

34704-978

1-9-2008

1/14



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

JAN - 9 2008

Mr. Scott Baker  
Registration Manager  
Loveland Products, Inc.  
P.O. Box 1286  
Greeley, Colorado 80632-1286

SUBJECT: Notification of Removal of California Restrictions  
EPA Registration Number: 34704-978  
Date of Submission: November 12, 2007

Dear Mr. Baker:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 dated, November 12, 2007 for the product, Tombstone Helios Insecticide. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the actions requested fall within the scope of PRN 98-10. The label submitted with the application has been stamped "Notification" and will be placed in our records.

If you have any questions, please call me directly at 703-305-6249 or Joyce Edwards of my staff at 703-308-5479.

Sincerely,

A handwritten signature in black ink that reads "Rachel C. Holloman".

Linda Arrington  
Notifications & Minor Formulations Team Leader  
Registration Division (7505P)  
Office of Pesticide Programs



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Mr. Scott Baker  
Registration Manager  
Loveland Products, Inc.  
P.O. Box 1286  
Greeley, Colorado 80632-1286

SUBJECT: Notification of Removal of California Restrictions  
EPA Registration Number: 34704-978  
Date of Submission: November 12, 2007

Based on your email letter of January 4, 2008, this letter rescinds the Agency letter of December 18, 2007, for the subject notification. The product name should have been Tombstone Helios Insecticide.

We apologize for any confusion this might have caused. If you have any questions, please call me directly at 703-305-6249 or Joyce Edwards of my staff at 703-308-5479.

Sincerely,

*Rachel C. Holloman*  
*for*

Linda Arrington  
Notifications & Minor Formulations Team Leader  
Registration Division (7505P)  
Office of Pesticide Programs

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Please read instructions on reverse before completing form.

Form Approved, OMB No. 2070-0060, Approval expires 2-28-95



United States  
Environmental Protection Agency  
Washington, DC 20460

<input type="checkbox"/>	Registration
<input type="checkbox"/>	Amendment
<input checked="" type="checkbox"/>	Other

OPP Identifier Number

### Application for Pesticide - Section I

1. Company/Product Number 34704-978	2. EPA Product Manager George LaRocca	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Tombstone Helios Insecticide	PM# 13	
5. Name and Address of Applicant (Include ZIP Code) Loveland Products, Inc. P.O. Box 1286 Greeley, Colorado 80632-1286 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 2(c)(3) (b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____	

### Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____	<b>NOTIFICATION</b> <b>DEC 18 2007</b>
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.	
<input type="checkbox"/> Notification - Explain below.	<input checked="" type="checkbox"/> Other - Explain below.	

**Explanation:** Use additional page(s) if necessary. (For section I and Section II.)

Notification of removal of California restrictions. This is being submitted as a minor label change under PR Notice 98-10, the statements removed are not related to FIFRA. Please place this label in the file as the latest approved label.

### Section - III

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Metal	<input type="checkbox"/> Plastic
* Certification must be submitted		If "Yes" Unit Packaging wgt.	No. per container	If "Yes" Package wgt	No. per container
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container 1 gal		5. Location of Label Directions <input type="checkbox"/>	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph Paper glued <input type="checkbox"/> Stenciled				<input type="checkbox"/> Other _____	

### Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)		
Name Scott Baker	Title Registration Manager	Telephone No. (include Area Code) 970-347-1468
<b>Certification</b> I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		6. Date Application Received  (Stamped)
2. Signature 	3. Title Registration Manager	
4. Typed Name Scott Baker	5. Date November 12, 2007	

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Performance

Quality

November 12, 2007

Document Processing Desk (7504P)  
U.S. Environmental Protection Agency  
Room S4900, One Potomac Yard  
2777 S. Crystal Drive  
Arlington, VA 22202

Subject: Tombstone Helios - EPA Reg. No. 34704-978

Loveland Products, Inc. is submitting an application by notification to remove the California restrictions.

- 1. Application for Registration.
- 2. 5 copies of the product Label.

**This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.**

Please contact me at 970-347-1468 or by e-mail: [scott.baker@uap.com](mailto:scott.baker@uap.com) if there are any questions or comments concerning this submission.

Sincerely,

Scott Baker  
Registration Manager  
Enclosures

**NOTIFICATION**

**DEC 18 2007**



Performance

Quality

5/14

November 12, 2007

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Sincerely,

Scott Baker  
Registration Manager  
Enclosures

# RESTRICTED USE PESTICIDE

Due to Toxicity to Fish and Aquatic Organisms

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

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## Emulsifiable Pyrethroid Insecticide For control of certain insect pests on field, vegetable, tree and vine crops.

### ACTIVE INGREDIENT:

Cyfluthrin

Cyano(4-fluoro-3-phenoxyphenyl)methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate ..... 25%

INERT INGREDIENTS ..... 75%  
TOTAL 100%

Contains 2 lb Cyfluthrin per gallon.  
(This product contains aromatic petroleum distillates.)

## 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.)

### FIRST AID

<b>If in eyes:</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15 to 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 swallowed:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Do not induce vomiting unless told to do so by 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 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 to 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 mouth-to-mouth if possible.</li> <li>Call a poison control center or doctor for further treatment advice.</li> </ul>

Have a product container or label with you when calling a poison control center or doctor, or going for treatment.

**FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL:  
1-800-301-7976.**

**Note to Physician: ANTIDOTE** - No specific antidote is available. Treat symptomatically. Published data indicate vitamin E acetate can prevent and/or mitigate symptoms of paresthesia caused by synthetic pyrethroids. Contains petroleum distillates. Vomiting may cause aspiration pneumonia.

EPA REG. NO. 34704-978

EPA EST. NO. 34704-MS-1

NET CONTENTS 1 GAL. (3.78 L)

IHT

022707 V3 10007

## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

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

Do not contaminate feed or food. Keep out of reach of children.

**Personal Protective Equipment:** Some materials that are chemical-resistant to this

product are listed below. If you want more options, follow the instructions for category G on an EPA chemical-resistance category selection chart.

**Applicators and other handlers must wear:** Long-sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate or viton, shoes plus socks, and protective eyewear.

Discard clothing and other absorbent materials that have been dropped or heavily contaminated with this products concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### Engineering Controls Statements

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### USER SAFETY RECOMMENDATIONS

User should:

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

### ENVIRONMENTAL HAZARDS

This pesticide is extremely toxic to fish and aquatic invertebrates. 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 apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment 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 if bees are visiting the treatment area. Additional information may be obtained by consulting your Cooperative Extension Service.

### PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

### DIRECTIONS FOR USE

#### Restricted Use Pesticide

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 exemptions 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 or viton, shoes plus socks, and protective eyewear.

**NOTIFICATION  
DEC 18 2007**

**TOMBSTONE HELIOS**  
**EPA REG. NO. 34704-978**

**STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in a cool, dry place and away from open flame and extreme heat. Store in such a manner as to prevent cross contamination with other pesticides, fertilizers, food and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

Handle open container in a manner as to prevent spillage. If container is leaking, invert container to prevent leakage. If the container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides below. In spill or leak incidents, keep unauthorized people away.

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

**CONTAINER DISPOSAL - NON-REFILLABLE CONTAINER:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**CONTAINER DISPOSAL - RETURNABLE/REFILLABLE SEALED CONTAINER:** Do not rinse container. Do not break seals. Replace the dust cover/cap and return container, intact to point of purchase.

