

1381-210

09/23/2008

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

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

SEP 23 2008

Subject: Updated Spray Drift Language for Pyrethroid
Agricultural Use Product as per EPA letter dated February 21, 2008

Dear Glenda Haage:

The Agency is in receipt of your Applications for Pesticide Notification dated July 22, 2008 for the following products:

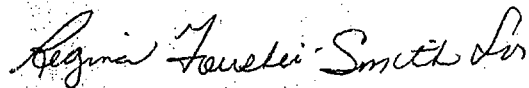
Tundra EC EPA Reg. No. (1381-196)
Grizzly Z Insecticide EPA Reg. No. (1381-211)
Mystic Z Insecticide EPA Reg. No. (1381-210)
Tundra CA EPA Reg. No. (1381-214)

Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action(s) requested fall within the scope of PRN 98-10. The labels submitted with the applications have been stamped "Notification" and will be placed in our records.

Note under Buffer Zones the correct webmail address is:
www.in.nrcs.usda.gov/technical/agronomy/newconbuf.pdf. Also reinstate the buffer strip paragraph for the State of New York and note "streams" should read "permanent streams" and "ponds" should read "natural ponds".

If you have any questions, please call me at (703) 305-6100.

Sincerely,



George T. LaRocca
Product Manager 13
Insecticide Branch
Registration Division (7505P)

Enclosure

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<h1 style="margin:0;">EPA</h1> <p style="margin:0;">United States Environmental Protection Agency Washington, DC 20460</p>	<input type="checkbox"/> Registration <input checked="" type="checkbox"/> Amendment <input type="checkbox"/> Other	OPP Identifier Number
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Application for Pesticide -Section I

1. Company/Product Number 1381-210	2. EPA Product Manager La Rocca	3. Proposed Classification <input type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Mystic Z Insecticide	PM#	
5. Name and Address of Applicant (Include ZIP Code) Winfield Solutions LLC P.O. Box 64589 St. Paul, MN 55164-0589 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: <div style="text-align: center;"> NOTIFICATION SEP 23 2008 </div> EPA Reg. No.: Product Name:	

Section II

<input checked="" type="checkbox"/> Amendment - Explain Below <input type="checkbox"/> Resubmission in response to Agency letter dated _____ <input type="checkbox"/> Notification - Explain below	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____ <input type="checkbox"/> "Me Too" Application <input type="checkbox"/> Other - explain below
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Explanation: Use additional page(s) if necessary. (For Section I and Section II).

Amendment in response to Agency letter dated February 21, 2008. I certify that the only changes made on the label are those necessary to comply with the EPA's letter of February 21, 2008.

Section III

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

Section IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)

Name Glenda Haage	Title Registration Manager	Telephone No. (Include Area Code) 712-548-5213
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Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.			6. Date Application Received (Stamped)
2. Signature 	3. Title Registration Manager		
4. Typed Name Glenda Haage	5. Date August 22, 2008		

August 22, 2008

Document Processing Desk (AMEND)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202-4501
Attn: George LaRocca

Subject: Mystic Z Insecticide (1381-210)
Response to Agency letter dated February 21, 2008

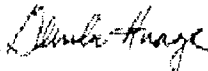
Dear Mr. LaRocca:

Winfield Solutions is responding to the subject letter by adding the spray drift language to the subject label.

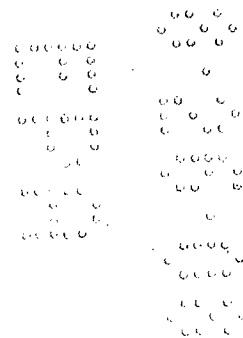
Enclosed please find five (5) copies of revised labeling with the changes highlighted. Also, per your email, I have struck through any old spray drift language.

Should you have any questions during your review, please contact me at gfbconsulting@frontiernet.net or 712-548-5213.

Sincerely,



Glenda Haage
Registration Manager



FIRST AID	
If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Do not give any liquid to the person. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
NOTE TO PHYSICIAN	
<p>Contains petroleum distillate – vomiting may cause aspiration pneumonia Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For 24-Hour Medical Emergency Assistance (Human or Animal) Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident) Call 1-877-424-7452</p>	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING/AVISO

May be fatal if swallowed. Causes moderate eye irritation. Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove and wash contaminated clothing before reuse.

Skin exposure may also result in a sensation described as a tingling, itching, burning, or prickly feeling. Onset may occur immediately to 4 hrs. after exposure and may last 2 – 30 hrs., without damage. Wash exposed areas once with soap and water. Relief from the skin sensation may be obtained by applying an oil-based cream.

