TORAC®

INSECTICIDE

TOLFENPYRAD	GROUP	21A	INSECTICIDE
	GROUP	39	FUNGICIDE

Broad spectrum insecticide that also controls eriophyid mites and certain fungal diseases

ACTIVE INGREDIENT:

Tolfenpyrad: 1H-Pyrazole-5-carboxamide, 4-chloro-3-ethyl-1-methyl-N-[[4-(4-methylphenoxy)phenyl]methyl]- **15.0%**

OTHER INGREDIENTS*: **85.0%**

TOTAL **100.0%**

contains 1.29 lbs active ingredient per U.S. gallon

*contains petroleum distillates

EPA Reg. No. 71711-31 **EPA Est. No. 67545-AZ-(GM)** **70815-GA-(CB)** **39578-TX-(E)**

superscript corresponds with lot number

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

If swallowed	• Immediately call a poison control center or doctor. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give any liquid to the person. • Do not give anything by mouth to an unconscious person.
If on skin or clothing	• 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 in eyes	• 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. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. For additional information on this pesticide product, including human health concerns and medical emergencies, call 1-800-348-5832.

NOTE TO PHYSICIAN: Contains petroleum distillates. There is no specific antidote. Vomiting may cause aspiration pneumonia. All treatments should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred.

See inside booklet for Precautionary Statements and Directions for Use

NET CONTENTS: 2.5 gallons

NICHINO AMERICA®
Nichino America, Inc.
4550 Linden Hill Road, Suite 501
Wilmington, DE 19808

301507
03/19

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
WARNING - AVISO

May be fatal if swallowed. Causes skin irritation. Causes substantial but temporary eye injury. Do not get in eyes, on skin, or on clothing. Harmful if absorbed through skin. Harmful if inhaled. Avoid breathing the spray mist. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Coveralls over a short-sleeved shirt and short pants
- Chemical-resistant gloves made of barrier laminate
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles, face-shield, or safety glasses)
- Chemical-resistant apron when mixing and loading
- Chemical-resistant apron when cleaning equipment

See **Engineering Controls.**

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

ENGINEERING CONTROLS STATEMENT

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 thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE 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.
- Discard clothing and personal protective equipment that cannot be reused including clothing and other absorbent materials that have been drenched or thoroughly contaminated with this product's concentrate.
- Wash clothing and personal protective equipment (including both the inside and outside of gloves) before each day of reuse according to manufacturer's directions or, if no such directions exist, in detergent and hot water. Keep and wash PPE separately from other laundry.

ENVIRONMENTAL HAZARDS

This pesticide is very highly toxic to fish and aquatic invertebrates. **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 may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product is highly toxic to bees and other pollinating insects 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 or other pollinating insects are visiting the treatment area.** Application must be made at least 8 hours prior to bees foraging.

This product may impact surface water quality due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having medium to high potential for reaching both surface water and aquatic sediment via runoff for several weeks after application. A level, well-maintained vegetative filter (buffer) strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of this chemical from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's potential to reach aquatic sediment via runoff.

PROTECTION OF POLLINATORS

APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications or contact with residues on plant surfaces after foliar applications.
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When using this product, take steps to:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product onto beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at: http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx.
Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to: www.aapco.org/officials.html. Pesticide incidents should also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

ENDANGERED SPECIES RESTRICTIONS

This product may pose a hazard to endangered aquatic species. Follow all use directions.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the state or tribal agency responsible for pesticide regulation.

1. FOR CROPS UNDER CONTRACTED POLLINATION SERVICES

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless the following condition has been met. If an application must be made when managed bees are at the treatment site, the beekeeper providing the pollination services must be notified no less than 48 hours prior to the time of the planned application so that the bees can be removed, covered, or otherwise protected prior to spraying.