For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC - 1-800-424-9300.

**Tombstone Helios may be used for control of a broad spectrum of insect pests by contact action. Because of this contact activity, good spray coverage of the crop is needed for the highest level of control.**

**Insect Resistance Statement**

Some insects are known to develop resistance to products used repeatedly for control. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or State agricultural authorities for details. If resistance to this product develops in your area, this product alone may not continue to provide adequate control of resistant pests. If poor performance cannot be attributed to improper application, extreme weather conditions, etc., 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/state Extension agent for the best alternative method of control in your area. Consult your state Cooperative Extension Service agent or agricultural advisor for insect resistance management strategies and recommended insect control methods in your area.

**APPLICATION GUIDELINES**

**For all insects, timing of application should be based on careful scouting and local economic thresholds.**

**Foliar Spray Application**

Foliar applications may be made using properly calibrated ground sprayers, fixed- or rotary-winged aircraft or through properly designed, sprinkler-type, chemigation equipment (See Chemigation Application directions below). Thorough and uniform coverage of plants, with direct contact of the spray mixture to the target pests, is required for satisfactory control.

Avoid application procedures where thorough coverage of plant is not possible. Applications made with less than thorough coverage may result in slower activity and/or less overall control from a single application than an application made with higher gallonages. See general, Spray Drift Reduction Management, section below for application guidelines on minimizing drift from all application methods.

**Ground applications** should be made in a minimum of 10 gallons/A.

**Aerial applications** should be made in a minimum of 2 gallons/A, however 5 gallons/A are recommended. See crop specific gallonage requirements. Aerial applications made to dense canopies may not provide sufficient coverage of lower leaves to provide pest control. Higher labeled rates of Tombstone Helios may be necessary for aerial applications.

**Chemigation applications** (See Chemigation Application directions below) should be made as concentrated as possible. For best results apply at 100% input/travel speed, for center pivots or 0.10 inch (2,716 gallons) up to 0.15 inch (4,073 gallons) of water/A, for other systems. Higher labeled rates of Tombstone Helios may be necessary for chemigation applications.

**Chemigation Application**

**Types of Irrigation Systems:** Tombstone Helios helios may be applied through sprinkler type irrigation systems, only. These types include; center pivot, lateral move, or solid set irrigation systems. Do not apply Tombstone Helios through any other type of irrigation system.

**Injection for Chemigation:** Inject the specified dosage of Tombstone Helios into the irrigation main, water stream: (1) through a constant flow, metering device; (2) into the center of the main line flow via a pitot tube or equivalent; (3) at a point ahead of at least one, right-angle turn in main stream flow such that thorough mixing with the irrigation water is ensured.

**Uniform Water Distribution and System Calibration:** The irrigation system must provide uniform distribution of Tombstone Helios treated water. Crop injury, lack of effectiveness, or illegal pesticide residues in or on the crop can result from non-uniform distribution. The system must be calibrated to uniformly distribute the rates specified for chemigation application to specific crops. If you have questions about calibration, contact your Cooperative Extension Service agent, equipment manufacturers, or other experts.

**Chemigation Monitoring:** 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.

**Required Injection and Sprinkler System Safety Devices:** 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 back-flow. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor/engine stops, or in cases where there is no water pump, when water pressure decreases to the point where pesticide distribution is adversely affected. Injection systems must use a metering pump or equivalent, such as a positive displacement injection pump (e.g., diaphragm pump, venturi injection) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

**Public Water Systems:** DO NOT APPLY TOMBSTONE THROUGH ANY IRRIGATION SYSTEM PHYSICALLY CONNECTED TO A PUBLIC WATER SYSTEM. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Tombstone Helios may be applied through any of the recommended types of irrigation systems that may be supplied by a public water system only if the water from the public water system is discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. Before beginning chemigation, always make sure that the air gap exists and that there is no blockage of the overflow of the reservoir tank. Any irrigation system using water supplied from a public water system must also meet the same safety requirements as any other type of water supply and include the same safety devices.

**Chemical Supply Tank Dilution and Agitation:** For injection of Tombstone Helios use a chemical supply tank for pre-mixing Tombstone Helios with either, water or non-emulsifiable oil before injecting mixture into the irrigation line. Dilution ratio should be at least 4 parts of either water/or non-emulsifiable oil, to 1 part Tombstone Helios. If necessary, constant mechanical or hydraulic agitation should be maintained in the chemical supply tank during the entire period of application. Determine the required amounts of Tombstone Helios and either water or non-emulsifiable oil, to mix in the tank. The amount of Tombstone Helios needed equals the number of fluid ounces of Tombstone Helios to be applied per acre multiplied by the number of acres to be chemigated. The amount of emulsion needed equals the gallons of emulsion delivered per hour by the injection pump, multiplied by the number of hours chemigation will take place. The amount of either water or non-emulsifiable oil needed equals the amount of emulsion needed minus the amount of Tombstone Helios needed.

**Posting Requirements:** Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements: Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2-1/2 inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

This sign is in addition to any sign posted to comply with the Worker Protection Standard.

**Cleaning the Chemical Injection System:** In order to apply pesticides accurately, the chemical injection system must be kept clean; free from chemical or fertilizer residues and sediments. Refer to your owner's manual or ask your equipment supplier for the cleaning procedure for your injection system.

**Flushing the Irrigation System:** At the end of the application period, allow time for all lines to flush the pesticide through all nozzles before turning off irrigation water. To ensure the lines are flushed and free of pesticides, a dye indicator may be injected into the lines to mark the end of the application period.

# TOMBSTONE HELIOS

## EPA REG. NO. 34704-978

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**Center-Pivot and Automatic-Move Linear Systems:** Inject the specified dosage per acre continuously for one complete revolution (center pivot) or move of the system. The system should be run at maximum speed. It is recommended that nozzles in the immediate area of control panels, chemical supply tanks, pumps and system safety devices be plugged to prevent chemical contamination of these areas. The use of END GUNS is NOT recommended. End guns that provide uneven distribution of treated water can result in crop injury, lack of effectiveness, or illegal pesticide residues in or on the crop.

**Solid Set and Manually Controlled Linear Systems:** Injection should be during the last 30 to 60 minutes of a regular irrigation period or as a separate 30 to 60 minute application not associated with a regular irrigation.

**OBSERVE THE FOLLOWING PRECAUTIONS WHEN SPRAYING IN THE VICINITY OF AQUATIC AREAS SUCH AS LAKES; RESERVOIRS; RIVERS, PERMANENT STREAMS, MARSHES OR NATURAL PONDS; ESTUARIES AND COMMERCIAL FISH FARM PONDS.**

**Spray Drift Reduction Management**

Do not apply when wind speed favors drift beyond the area intended for treatment. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator is responsible for considering all of these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

**Buffer Zone Requirements**

**Ground, Foliar Applications:** Do not apply by ground within 25 feet of lakes; reservoirs; rivers; permanent streams, marshes or natural ponds; estuaries and commercial fish farm ponds. Increase the buffer zone to 450 feet when an ultra low volume (ULV) application is made.

**Aerial Applications:** Do not apply by air within 150 feet of lakes; reservoirs; rivers; permanent streams, marshes or natural ponds; estuaries and commercial fish farm ponds. The spray boom should be mounted on the aircraft so as to minimize drift caused by wing tip vortices. The minimum practical boom length should be used, and must not exceed 75% of the wing span or rotor diameter.