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 G on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

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

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

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

Users should:

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

Environmental Hazards

This pesticide is extremely toxic to fish and aquatic organisms and toxic to wildlife.

For terrestrial uses: do not apply directly to water or 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 wash water.

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 if bees are visiting the treatment area.

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 your State or Tribe, consult the agency responsible for pesticide regulation.

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

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 24 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, Category G, such as barrier laminate or viton ≥ 14 mils
- Shoes plus socks

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STORAGE AND DISPOSAL

Prohibitions

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

Storage

Store in original containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with sand, earth, or synthetic absorbent. Remove to chemical waste area. DO NOT ALLOW PRODUCT TO FREEZE.

Pesticide Disposal

Pesticide wastes are acutely hazardous. 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

Triple rinse (or equivalent); then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by State and local authorities.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR INSECT CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

GENERAL DIRECTIONS FOR USE

SHAKE WELL BEFORE USING.

Initial and residual control are contingent upon thorough crop coverage. Apply with ground or aerial equipment using sufficient water to obtain full coverage of foliage. Apply in a minimum of 2 gals./A by air or 10 gals./A by ground unless otherwise specified in this label. When foliage is dense or pest pressure is high (heavier insect or egg pressure, larger larval stages), use of higher application volumes and/or higher use rates may improve initial and residual control.

For cutworm control, Mystic® Z Insecticide may be applied before, during, or after planting. For soil-incorporated applications, use higher rates for improved control.

RESISTANCE MANAGEMENT

Mystic® Z Insecticide is a Group 3 Insecticide (contains the active ingredient lambda-cyhalothrin). 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, 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.

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 Lambda-cyhalothrin 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.csusda/v/technical/agronom/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, 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, 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, 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 the wind velocity exceeds 15 mph.

Temperature Inversion

Do not make aerial or ground applications into temperature inversions.

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

Additional Requirements for Ground Applications

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

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

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

Additional Requirements for Aerial Applications

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

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

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

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

SPRAY DRIFT PRECAUTIONS

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.

- Do not apply by ground within 25 ft., or by air within 150 ft. of lakes; reservoirs; rivers; permanent streams, marshes, pot holes, or natural ponds; estuaries and commercial fish farm ponds. Increase the buffer zone to 450 ft. when ultra-low volume (ULV) application is made.
- All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.

- ~~For aerial applications, 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 wing span or rotor diameter.~~
- ~~Use the largest droplet size consistent with good pest control. 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 height consistent with pest control and flight safety. Applications more than 10 ft. above the crop canopy should be avoided.~~
- ~~Make aerial or ground applications when the wind velocity favors on-target product deposition (approximately 3–10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph.~~
- ~~Risk of exposure to aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.~~
- ~~Do not cultivate within 10 ft. of the aquatic area so as to allow growth of a vegetative filter strip.~~
- ~~Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.~~
- ~~Do not make aerial or ground applications during 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.~~

In the State of New York, a 25 ft. vegetated, non-cropped buffer strip untraversed by drainage tiles must be maintained between a treated field and a coastal salt marsh or stream that drains into a coastal salt marsh, for both aerial or ground application. For aerial applications, the 25 ft. vegetated non-cropped buffer strip for runoff protection would be part of the larger 150 ft. buffer strip (or 450 ft. buffer strip for ULV application) required for spray drift.

Tank Mix Application

When tank mixing with any other agricultural products, **always add Mystic[®] Insecticide last.** Fill the tank with $\frac{1}{2}$ - $\frac{2}{3}$ volume of the mixing diluent. Make sure all other products are fully dispersed in the mixing diluent before adding the recommended rate of Mystic[®] Z Insecticide to the tank. Add the remainder of the mixing diluent volume. It is recommended that mixing and spray equipment have continuous agitation for best results. Follow the precautions and limitations of the most restricted product in the tank mixture.

While Mystic[®] Z Insecticide has good flexibility for tank mixing with other agricultural products, a jar test for physical compatibility is recommended for untried mixtures, using proper ratios and mixing sequences of all ingredients to be included in the mixture.

Mystic[®] Z Insecticide is an aqueous based formulation. It is recommended that no type of non-emulsifiable oils be used in combination with Mystic[®] Z Insecticide. If adjuvants are used, use only:

- Nonionic Surfactant (NIS) containing at least 75% surface agent, or
- Nonphytotoxic Crop Oil Concentrate (COC), including once-refined Vegetable Oil Concentrate (VOC), or,
- Methylated Sunflower Oils (MSO) containing a minimum of 17% emulsifier.