2. FOR FOOD CROPS AND COMMERCIALLY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless one of the following conditions is met:

- The application is made to the target site after sunset.
- The application is made to the target site when temperatures are below 55˚F.
- The application is made in accordance with a government-initiated public health response.
- The application is made in accordance with an active state-administered apiary registry program where beekeepers are notified no less than 48 hours prior to the time of the planned application so that the bees can be removed, covered, or otherwise protected prior to spraying.
- The application is made due to an imminent threat of significant crop loss and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48 hours prior to the time of the planned application so that the bees can be removed, covered, or otherwise protected prior to spraying.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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

For early entry into 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, wear:

- Coveralls worn over short-sleeved shirt and short pants
- Chemical-resistant gloves made of barrier laminate
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles, face shield, or safety glasses)

USE INFORMATION

TORAC® Insecticide is an emulsifiable concentrate containing 1.29 lbs of active ingredient tolfenpyrad per gallon. This product is a contact insecticide used for the control of several orders of insects. Complete and thorough spray coverage is necessary for maximum results. **TORAC** Insecticide should be used in a program with other products to provide season-long protection. Apply as a spray as directed in the **Application Directions** section of this label.

Mix with sufficient water and apply as a foliar spray to obtain uniform coverage. Adjust water volumes and tractor speed accordingly for crops with dense foliage or excessive growth. Unless otherwise specified under **Application Directions**, apply when pest populations are beginning to build, before crop damage or injury is observed. Consult your local agricultural advisor or state cooperative extension service for recommendations.

DIRECTIONS FOR USE OF TORAC INSECTICIDE AS A FUNGICIDE

For crops and diseases where the level of activity of **TORAC** Insecticide is listed as "control", this product may be used alone as a contact fungicide or mixed with other registered fungicide products to broaden spectrum of disease control. For crops and diseases where the level of activity of **TORAC** Insecticide is listed as "suppression", this product should NOT be substituted for labeled fungicidal products.

APPLICATION DIRECTIONS

- Applications should be made immediately after the spray solution is prepared.
- Thorough spray coverage is critical to obtain control of the target pest(s).
- Applications may be made by air or ground with high or low volume spray equipment that provides thorough spray coverage of the plant.
- For ground applications, use coarse droplet size.
- For aerial applications, use larger droplet size (greater than 200 microns).
- Use sufficient water volume to ensure thorough coverage of foliage.

RESTRICTIONS

- **Do not apply TORAC Insecticide through any type of irrigation system except those described in the Chemigation section.**
- **Not for sale, sale into, distribution, and/or use in New York State.**

BUFFER ZONES

Vegetative Filter (Buffer) Strip

All crops: 15-foot vegetative filter (buffer) strip

Construct and maintain the vegetative filter (buffer) strip of grass or other permanent vegetation between 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 tolfenpyrad onto fields where a maintained vegetative filter (buffer) strip of at least 15 feet exists between the field edge 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, https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_030970.pdf

Buffer Zone for Ground Application

Do not apply within 15 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

Buffer Zone for Aerial Application

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

CHEMIGATION

For chemigation use in Brassica Head and Stem Vegetable (Crop Group 5-16); Brassica Leafy Greens (Crop Subgroup 4-16B); Bulb Vegetables Group (Crop Group 3-07); Fruiting Vegetable (Crop Group 8-10); Leaf Petiole Vegetable Subgroup (Crop Subgroup 22B); Leafy Greens Subgroup (Crop Subgroup 4-16A); and Tuberous and Corm Vegetables Subgroup (Crop Subgroup 1C) only.

Apply this product alone or in combination with other products which are registered for application through irrigation systems.

- Apply this product only through center pivot, solid set, hand move, or moving wheel irrigation systems. Do not apply this product through any other type of irrigation system.
- Crop injury, lack of performance, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact state extension service specialists, equipment manufacturers, or other experts.
- 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.
- 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.

Chemigation Systems Connected to Public Water Systems

- 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.
- Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.
- Apply by chemigation using a minimum of 0.10 to 0.25 acre-inches of water.

Sprinkler Chemigation

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

Chemigation Calibration and Application Instructions
Apply **TORAC** Insecticide under the schedule specified in the **Use Directions**, not according to the irrigation schedule unless the events coincide. The following calibration and application techniques are provided for user reference but do not constitute a warranty of fitness for application through sprinkler irrigation equipment. Check with state and local regulatory agencies for potential use restrictions before applying any agricultural chemical through sprinkler irrigation equipment.