**Importance of Droplet Size:** An important factor influencing drift is droplet size. Small droplets (<150 to 200 microns) drift to a greater extent than large droplets. Within typical equipment specifications, applications should be made to deliver the largest droplet spectrum that provides sufficient control and coverage. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible and by avoiding excessive spray boom pressure. Spray should be released at the lowest possible height consistent with good pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided.

Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.

**Wind Speed Restrictions:** Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size, canopy and equipment specifications determine drift potential at any given wind speed. Do not apply when wind speeds are greater than 15 mph and avoid gusty and windless conditions. Avoiding applications when wind direction is toward the aquatic area can reduce risk of exposure to sensitive aquatic areas.

**Restrictions During Temperature Inversions:** Do not make aerial or ground applications during temperature inversions. Drift potential is high during temperature inversions. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog. However, if fog is not present, the movement of smoke from a ground source can also identify inversions. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical mixing.

**Runoff Management**

Do not cultivate within 10 feet of the aquatic areas to allow growth of a vegetative filter strip. When used on erodible soils, best management practices for minimizing runoff should be employed. Consult your local Soil Conservation Service for recommendations in your use area. Do not apply if soil is saturated with water. Do not apply under conditions that favor drift from runoff. Do not apply in the rain.

### FIELD CROPS

**Recommended Applications – Tombstone Helios**

For all crops, apply specific dosage of Tombstone Helios at early threshold for target pest, as population begins to develop. Degree of control or suppression of additional labeled pests will be determined, in part by the stage of pest development at application and infestation level of those pests.

Application timing should be based on local economic thresholds. Tombstone Helios may be applied before, during, or after planting. Use the higher rates for moderate to heavy insect pressure. Lower rates are generally adequate for low to moderate insect pressure but require careful scouting and may require more frequent application.

Tombstone Helios is an Emulsifiable Concentrate formulation and is active by contact and ingestion. Thorough coverage is necessary for optimum performance.

See application recommendations at the beginning of each section: **FIELD CROPS; VEGETABLE CROPS; TREE and VINE CROPS.**

**ALFALFA**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Alfalfa looper Cutworms Green cloverworm Meadow spittlebug Potato leafhopper	0.8 - 1.6	0.013 - 0.025
Alfalfa caterpillar Alfalfa plant bug Alfalfa webworm Alfalfa weevil Armyworm (1st and 2nd instar) Aster leafhopper Beet armyworm (1st and 2nd instar) Corn earworm Corn rootworms (adult) Cucumber beetle (adult) Egyptian alfalfa weevil Fall armyworm (1st and 2nd instar) Grape colaspis (adult) Japanese beetle (adult) June beetle (adult) Loopers Lygus bug Mexican bean beetle Stink bugs Tarnished plant bug Threecornered alfalfa hopper Velvetbean caterpillar Yellowstriped armyworm (1st and 2nd instar)	1.6 - 2.8	0.025 - 0.044
Blotch leafminer Grasshoppers Western yellowstriped armyworm (1st and 2nd instar)	2.0 - 2.8	0.031 - 0.044
<b>Pests Suppressed</b> Blue pea aphid Cowpea aphid Pea aphid Whitefly (adult)	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI) or Pre-grazing Interval: **7 days.**

Maximum Tombstone Helios allowed per cutting: **3.2 fluid ounces/A (0.050 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **12.8 fluid ounces/A (0.200 lbs AI/Acre)**

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA –aerial application.**

Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**

Due to potential injury to bees, do not apply to alfalfa grown for seed.

Do not apply to mixed stands with intentionally-grown forage grasses.

See CHEMIGATION statement in Application Guidelines section of this label.

**CORN**

**Field Corn, Popcorn, Seed Corn (see Sweet Corn recommendations in Vegetable Crops Section)**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Black cutworm Flea beetles Granulate cutworm Sandhill cutworm	0.8 - 1.6	0.013 - 0.025
Armyworm (1st and 2nd instar) Bean leaf beetle Cereal leaf beetle Chinch bug Click beetle (adult) Corn earworm Corn rootworms (adult) European corn borer* Grape colaspis (adult) Japanese beetle (adult) June beetle (adult) Leafhoppers Masked chafer (adult) Southern armyworm (1st and 2nd instar) Southern corn leaf beetle Southwestern corn borer* Stalk borer Stink bugs Webworm Western bean cutworm Yellowstriped armyworm (1st and 2nd instar)	1.6 - 2.8	0.025 - 0.044
Grasshoppers	2.1 - 2.8	0.033 - 0.044
Fall armyworm (1st and 2nd instar)	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI): For grain or fodder **21 days;** Green forage may be fed 0 days after last application.

Maximum Tombstone Helios allowed per 7-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **11.2 fluid ounces/A (0.175 lbs AI/Acre).**



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**Corn cont'd.:**

**Field Corn, Popcorn, Seed Corn (see Sweet Corn recommendations in Vegetable Crops Section)**

Maximum number of application per season: **4**. Three applications may be applied up to early dent stage. One application may be made between early dent and 21 days before harvest.

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application**. Minimum ULV application volume (once refined cotton seed/vegetable oil):

**1.0 qt/A – aerial application.**

See CHEMIGATION statement in Application Guidelines section of this label.

\*Application must be made prior to the larva boring into the plant.

**CORN soil pests**

**Field Corn, Popcorn, Seed Corn**

Pests Controlled	Rate fluid ounces/1000 row ft	Rate fluid ounces/acre (based on 30 inch row spacing)
Seedcorn maggot	0.12-0.16	2.0-2.8
Wireworm		
<b>Pest Suppressed</b>		
White grub	0.14-0.16	2.5-2.8

**Note:** Pre-Harvest Interval (PHI): For grain or fodder **21 days**; Green forage may be fed **0 days** after last application.

Maximum Tombstone Helios allowed per 7 day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**.

Maximum Tombstone Helios allowed per crop season: **11.2 fluid ounces/A (0.175 lbs AI/Acre)**.

**APPLICATION INSTRUCTIONS:**

**Carrier:** Tombstone Helios may be applied in water or in liquid pop-up fertilizer at planting. Apply in a **minimum of 2 GPA** of total mix volume when applied in water. Good agitation must be maintained at all times during application.

**Instruction for liquid pop-up fertilizer application:** Perform a compatibility test prior to mixing the entire tank to ensure that Tombstone Helios will remain in solution while applying. Take a known amount of the fertilizer to be used as a carrier and place in a glass jar. Add the appropriate amount of Tombstone Helios based on the labeled use rate. Add other components to be tank mixed. Gently agitate the solution. Examine the solution for signs of incompatibility such as flocculation, precipitation, separation, etc. If incompatibility occurs contact your local Loveland Products Inc. representative for additional information.

Fertilizers containing zinc have been shown to be incompatible with Tombstone Helios and should not be mixed with Tombstone Helios.

**Placement:** Total mix volume should be applied in the open furrow ahead of the closing wheels for optimum coverage.

**Row width adjustment:** The above rate calculations are based on a standard 30 inch row spacing. For row spacing of less than 30 inches, adjust the rate of Tombstone Helios not to exceed **2.8 fluid ounces/A (0.044 lbs AI/Acre)**. Diminished control may occur when rates are decreased below the recommended minimum rates per 1000 row feet.