Adjuvants other than NIS or COC may be used providing the product meets the following criteria:

1. Contains only EPA exempt ingredients.
2. Is nonphytotoxic to the target crop.

- 3. Is compatible in mixture. (May be established through a jar test.)
- 4. Is supported locally for use with Mystic[®] Z Insecticide on the target crop through proven field trials and through university and extension recommendations.

In addition, the following may be used as diluents:

- Crop Oil Concentrate
- Methylated Sunflower Oils
- Urea-Ammonium Nitrate

It is recommended that the following not be used in combination with Mystic[®] Z Insecticide as diluents or adjuvants:

- Nonemulsifiable oils,
- Diesel Fuel
- Straight Mineral Oil

CHEMIGATION

Sprinkler Irrigation Application

Apply Mystic[®] Z Insecticide at rates and timing described elsewhere in this label. As local recommendations differ, consult your local State Extension Service or other local experts for recommendations on adjuvant or diluent types, (see **Tank Mix Application**) rates and mixing instructions. These recommendations should be proven, through university and extension field trials, to be effective with Mystic[®] Z Insecticide applied by chemigation.

Check the irrigation system to insure uniform application of water to all areas. Thorough coverage of foliage is required for good control. Good agitation in the pesticide supply tank should be maintained prior to and during the entire application period.

Apply by injecting the recommended rate of Mystic[®] Z Insecticide into the irrigation system using a metering device that will introduce a constant flow and by distributing the product to the target area in 0.1-0.2 acre-inch of water. In general, use the least amount of water required for proper distribution and coverage. It is recommended that the product be injected into the main irrigation line ahead of a right angle turn in the line to insure adequate dispersion or mixing in the irrigation water. Once the application is completed, flush the entire irrigation and injection system with clean water before stopping the system.

In addition to the above recommendations, if application is being made during a normal irrigation set of a stationary sprinkler, the recommended rate of Mystic[®] Z Insecticide for the area covered should be injected into the system only during the end of the irrigation set for sufficient time to provide adequate coverage and product distribution.

It is not recommended that Mystic[®] Z Insecticide be applied through an irrigation system 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.

Use Precautions - Sprinkler Irrigation Applications

- 1. 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. Do not apply this product through any other type of irrigation system.
- 2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
- 3. If you have any questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers, or other experts.
- 4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label prescribed safety devices for public water systems are in place.

5. 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.
6. 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.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check-valve to prevent the flow of fluid back toward the injection pump.
8. 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.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. 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.
11. 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 are capable of being fitted with a system interlock.
12. Any alternatives to the above required safety devices must conform to the list of EPA-approved alternative devices.
13. **Do not** apply when wind speed favors drift beyond the area intended for treatment or non-uniform distribution of treated water.
14. **Do not** apply through chemigation systems connected to public water systems.

SPECIFIC USE DIRECTIONS

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
CEREAL GRAINS			
Rice	Bird Cherry-Oat Aphid Chinch Bug Fall Armyworm Grasshopper species	0.025-0.04	1.6-2.56
	Greenbug Leafhopper species Rice Stink Bug Rice Water Weevil (adult) Sharpshooter species True Armyworm Yellow Sugarcane Aphid Yellowstriped Armyworm		
	European Corn Borer ¹ Mexican Rice Borer ¹ Rice Seed Midge ¹ Rice Stalk Borer ¹ Sugarcane Borer ¹	0.03-0.04	1.92-2.56

Remarks:

- Apply as required by scouting. Timing and frequency of application should be based upon insect populations reaching locally determined economic thresholds. Determine the need for repeat applications, usually at intervals of 5 - 7 days, by scouting.
- Mystic[®] Z Insecticide can be safely used when propanil products are being used for weed control.
- Apply by air or by ground equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gals. of water (or total carrier volume) /A, but ensure sufficient volume is used to provide adequate coverage. In addition, adding an emulsified crop oil (e.g., 1 pt. /A) when lower aerial application volumes are used is recommended to help improve coverage, reduce evaporation and improve efficacy.

