefillable Container (greater than five gallons):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling or reconditions, or puncture and dispose of in a sanitary landfill or by incineration or, if allow by state and local authorities, by burning. If container is burned, stay out of smoke.

**Refillable Container:** Refill this container with bifenthrin 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 into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

### CONDITION OF SALE AND WARRANTY

The DIRECTIONS FOR USE of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of UNIVERSAL CROP



PROTECTION ALLIANCE, LLC, its Supplemental Distributors, or the Seller. All such risks shall be assumed by the Buyer.

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[EPA approval date]