**COTTON**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cotton leafperforator	0.8 - 1.6	0.013 - 0.025
Cotton leafworm		
Cutworms		
Thrips		
Boll weevil	1.6 - 2.6	0.025 - 0.041
Cabbage looper		
Cotton aphid		
Cotton bollworm*		
Cotton fleahopper		
Cucumber beetle		
European corn borer		
Flea beetles		
Garden webworm		
Lygus bug*		
Pink bollworm		
Saltmarsh caterpillar		
Southern garden leafhopper		
Stink bugs		
Tarnished plant bug*		
Threecornered alfalfa hopper		
Tobacco budworm*		
<b>Ovicidal Control:</b>		
Cotton bollworm and tobacco budworm		
Grasshopper	2.0 - 2.8	0.031 - 0.044
Beet armyworm (1st and 2nd instar)	3.2	0.050
Cotton leafminer		
Fall armyworm (1st and 2nd instar)		
Soybean looper		
Yellowstriped armyworm		
<b>Pest Suppressed</b>		
Whitefly (adult)	3.2	0.050

**Notes:** Pre-Harvest Interval (PHI): **0 day**.

Maximum Tombstone Helios allowed per 3-day interval: **3.2 fluid ounces/A (0.050 lbs AI/Acre)**.

Maximum Tombstone Helios allowed per crop season: **32.0 fluid ounces/A (0.500 lbs AI/Acre)**.

Maximum number of applications: **10**

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application.**

**Cotton cont'd.:**

Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**

See CHEMIGATION statement in Application Guidelines section of this label.

\*See INSECT RESISTANCE statement elsewhere on this label.

Do not graze treated fields.

Do not make more than a total of 10 synthetic pyrethroid applications (of one product or combination of products) to a cotton crop in one growing season.

**GRASSES\***

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Armyworms	1.6-1.9	0.025-0.03

**Notes:** Pre-Harvest Interval (PHI) for hay: **7 days**.

Pre-grazing interval for forage: **0 days**

Maximum Tombstone Helios allowed per hay cutting: **1.9 fluid ounces/A (0.030 lbs AI/Acre)**.

Maximum Tombstone Helios allowed per 28 days for forage: **1.9 fluid ounces/A (0.030 lbs AI/Acre)**.

Maximum number of applications per year: **1**

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application.**

See CHEMIGATION statement in Application Guidelines section of this label.

\*\*Use permitted in CA, ID, OR, and WA only.

**PEANUT**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms	1.0-1.8	0.016-0.028
Green cloverworm		
Potato leathopper		
Rednecked peanutworm		
Velvetbean caterpillar		
Armyworm (1st and 2nd instar)	1.8-2.4	0.028-0.038
Bean leaf beetle		
Corn earworm		
Corn rootworms (adult)		
Grape colaspis (adult)		
Grasshoppers		
Japanese beetle (adult)		
June beetle (adult)		
Stink bugs		
Threecornered alfalfa hopper		
Vegetable weevil		
Beet armyworm (1st and 2nd instar)	2.4-2.8	0.038-0.044
Fall armyworm (1st and 2nd instar)		
Southern armyworm (1st and 2nd instar)		
Whitetringed beetle (adult)		
<b>Pests Suppressed</b>		
Soybean looper	2.8	0.044
Thrips		
Whitefly (adult)		

**Notes:** Pre-Harvest Interval (PHI): **14 days (minimum time between final application and threshing for seed)**.

Maximum Tombstone Helios allowed per 10 day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**

Maximum Tombstone Helios allowed per crop season: **8.4 fluid ounces/A (0.131 lbs AI/Acre)**

Maximum number of applications: **3**

Minimum application volume (water): **10.0 GPA – ground; 2.0 – aerial application.**

Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**

See CHEMIGATION statement elsewhere on this label.

**SORGHUM**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms	1.0 - 1.3	0.016 - 0.020
<b>Sorghum midge</b>		
Armyworm (1st and 2nd instar)	1.3 - 2.8	0.020 - 0.044
Beet armyworm (1st and 2nd instar)		
Black woollybear		
European corn borer*		
Fall armyworm (1st and 2nd instar)		
False chinch bug		
Flea beetle		
Sorghum headworm (corn earworm)		
Sorghum webworm		
Southern armyworm (1st and 2nd instar)		
Southwestern corn borer*		
Stalk borer*		
Stink bugs		
Webworms		
Yellowstriped armyworm (1st and 2nd instar)		
Chinch bug	2.0 - 2.8	0.038 - 0.044
Grasshoppers		
Sugarcane rootstock weevil		

**Notes:** Pre-Harvest Interval (PHI): **14 days**.

If more than 5.6 fluid ounces/Acre is applied, allow at least 14 days between last application and grazing.

Maximum Tombstone Helios allowed per 10-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**.

Maximum Tombstone Helios allowed per crop season: **8.4 fluid ounces/A (0.131 lbs AI/Acre)**.

Maximum number of applications: **6**

Minimum application volume (water): **10.0 GPA – ground; 2.0 – aerial application.**

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### Sorghum cont'd.:

Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0qt/A – aerial application.**  
 See CHEMIGATION statement in *Application Guidelines* section of this label.  
 \*Application must be made prior to the larva boring into the plant.

### SOYBEAN

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms Potato leafhopper Thrips Green cloverworm	0.8- 1.6	0.013 - 0.025
Armyworm Bean leaf beetle Bean leaf webber Beet armyworm (1st and 2nd instar) Blister beetle Cabbage looper Click beetle (adult) Corn earworm Corn rootworms (adult) Cucumber beetle European corn borer Fall armyworm (1st and 2nd instar) Grape colaspis (adult) Japanese beetle (adult) June beetle (adult) Lygus bug Masked chafer (adult) Mexican bean beetle Saltmarsh caterpillar Silverspotted skipper Southern armyworm (1st and 2nd instar) Stink bugs Tarnished plant bug* Threecornered alfalfa hopper Tobacco budworm* Velvetbean caterpillar Webworm Woollybear caterpillar Yellowstriped armyworm	1.6 - 2.8	0.025 - 0.044
Grasshoppers Soybean aphid	2.0 - 2.8	0.031 - 0.044
<b>Pests Suppressed</b>		
Lesser cornstalk borer Soybean looper*	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI) or feeding of dry vines: **45 days.** Green forage may be fed 15 days after last application.  
 Maximum Tombstone Helios allowed per 7-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**  
 Maximum Tombstone Helios allowed per crop season: **11.2 fluid ounces/A (0.175 lbs AI/Acre).**  
 Maximum number of applications per season: **4**  
 Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application.**  
 Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**  
 See CHEMIGATION statement in *Application Guidelines* section of this label.  
 \*See INSECT RESISTANCE statement elsewhere on this label.

### SUGARCANE

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Sugarcane borer*	2.1	0.033
Rice stalk borer*	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI): **15 days**  
 Maximum Tombstone Helios allowed per 7-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre).**  
 Maximum Tombstone Helios allowed per crop season: **16.8 fluid ounces/A (0.263 lbs AI/Acre).**  
 Maximum number of applications: **6.**  
 Minimum application volume (water): **20.0 GPA – ground; 2.0 GPA aerial application.**  
 Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**  
 Do not apply if soil is saturated with water.  
 Do not apply when under conditions that favor runoff.  
 Do not apply in the rain.  
 \*Application must be made prior to the larva boring into the plant.