- For control of rice water weevil in dry-seeded rice, make a foliar application as indicated by scouting for the presence of adults and/or feeding scars, usually within a time-frame of 0-5 days after permanent flood establishment. **Do not** exceed 10 days from starting permanent flood until insecticide application unless scouting indicates weevils have not been previously present. Adults may also be treated at later stages of rice development to reduce overwintering populations.
- For control of rice water weevil in water-seeded rice, make the first foliar application after pinpoint flood as indicated by scouting for the presence of adults and/or feeding scars, usually when rice has emerged 0.5 inch above the waterline. Under conditions of prolonged migration into the field, start field scouting for rice water weevil adults and/or feeding scars 3-5 days after the initial treatment and, if needed, apply a second application within 7-10 days of the first application. Adults may also be treated at later stages of rice development to reduce overwintering populations.
- California: In addition to above directions for control of rice water weevil in water seeded rice, Mystic[®] Z Insecticide may be applied at the 1-3 leaf growth stage, with the majority at the 2 leaf growth stage. Adults are vulnerable on levees and in the water. Larvae are vulnerable while feeding on the leaf prior to entering the soil. Monitor for adults, based upon field history and density of population. Monitor field edges and levee areas for adults. Treat in the following manner: a) spray the inside perimeter of the field, or b) spray the entire field.
- Greenbug is known to have many biotypes. Mystic[®] Z Insecticide may only provide suppression. If satisfactory control is not achieved with the first application of Mystic[®] Z Insecticide, a resistant biotype may be present. Use alternate chemistry for control.
- For control of stem borers, scout fields, when rice growth is near panicle differentiation, for early symptoms of damaging populations exhibited as discoloration (orange-tan) around the junction of the leaf sheath and leaf blade which is caused by feeding of young larvae within the sheath. Applications must be made before larvae bore into rice stems. Make the first application at panicle differentiation to 2 inch panicle for partial control. Make the second application at boot to heading for maximum control. All rice varieties are susceptible to stem borer damage, but Cocodrie and Priscilla are particularly susceptible.
- **Do not** release flood water within 7 days of an application.
- **Do not** apply more than 0.12 lb. a.i. (0.48 pt.) /A per season.
- **Do not** apply more than 0.04 lb. a.i. (0.16 pt.)/A within 21 to 27 days of harvest.
- **Do not** apply within 21 days of harvest.
- **Do not** use treated rice fields for the aquaculture of edible fish and crustacea.
- **Do not** apply as an ultra-low volume (ULV) spray.

¹For control before the larvae bores into the plant stalk.

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
CEREAL GRAINS			
Sorghum (Grain)	Cutworm species Sorghum Midge	0.015–0.020	0.96–1.28
	Armyworm	0.02–0.03	1.28–1.92
	Beet Armyworm ³		
	Corn Earworm		
	European Corn Borer ²		
	Fall Armyworm ¹		
	Flea Beetle species		
	Grasshopper species		
	Lesser Cornstalk Borer ²		
	Southwestern Corn Borer ²		
	Stink Bug species		
	Webworm species		
	Yellowstriped Armyworm ¹		
	Chinch Bug	0.03	1.92
	Mexican Rice Borer ²		
	Rice Stalk Borer ²		
	Sugarcane Borer ²		

Remarks:

- Apply as required by scouting, usually at intervals of 5 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.

- Apply with ground or aerial equipment using sufficient water and application methods to obtain full coverage of target location. When applying by air, apply in a minimum of 2 gals. of water /A.
- For sorghum midge control, begin applications when 25% of the sorghum heads have emerged and are in tip bloom. Repeat applications at 5-day intervals if needed.
- For chinch bug control, begin applications when bugs migrate from small grains or grass weeds to small sorghum. Direct spray to the base of sorghum plants. Repeat applications at 3 - 5-day intervals if needed. Mystic® Z Insecticide may only suppress heavy infestations and/or subsequent migrations.
- **Do not** apply more than 0.08 lb. a.i. (0.32 pt.) /A per season.
- **Do not** apply more than 0.06 lb. a.i. (0.24 pt.) /A per season after crop emergence.
- **Do not** apply more than 0.02 lb. a.i. (0.08 pt.) /A per season once crop is in soft-dough stage.
- **Do not** apply within 30 days of harvest.

¹Use higher rates for large larvae.

²For control before the larva bores into the plant stalk.

³See **Resistance** statement under **General Directions for Use**.