### SUNFLOWER

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms Sunflower beetle	0.8 - 1.6	0.013 - 0.025
Sunflower stem weevil (adult) Banded sunflower moth	1.6 - 2.4	0.025 - 0.038
Grasshoppers Stink bugs Sunflower bud moth Sunflower headclipping weevil Sunflower midge Sunflower moth Sunflower seed weevil	2.0 - 2.8	0.031 - 0.044

### Sunflower cont'd.:

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Palestriped flea beetle	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI) and Pre-grazing or Foraging interval: **30 days.**  
 Maximum Tombstone Helios allowed per 7-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre).**  
 Maximum Tombstone Helios allowed per crop season: **8.4 fluid ounces/A (0.131 lbs AI/Acre).**  
 Maximum number of applications: **6**  
 Minimum application volume (water): **10.0 GPA – ground; 2.0 - aerial application (DO NOT apply ULV).**  
 See CHEMIGATION statement in *Application Guidelines* section of this label.

### WHEAT

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Army cutworm Cereal leaf beetle Cutworms	1.0-1.8	0.016-0.028
Armyworm Bird cherry-oat aphid* English grain aphid* Fall armyworm (1st and 2nd instar) Flea beetles Grasshoppers Grass sawfly Pale western cutworm Russian wheat aphid* Southern armyworm (1st and 2nd instar) Stink bugs Yellowstriped armyworm	1.8-2.4	0.028-0.038
Chinch bug	2.4	0.038

**Notes:** Pre-grazing or Foraging Interval: **7 days.** Pre-Harvest Interval (PHI): **30 days.**  
 Maximum Tombstone Helios allowed per 3-day interval: **2.4 fluid ounces/A (0.038 lbs AI/Acre)**  
 Maximum Tombstone Helios allowed per crop season: **4.8 fluid ounces/A (0.076 lbs AI/Acre)**  
 Maximum number of applications: **2**  
 Minimum application volume (water): **10.0 GPA – ground; 2.0 GPA – aerial application.**  
 Minimum ULV application volume (cotton seed/vegetable oil): **1.0 qt/A – aerial application.**  
 See CHEMIGATION statement in *Application Guidelines* section of this label.  
 \*For best control, applications must be made prior to insects damaging the plants. Use the higher rate range and increased water volume for applications occurring after plant damage has taken place or following booting in order to receive better coverage. Once damage occurs or plant growth stage reaches booting, control may be limited to suppression only.

## VEGETABLE CROPS

### Recommended Applications - Tombstone Helios

For all crops, apply specific dosage of Tombstone Helios at early threshold for target pest, as population begins to develop. Degree of control or suppression of additional labeled pests will be determined, in part by the stage of pest development at application and infestation level of those pests.

Application timing should be based on local economic thresholds. Tombstone Helios may be applied before, during, or after planting. Use the higher rates for moderate to heavy insect pressure. Lower rates are generally adequate for low to moderate insect pressure but require careful scouting and may require more frequent application.

Tombstone Helios is an Emulsifiable Concentrate formulation and is active by contact and ingestion. Thorough coverage is necessary for optimum performance.

See application recommendations at the beginning of each section: FIELD CROPS, VEGETABLE CROPS; TREE AND VINE CROPS.

### COLE CROPS

Includes all members of Crop Subgroup 5A such as, but not limited to: Broccoli, Chinese (gai lon) broccoli, Brussels sprouts, Cabbage, Chinese (napa) cabbage, Chinese mustard (gai choy) cabbage, Cauliflower, Cavalo broccoli, Kohlrabi, Mustard greens and Turnip greens.

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms Potato leafhopper Thrips	0.8 - 1.6	0.013 - 0.025
Alfalfa looper Cabbage looper Cabbage webworm Imported cabbageworm Southern cabbageworm	1.6 - 2.4	0.025 - 0.038
Armyworm Beet armyworm (1st and 2nd instar) Cabbage flea beetle Corn earworm Diamondback moth (larvae)* Fall armyworm (1st and 2nd instar) Grasshoppers Japanese beetle (adult) Lygus bug Meadow spittlebug Southern armyworm (1st and 2nd instar) Stink bugs Tarnished plant bug*	2.4 - 3.2	0.038 - 0.050

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**Bean and Pea, Dry cont'd:**

Includes all members of Crop Subgroup 6C such as, but not limited to: **Adzuki bean, Blackeyed pea, Broad bean, Catjang, Chickpea, Cowpea, Crowder pea, Field bean, Field pea, Garbonzo bean, Guar, Kidney bean Lablab bean, Lentil, Lima bean, Lupin (grain, sweet, white and white sweet), Moth bean, Mung bean, Navy bean Pigeon pea, Pinto bean, Rice bean, Tepary bean, Urd bean**

(Southern pea included in separate section.)

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Lygus bug	2.4 - 3.2	0.038 - 0.050
Mexican bean beetle		
Pea leaf weevil		
Pea weevil		
Saltmarsh caterpillar		
Silverspotted skipper		
Soybean looper*		
Threecornered alfalfa hopper		
Tobacco budworm*		
Velvetbean caterpillar		
Webworm		
Woollybear caterpillar		
Yellowstriped armyworm		
<b>Pest Suppressed</b>		
Pea aphid	3.2	0.050

**Notes:** Pre-Harvest Interval (PHI): **7 days** (minimum time between final application and threshing for seed).

Maximum Tombstone Helios allowed per 14-day interval: **3.2 fluid ounces/A (0.050 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **6.4 fluid ounces/A (0.100 lbs AI/Acre).**

Maximum number of applications: **4**

Minimum application volume (water): **10.0 GPA – ground, 5.0 GPA – aerial application.**

See CHEMIGATION statement in *Application Guidelines* section of this label.

Do not feed treated vines or hay to livestock.

\*See INSECT RESISTANCE statement elsewhere on this label.

**PEA, SOUTHERN**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre		
Cutworms	0.8 - 1.6	0.013 - 0.025		
Potato leafhopper				
Beet armyworm (1st and 2nd instar)	1.6 - 2.1	0.025 - 0.033		
Fall armyworm (1st and 2nd instar)				
Corn earworm				
Cowpea curculio				
Grasshoppers				
Lygus bug				
Stink bugs				
Southern armyworm (1st and 2nd instar)				
Tarnished plant bug*				
Thrips				
Yellowstriped armyworm				
<b>Pest Suppressed</b>				

**Notes:** Pre-Harvest Interval (PHI): **3 day.**

Maximum Tombstone Helios allowed per 5-day interval: **2.1 fluid ounces/A (0.033 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **10.5 fluid ounces/A (0.165 lbs AI/Acre).**

Maximum number of applications: **5.**

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application.**

Due to potential injury to bees, do not apply to southern peas grown for seed.

See CHEMIGATION statement in *Application Guidelines* section of this label.

Do not feed treated vines or hay to livestock.

Do not apply to cowpea or southern pea varieties grown for livestock feed.

\*See INSECT RESISTANCE statement elsewhere on this label.

**POTATO, SWEET POTATO and other tuberous and corm vegetables:**

Includes all members of Crop Subgroup 1C such as, but not limited to: **Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Edible canna, Cassava (bitter and sweet), Chayote root, Chufa, Dasheen, Ginger, Leren, Potato, Sweet potato, Tanier, True yam, Turmeric, Yam bean**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre		
Cutworms	1.6 - 2.8	0.025 - 0.044		
Potato leafhopper				
Cabbage looper				
Colorado potato beetle*				
Eggplant flea beetle				
European corn borer				
Potato flea beetle				
Potato psyllid				
Potato tuberworm				
Tarnished plant bug*				
<b>Pest Suppressed</b>				
Aphids			2.8	0.044

**Notes:** Pre-Harvest Interval (PHI): **0 day**

**POTATO, SWEET POTATO and other tuberous and corm vegetables cont'd:**

Includes all members of Crop Subgroup 1C such as, but not limited to: **Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Edible canna, Cassava (bitter and sweet), Chayote root, Chufa, Dasheen, Ginger, Leren, Potato, Sweet potato, Tanier, True yam, Turmeric, Yam bean**

If more than 5.6 fluid ounces/Acre is applied, allow at least 14 days between last application and grazing.

Maximum Tombstone Helios allowed per 5-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **16.8 fluid ounces/A (0.263 lbs AI/Acre).**

Maximum number of applications: **6.**

Minimum application volume (water): **10.0 GPA – ground, 2.0 GPA – aerial application.**

See CHEMIGATION statement in *Application Guidelines* section of this label

\*See INSECT RESISTANCE statement elsewhere on this label.

**ROOT VEGETABLES (except sugarbeet)**

Includes all members of Crop Subgroup 1B such as, but not limited to: **Garden beet, Edible burdock, Carrot, Celeriac, Turnip-rooted chervil, Chicory, Ginseng, Horseradish, Turnip-rooted parsley, Parsnip, Radish, Oriental radish, Rutabaga, Salsify (black, Spanish and oyster plant), Skirret, Turnip**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Aster leafhopper	1.6-2.8	0.025-0.044
Cutworms		
Flea Beetle		
Potato leafhopper		
Carrot weevil		
	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI): **0 day.**

Maximum Tombstone Helios allowed per 7-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**

Maximum Tombstone Helios allowed per crop season: **14.0 fluid ounces/A (0.220 lbs AI/Acre)**

Maximum number of applications: **5**

Minimum application volume (water): **10.0 GPA - ground; 2.0 GPA - aerial application**

Do not harvest radish tops (leaves) for human consumption.

Due to potential injury to bees, do not apply to any of the crops listed in this section grown for seed.

See CHEMIGATION statement in *Application Guidelines* section of this label.

**SWEET CORN**

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Black cutworm	1.6 - 2.8	0.025 - 0.044
Flea beetles		
Granulate cutworm		
Sandhill cutworm		
Armyworm		
Bean leaf beetle		
Cereal leaf beetle		
Chinch bug		
Click beetle (adult)		
Corn earworm		
Corn rootworms (adult)		
Corn silk fly		
European corn borer		
Grape colaspis (adult)		
Japanese beetle (adult)		
Leafhoppers		
Masked chafer (adult)		
Southern armyworm (1st and 2nd instar)		
Southern corn leaf beetle		
Southwestern corn borer		
Stalk borer		
Stink bugs		
Webworm		
Western bean cutworm		
Yellowstriped armyworm (1st and 2nd instar)		
Grasshoppers	2.0 - 2.8	0.031 - 0.044
Fall armyworm (1st and 2nd instar)	2.8	0.044

**Notes:** Pre-Harvest Interval (PHI): **0 day**

Maximum Tombstone Helios allowed per 2-day interval: **2.8 fluid ounces/A (0.044) lbs AI/Acre.**

Maximum Tombstone Helios allowed per crop season: **28.0 fluid ounces/A (0.440 lbs AI/Acre).**

Maximum number of applications: **10.**

Minimum application volume (water): **10.0 GPA – ground; 2.0 – aerial application.**

Minimum ULV application volume (once refined cotton seed/vegetable oil): **1.0 qt/A – aerial application.**

See CHEMIGATION statement in *Application Guidelines* section of this label.

**TREE and VINE CROPS**

**Recommended Applications – Tombstone Helios**

For tree and vine crops, application rates should be based on the Tree or Vine, Row-Volume/Density concept for either dilute or concentrate applications. For determining product required in concentrate applications, first determine amount of spray volume per acre necessary to spray-to-drip in a dilute application in a grove, yard, vineyard, or orchard. Based on this volume, calculate required formulation quantities per acre. Apply equivalent amount per acre for concentrated sprays. For orchard/vineyard airblast applications, do not spray above trees/vines and turn off outward pointing nozzles at row ends and outer rows.

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### Cole Crops cont'd.

Includes all members of Crop Subgroup 5A such as, but not limited to: Broccoli, Chinese (gai lan) broccoli, Brussels sprouts, Cabbage, Chinese (napa) cabbage, Chinese mustard (gai choy) cabbage, Cauliflower, Cavalo broccoli, Kohlrabi, Mustard greens and Turnip Greens.

Pests Suppressed	Rate fluid ounces/Acre	Rate lbs AI/Acre
Vegetable weevil (adult)	2.4 - 3.2	0.038 - 0.050
Yellowstriped armyworm		
Whitefly (adult)	3.2	0.050

Notes: Pre-Harvest Interval (PHI): 0 day.

Maximum Tombstone Helios allowed per 7-day interval: 3.2 fluid ounces/A (0.050 lbs AI/Acre).

Maximum Tombstone Helios allowed per crop season: 12.8 fluid ounces/A (0.200 lbs AI/Acre).

Maximum number of applications: 4.

Minimum application volume (water): 10 GPA - ground, 5 GPA - aerial application.

Due to potential injury to bees, do not apply to cole crops grown for seed.

See CHEMIGATION statement in Application Guidelines section of this label.

\*See INSECT RESISTANCE statement elsewhere on this label.

### CUCURBITS (except crops grown for seed)

Includes all members of Crop Group 9 such as, but not limited to: Balsam apple, Balsam pear, Bitter melon, Chayote, Chinese cucumber, Chinese waxgourd (Chinese preserving melon), Citron melon, Cucumber, Gherkin, Edible gourd (includes: hyotan, cucuzza, henchmia and Chinese okra), Muskmelon (includes: cantaloupe, true cantaloupe, casaba, Crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, and snake melon), Pumpkin, Summer squash (includes: crookneck squash, scallop squash, straightneck squash, vegetable marrow, and zucchini) Watermelon, Winter squash (includes: butternut squash, calabaza, Hubbard squash, acorn squash and spaghetti squash)

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms	0.8-1.6	0.013-0.025
Potato leafhopper		
Armyworm	1.6-2.4	0.025-0.038
Cabbage looper		
Corn earworm		
Grasshoppers		
Melonworm		
Pickleworm		
Flindworm		
Stink bugs		
Cucumber beetle	2.4-2.8	0.038-0.044
Lygus bug		
Stripped cucumber beetle		
Tarnished plant bug*		
Tobacco budworm		
<b>Pest Suppressed</b>		
Whitefly (adult)	2.8	0.044

Notes: Pre-Harvest Interval (PHI): 0 day.

Maximum Tombstone Helios allowed per 7-day interval: 2.8 fluid ounces/A (0.044 lbs. AI/Acre)

Maximum Tombstone Helios allowed per crop season: 11.2 fluid ounces/A (0.175 lbs. AI/Acre)

Maximum number of applications: 4

Minimum application volume (water): 10.0 GPA - ground; 2.0 GPA - aerial application.