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
CEREAL GRAINS			
Triticale Wheat Wheat Hay	Army Cutworm Cutworm species	0.015–0.025	0.96–1.60
	Armyworm Bird Cherry-Oat Aphid ¹ Cereal Leaf Beetle English Grain Aphid ¹ Fall Armyworm Flea Beetle species Grasshopper species Hessian Fly ⁴ Orange Blossom Wheat Midge Russian Wheat Aphid ¹ Stink Bug species Yellowstriped Armyworm	0.02–0.03	1.28–1.92
	Grass Sawfly	0.025–0.03	1.60–1.92
	Chinch Bug Corn Leaf Aphid ² Greenbug ^{1,3} Mite species ²	0.03	1.92

Remarks

- Apply as required by scouting, usually at intervals of 5 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
- Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gals. of water/A.
- For chinch bug control, repeat applications at 3-5-day intervals if needed. Mystic® Z Insecticide may only suppress heavy infestations and/or migrations.
- Greenbug is known to have many biotypes. Mystic® Z Insecticide may provide suppression only. In this situation, a second application using an alternative chemistry may be needed.
- **Do not** apply within 30 days of harvest.
- **Do not** allow livestock to graze in treated areas or harvest treated wheat forage as feed for meat or dairy animals within 7 days after treatment. **Do not** feed treated straw to meat or dairy animals within 30 days after the last treatment.
- **Do not** apply more than 0.06 lb. a.i. (0.24 pts.)/A per season.

¹Best control is obtained before insects begin to roll leaves. Once wheat has started to boot, Mystic® Z Insecticide

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may provide suppression only. Higher rates and increased coverage will be necessary.

²Suppression only.

³See resistance statement under **General Directions for Use**.

⁴Make applications when adults emerge.

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
Cotton	Cutworm species Soybean Thrips Tobacco Thrips	0.015-0.02	0.96-1.28
	Cabbage Looper Cotton Fleahopper Cotton Leafperforator Cotton Leafworm Lygus Bug species ³ Pink Bollworm Saltmarsh Caterpillar	0.02-0.03	1.28-1.92
	Bandedwing Whitefly ^{2,3} Beet Armyworm ^{1,3} Boll Weevil Brown Stink Bug Cotton Aphid ^{2,3} Cotton Bollworm European Corn Borer Fall Armyworm Green Stink Bug Southern Green Stink Bug Sweet Potato Whitefly ^{2,3} Tobacco Budworm ³ Twospotted Spider Mite ²	0.025-0.04	1.60-2.56

Remarks:

- Apply as required by scouting, usually at intervals of 5 - 7 days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
- Apply with ground or aerial equipment using sufficient water to obtain full coverage of foliage.
- Applications may also be made with equipment adapted and calibrated for ULV sprays. Mystic[®] Z Insecticide may be mixed with once-refined vegetable oil and applied in a minimum of at least 1 qt. of finished spray /A.
- Under light bollworm/budworm infestation levels, 0.02 lb. a.i./A may be applied in conjunction with intense field monitoring.
- For boll weevil control, spray on a 3-5 day schedule.
- When applied according to label directions for control of cotton bollworm and tobacco budworm, Mystic[®] Z Insecticide also provides ovicidal control of unhatched *Heliothine* species eggs.
- **Do not** apply within 21 days of harvest.
- **Do not** graze livestock in treated areas.
- **Do not** apply more than 0.2 lb. a.i. (0.8 pt.) /A per season.
- **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. Synthetic pyrethroid products include Ammo[®] insecticide, Asana[®] XL insecticide, Baythroid[®] emulsifiable pyrethroid insecticide, Capture[®] insecticide/miticide, Danitol[®] 2.4 EC Spray insecticide/miticide, Decis[®] Insecticide, Fury[™] insecticide, Mystic[®] Z Insecticide, Karate[®] Insecticide, Karate[®] Insecticide with Zeon[™] Technology, Mustang[®] insecticide, Scout X-TRA[™] insecticide, Warrior[®] Insecticide with Zeon[™] Technology and Warrior[®] Insecticide.

¹For control of the first and second instar only.

²Suppression only.

³See **Resistance** statement under **General Directions for Use**.