See CHEMIGATION statement in Application Guidelines section of this label.

\*See INSECT RESISTANCE statement elsewhere in this label.

### FRUITING VEGETABLES

Includes all members of Crop Group 8 such as, but not limited to: Eggplant, Groundcherry, Pepino, Pepper (includes: bell pepper, chili pepper, cooking pepper, pimento, sweet pepper), Tomatillo, and Tomato

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Calery leaflier	1.6 - 2.8	0.025 - 0.044
Colorado potato beetle*		
European corn borer		
Garden webworm		
Potato aphid		
Potato leafhopper		
Stink bugs		
Tomato fruitworm (corn earworm)		
Tomato hornworm		
Beet armyworm (1st and 2nd instar)	2.1-2.8	0.033-0.044
Cabbage looper		
Southern armyworm (1st and 2nd instar)		
Tarnished plant bug*		
Thrips (except <i>Thrips palmi</i> )		
Tomato pinworm		
Variegated cutworm		
Western yellowstriped armyworm (1st and 2nd instar)		
Flea beetles	2.8	0.044
<b>Pests Suppressed</b>		
Leafminers	2.8	0.044
Pepper weevil		
Whitefly (adult)		

### Fruiting Vegetables cont'd.

Includes all members of Crop Group 8 such as, but not limited to: Eggplant, Groundcherry\*, Pepino\*, Pepper (includes: bell pepper, chili pepper, cooking pepper, pimento, sweet pepper), Tomatillo\*, and Tomato

Notes: Pre-Harvest Interval (PHI) for tomato: 0 days. PHI for all other fruiting vegetables included in this section: 7 days.

Maximum Tombstone Helios allowed per 7-day interval: 2.8 fluid ounces/A (0.044 lbs. AI/Acre)

Maximum Tombstone Helios allowed per crop season: 16.8 fluid ounces/A (0.263 lbs AI/Acre)

Maximum number of applications: 6.

Minimum application volume (water): 10.0 GPA - ground; 2.0 GPA - aerial application.

See CHEMIGATION statement in Application Guidelines section of this label.

\*See INSECT RESISTANCE statement elsewhere on this label.

### LEAFY VEGETABLES

Includes all members of Crop Group 4 such as, but not limited to: Amaranth (Chinese spinach), Arugula (rocket), Cardoon, Celery, Chinese celery, Celtuce, Chervil, Chrysanthemum (edible-leaved and garland), Corn salad, Cress (garden and upland), Dandelion, Dock (sorrel), Endive (escarole), Florence fennel, Lettuce (head and leaf), New Zealand spinach, Orach, Parsley, Purslane (garden and winter), Radicchio (red chicory), Rhubarb, Spinach, Swiss chard, Vine spinach

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms	0.8 - 1.6	0.013 - 0.025
Potato leafhopper		
Thrips		
Alfalfa looper	1.6 - 2.4	0.025 - 0.038
Cabbage looper		
Green cloverworm		
Imported cabbageworm		
Saltmarsh caterpillar		
Beet armyworm (1st and 2nd instar)	2.4 - 3.2	0.038 - 0.050
Corn earworm		
Diamondback moth (larvae)*		
European corn borer		
Fall armyworm (1st and 2nd instar)		
Flea beetles		
Grasshoppers		
Japanese beetle (adult)		
Lygus bug		
Meadow spittlebug		
Southern armyworm (1st and 2nd instar)		
Stink bugs		
Tarnished plant bug*		
Vegetable weevil (adult)		
Yellowstriped armyworm		
<b>Pest Suppressed</b>		
Whitefly (adult)	3.2	0.050

Notes: Pre-Harvest Interval (PHI): 0 day.

Maximum Tombstone Helios allowed per 7-day interval: 3.2 fluid ounces/A (0.050 lbs AI/Acre).

Maximum Tombstone Helios allowed per crop season: 12.8 fluid ounces/A (0.200 lbs AI/Acre).

Maximum number of applications: 4

Minimum application volume (water): 10 GPA - ground, 5 GPA - aerial application.

Due to potential injury to bees, do not apply to lettuce grown for seed.

See CHEMIGATION statement in Application Guidelines section of this label.

\*See INSECT RESISTANCE statement elsewhere on this label.

### BEAN AND PEA, DRY

Includes all members of Crop Subgroup 6C such as, but not limited to: Adzuki bean, Blackeyed pea, Broad bean, Catjang, Chickpea, Cowpea, Crowder pea, Field bean, Field pea, Garbonzo bean, Guar, Kidney bean, Lablab bean, Lentil, Lima bean, Lupin (grain, sweet, white and white sweet), Moth bean, Mung bean, Navy bean, Pigeon pea, Pinto bean, Rice bean, Tepary bean, Urd bean

(Southern pea included in separate section.)

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Cutworms	0.8 - 1.6	0.013 - 0.025
Potato leafhopper		
Cowpea curculio*	1.6 - 2.4	0.025 - 0.038
Stink bugs		
Tarnished plant bug*		
Bean leaf beetle	2.4 - 3.2	0.038 - 0.050
Bean leaf webber		
Beet armyworm (1st and 2nd instar)		
Blister Beetle		
Cabbage looper		
Corn earworm		
Cucumber beetle		
European corn borer		
Fall armyworm (1st and 2nd instar)		
Grasshoppers		
Green cloverworm		
Japanese beetle (adult)		

## TOMBSTONE HELIOS

EPA REG. NO. 34704-978

Tombstone Helios is an Emulsifiable Concentrate (EC) formulation and is active by contact and ingestion. Thorough coverage of foliage and fruit is necessary for optimum performance.

For all crops, apply specific dosage of Tombstone Helios at early threshold for target pests, as population begins to develop. Degree of control or suppression of additional labeled pests will be determined, in part by the stage of pest development at application and infestation level of those pests.

Application timing should be based on local economic thresholds. Use the higher rates for moderate to heavy insect pressure. Lower rates are generally adequate for low to moderate insect pressure but require careful scouting and may require more frequent application.

See application recommendations at the beginning of each section: **FIELD CROPS; VEGETABLE CROPS; TREE and VINE CROPS.**

### CITRUS (California and Arizona, Only)

Includes all members of Crop Group 10 such as, but not limited to: Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Orange (sweet and sour), Pummelo, Satsuma mandarin, Tangelo, White sapote, and other cultivars and/or hybrids of these.

Pests Controlled	Rate fluid ounces/Acre	Rate lbs. AI/Acre
Glasswinged sharpshooter	1.6 - 3.2	0.025-0.050
Foliar feeding cutworms	2.4 - 3.2	0.038-0.050
Fuller rose beetle (larvae and adults on foliage)		
Grasshoppers		
Root-weevil complex (larvae and adults on foliage)		
Citrus thrips	6.4	0.10
Katydid		

**Notes:** Pre-Harvest Interval (PHI): 0 day.  
Maximum Tombstone Helios allowed per 7-day interval: **6.4 fluid ounces/A (0.10 lbs AI/Acre).**

Maximum Tombstone Helios allowed per crop season: **6.4 fluid ounces/A (0.10 lbs AI/Acre).**

Maximum number of applications: **4 (at low rate)**  
Minimum application volume (water): **25 GPA - ground, 25 GPA - aerial application.**  
Maximum use rate is based on canopy size requiring 250 gallons per acre, if sprayed to drip.

### GRAPE

Includes: Table grape, Raisin, Wine and Muscadine grape

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Glasswinged sharpshooter	1.6 - 3.2	0.025-0.050
Grape leaf skeletonizer		
Western grape skeletonizer		
Climbing cutworm	2.4-3.2	0.038-0.050
Grape berry moth		
Grape bud beetle		
Grape cane gallmaker (adult)		
Grape flea beetle		
Grape leaf folder		
Grape leafhopper		
Grape leafroller		
Grape mealybug (crawlers)		
Omnivorous leafroller		
Orange tortrix		
Thrips		
Variegated leafhopper		

**Notes:** Pre-Harvest Interval (PHI): 3 days.  
Maximum Tombstone Helios allowed per 14-day interval: **3.2 fluid ounces/A (0.050 lbs. AI/Acre)**

Maximum Tombstone Helios allowed per crop season: **12.8 fluid ounces/A (0.200 lbs. AI/Acre)**

Maximum number of applications: **4**  
Minimum application volume (water): **50 GPA - ground; 25 GPA - aerial application.**  
Maximum use rate is based on canopy size requiring 250 gallons per acre, if sprayed to drip.

### HOP

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Hop aphid	3.2	0.050
Hop flea beetle		
Hop looper		
Hop plant bug		

**Notes:** Pre-Harvest Interval (PHI): 7 days  
Maximum Tombstone Helios allowed per 14-day interval: **3.2 fluid ounces/A (0.050 lbs AI/Acre)**

Maximum Tombstone Helios allowed per crop season: **16.0 fluid ounces/A (0.250 lbs AI/Acre)**

Maximum number of applications: **5**  
Minimum application volume (water): **25 GPA - ground; 25 GPA - aerial application.**

### POME FRUIT

Includes all members of Crop Group 11 such as, but not limited to: Apple, Crabapple, Loquat, Mayhaw, Pear, Oriental pear, Quince

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Green fruitworm	1.4-2.0	0.022-0.031
Potato leafhopper		
White apple leafhopper		
Codling moth	2.0-2.4	0.031-0.038
Oriental fruit moth		
Spotted tentiform leafminer		
Stink bugs		
Tarnished plant bug		
Western tentiform leafminer		
Apple leafroller	2.4-2.8	0.038-0.044
Apple maggot		
Ermine moth		
European apple sawfly		
Lesser appleworm		
Obliquebanded leafroller		
Pandemis leafroller		
Pear sawfly (larvae = pear slug)		
Periodical cicada		
Plum curculio		
Redbanded leafroller		
San Jose scale (crawlers)		
Tufted apple bud moth		
Variegated leafroller		

**Notes:** Pre-Harvest Interval (PHI): 7 days  
Maximum Tombstone Helios allowed per 14-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**  
Maximum Tombstone Helios allowed per crop season: **2.8 fluid ounces/A (0.044 lbs. AI/Acre)**  
Maximum number of applications: **2 (at low rate)**  
Minimum application volume (water): **100 GPA - ground application; 25 GPA - aerial application.**  
Maximum use rate is based on canopy size requiring 400 gallons per acre, if sprayed to drip.

### STONE FRUIT

Includes all members of Crop Group 12 such as, but not limited to: Apricot, Cherry (sweet and tart), Nectarine, Peach, Plum (includes Chickasaw plum, Damson plum, and Japanese plum), Plumcot, Prune

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Green fruitworm	1.4-2.0	0.022-0.031
Lesser peach tree borer		
White apple leafhopper		
Codling moth	2.0-2.4	0.031-0.038
Lygus bug		
Oriental fruit moth		
Stink bugs		
Tarnished plant bug		
American plum borer	2.4-2.8	0.038-0.044
Black cherry aphid		
Cherry fruit fly		
Obliquebanded leafroller		
Omnivorous leafroller		
Peach twig borer		
Periodical cicada		
Plum curculio		
Redbanded leafroller		
Western cherry fruit fly		

**Notes:** Pre-Harvest Interval (PHI): 7 days.  
Maximum Tombstone Helios allowed per 14-day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**  
Maximum Tombstone Helios allowed per crop season: **5.6 fluid ounces/A (0.088 lbs AI/Acre)**

Maximum number of applications: **4 (at low rate)**  
Minimum application volume (water): **50 GPA - ground application; 25 GPA - aerial application.**  
Maximum use rate is based on canopy size requiring 250 gallons per acre, if sprayed to drip.

### TREE NUT CROPS

Includes all members of Crop Group 14 such as, but not limited to: Almond, Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut (black and English)

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Potato leafhopper	1.4-2.0	0.022-0.031
White apple leafhopper		
Ants (on foliage)	2.0-2.4	0.031-0.038
Codling moth		
Common earwig		
Filbertworm		
Leaf-footed bug		
Navel orangeworm		
Pecan nut casebearer		
Pecan weevil		
Stink bugs		
Tarnished plant bug		
Twolined spittlebug		

# TOMBSTONE HELIOS

## EPA REG. NO. 34704-978

**TREE NUT CROPS cont'd.:**

*Includes all members of Crop Group 14 such as, but not limited to: Almond, Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut (black and English)*

Pests Controlled	Rate fluid ounces/Acre	Rate lbs AI/Acre
Hickory shuckworm	2.4-2.8	0.038-0.044
Obliquebanded leafroller		
Peach twig borer		
Walnut husk fly		

**Notes:** Pre-Harvest Interval (PHI): 14 days

Maximum Tombstone Helios allowed per 14 day interval: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**

Maximum Tombstone Helios allowed per crop season: **2.8 fluid ounces/A (0.044 lbs AI/Acre)**

Maximum number of applications: **2 (at low rate)**

Minimum application volume (water): 100 GPA - ground application; 25 GPA - aerial application.

Maximum use rate is based on canopy size requiring 500 gallons per acre, if sprayed to drip.

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/14

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**RATE CONVERSION CHART**

FLUID OUNCES PER ACRE	LBS AI PER ACRE	ACRE PER GALLON
0.8	0.013	160
1.0	0.016	128
1.2	0.019	107
1.4	0.022	91
1.6	0.025	80
1.8	0.028	71
2.0	0.031	64
2.2	0.034	58
2.4	0.038	53
2.6	0.041	49
2.8	0.044	46
3.0	0.047	43
3.2	0.050	40
6.4	0.100	20

**RATE CONVERSION CHART FOR TREE AND VINE APPLICATIONS**

FLUID OUNCES PER ACRE	FLUID OUNCES PER 100 GAL OF WATER WHEN USING SPRAY VOLUME OF:						
	25 GPA	50 GPA	100 GPA	150 GPA	200 GPA	250 GPA	500 GPA
1.4	5.6	2.8	1.4	0.9	0.7	0.56	0.28
1.6	6.4	3.2	1.6	1.1	0.8	0.64	0.32
2.0	8.0	4.0	2.0	1.3	1.0	0.8	0.4
2.4	9.6	4.8	2.4	1.6	1.2	1.0	0.5
2.8	11.2	5.6	2.8	1.9	1.4	1.1	0.6
3.2	12.8	6.4	3.2	2.1	1.6	1.3	0.65
6.4	25.6	12.8	6.4	4.3	3.2	2.6	1.3

**CROP ROTATION STATEMENT**

Treated areas may be replanted with any crop as soon as practical after last application.

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