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
LEGUME VEGETABLES (SOYBEANS)			
Soybeans	Bean Leaf Beetle	0.015–0.025	0.96–1.6
	Cabbage Looper		
	Corn Earworm		
	Corn Rootworm Beetle (Adult)		
	Mexican		
	Northern		
	Southern		
	Western		
	Cutworm species		
	Green Cloverworm		
	Mexican Bean Beetle		
	Painted Lady (Thistle) Caterpillar		
	Potato Leafhopper		
	Saltmarsh Caterpillar		
	Soybean Aphids ⁴		
Threecornered Alfalfa Hopper			
Thrips species ⁵			
Velvetbean Caterpillar			
Woollybear Caterpillar			
Armyworm ¹	0.025–0.03	1.6–1.92	
Blister Beetle species			
European Corn Borer			
Fall Armyworm ¹			
Grasshopper species			
Japanese Beetle (Adult)			
Plant Bug species			
Silverspotted Skipper			
Stink Bug species			
Tobacco Budworm ³			
Webworm species			
Yellowstriped Armyworm ¹			
Beet Armyworm ^{2,3}	0.03	1.92	
Lesser Cornstalk Borer ²			
Soybean Looper ^{2,3}			
Spider Mite species ²			

Remarks:

- Apply as required by scouting, usually at intervals of 5 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
- **Do not** graze or harvest treated soybean forage, straw, or hay for livestock feed.
- Apply with ground or aerial equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gals. of water /A.
- For control of adult corn rootworm beetles (*Diabrotica* species) as part of an aerial-applied corn rootworm control program use a minimum of 1.28 fl. oz./A (0.02 lb. a.i./A).
- **Do not** apply within 30 days of harvest.
- **Do not** apply more than 0.06 lb. a.i. (0.24 pt.) /A per season.

¹Use higher rates for large larvae.

²Suppression only.

³See **Resistance** statement under **General Directions for Use**.

⁴Use lower rates for early season applications and/or lighter populations.

⁵Does not include Western Flower Thrips.

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
Peanuts	Cutworm species Green Cloverworm Potato Leafhopper Rednecked Peanut Worm Threecornered Alfalfa Hopper Velvetbean Caterpillar	0.015-0.025	0.96-1.60
	Bean Leaf Beetle Corn Earworm Fall Armyworm ¹ Grasshopper species Southern Corn Rootworm (Adult) Stink Bug species Tobacco Thrips Vegetable Weevil Whitefringed Beetle (Adult)	0.02-0.03	1.28-1.92
	Aphid species ² Beet Armyworm ^{2,3} Lesser Cornstalk Borer ² Soybean Looper ^{2,3} Spider Mite species ²	0.03	1.92

Remarks:

- Apply as required by scouting, usually at intervals of 7 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
- Apply with ground or aerial equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gals. of water /A.
- **Do not** apply within 14 days of harvest.
- **Do not** apply more than 0.12 lb. a.i. (0.48 pt.) /A per season.

¹Use higher rates for large larvae.

²Suppression only.

³See **Resistance** statement under **General Directions for Use**

Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
Sugarcane	Mexican Rice Borer ¹ Pygmy Mole Cricket Rice Stalk Borer ¹ Sugarcane Aphid ³ Sugarcane Beetle (Adult) ² Sugarcane Borer ¹ West Indian Crane fly Yellow Sugarcane Aphid ³	0.025-0.04	1.60-2.56

Remarks:

- Apply as required by scouting, usually at intervals of 7 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic threshold.
- Apply with ground or air equipment using sufficient water to obtain full coverage of the foliage or target area. When applying by air, apply a minimum of 2 gal. of water /A.
- **Do not** apply within 21 days of harvest.
- **Do not** apply more than 0.16 lb. a.i. (0.64 pt.) /A per season.

¹For control before the larva bores into the plant stalk.

²Suppression only of beetles active above ground.

³See **Resistance** statement under **General Directions for Use**.

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Crop	Target Pests	Rate	
		lb. a.i./A	fl. oz./A
Non-Cropland (Excluding Public Land)	See Crop Outlets on this Karate Insecticide with Zeon Technology label for target pests and rates.	See Crop Outlets	See Crop Outlets

Remarks:

- Spray non-cropland adjacent to agricultural areas to control migratory insects, which may threaten crops.
- Follow **General Use Directions**, rates and spray recommendations found elsewhere in this label for the adjacent crop outlet and target pests.
- Use highest labeled rates for dense/large foliage, high insect populations and larger larval stages.
- Repeat as necessary to maintain control.
- **Do not** exceed 0.2 lb. a.i. (0.8 pt.) /A per year.
- **Do not** graze livestock in treated areas.

Rate Conversion Chart

Lb. a.i. Per Acre	Fl. oz. Per Acre	Pints Per Acre	Treated Acres Per Gal.
0.015	0.96	0.06	133
0.02	1.28	0.08	100
0.025	1.60	0.10	80
0.03	1.92	0.12	67
0.035	2.24	0.14	57
0.04	2.56	0.16	50

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