Center Pivot Irrigation Equipment
Notes:
- Use only drive systems which provide uniform water distribution.
- Do not use end guns when chemigating **TORAC** Insecticide to avoid non-uniform application.
- Plug the first nozzle closest to the well head to protect the water source.

1. Determine the size of the area to be treated.
2. Determine the time required to apply ¼ to ½ inch of water over the area to be treated when the system and injection system area operate at normal pressures as recommended by the equipment manufacturer. Run the system at 80 to 95% of the manufacturer's rated maximum travel speed.
3. Using water, determine the injection pump output when operated at normal line pressure.
4. Determine the amount of **TORAC** Insecticide and any tankmix partners required to treat the area covered by the irrigation system.
5. Add to the solution tank the required amount of **TORAC** Insecticide and tankmix partners and sufficient water to meet the injection time requirements.
6. Make sure the system is fully charged with water before starting injection of the **TORAC** Insecticide solution. Time the injection to last at least as long as it takes to bring the system to full pressure.
7. Maintain constant agitation in the solution tank during the injection period.
8. Inject the specified amount of **TORAC** Insecticide per acre continuously for one complete revolution of the system.
9. Stop the injection equipment after treatment is completed. Continue to operate the system until the **TORAC** Insecticide solution has cleared all of the sprinkler heads.
10. Allow time for all lines to flush the **TORAC** Insecticide solution through all nozzles before turning off irrigation water.
11. Apply using a minimum of 0.10 to 0.25 acre-inches of water.

Solid Set, Hand Move, and Moving Wheel Irrigation Equipment
1. Determine the acreage covered by the sprinklers.
2. Fill injector solution tank with plain water and calibrate the flow rate of the system to deliver the contents of the tank over a 20 to 40 minute time interval.
3. Determine the amount of **TORAC** Insecticide required to treat the area covered by the irrigation system.
4. Add the required amount of **TORAC** Insecticide and any other tankmix partners into the same quantity of water used to calibrate the injection period.
5. Operate the system at the same pressure and time interval established during the calibration.
6. Inject specified amount of **TORAC** Insecticide per acre for: (1) a 20 to 40 minute period at the end of a regular irrigation set; or (2) as a 20 to 40 minute injection as a separate application not associated with a regular irrigation to maximize retention of the insecticide on the foliage.

7. Maintain constant agitation in the solution tank during the injection period.
8. Stop injection equipment after treatment is completed. Continue to operate the system until the **TORAC** Insecticide solution has cleared the last sprinkler head. To ensure lines are flushed and free from remaining pesticides, a dye indicator may be injected into the lines to mark the end of the application period.
9. Apply using a minimum of 0.10 to 0.25 acre-inches of water.

Chemigation Monitoring: A person knowledgeable of the chemigation system and equipment responsible for its operation, or under the supervision of a responsible person, shall shut the system down and make necessary adjustments should the need arise. Follow the appropriate personal protective equipment (PPE) guidelines.

SPRAY ADJUVANTS

For maximum performance, the use of an agricultural spray adjuvant with **TORAC** Insecticide is recommended to increase spray coverage of the plants and pests being treated. Select an adjuvant that is labeled for agricultural use and follow its use directions.

ROTATIONAL CROP RESTRICTIONS

Crop/Crop Group	Plantback Timing
All crops on this label	0 days following application
All other crops	14 days following application

RESISTANCE MANAGEMENT

For resistance management, **TORAC** Insecticide contains a Group 21A insecticide. Any insect population may contain individuals naturally resistant to **TORAC** Insecticide and other Group 21A insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Appropriate resistance management strategies should be followed.

To delay insecticide resistance, take the following steps:

- Rotate the use of **TORAC** Insecticide or other Group 21A insecticides within a growing season, or among growing seasons, with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group that are equally effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):
  - Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
  - Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management.
  - When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
  - Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
  - The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide use that includes scouting, uses historical information related to pesticide use, crop rotation, recordkeeping, and which considers cultural, biological, and other chemical control practices.

- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance, contact Nichino America representatives at 1-888-740-7700.

MIXING DIRECTIONS

Shake well before using. Read and follow all label directions for each tankmix product prior to any tank mixing with **TORAC** Insecticide. This product can be mixed with other registered pesticides for use on labeled crops or sites in accordance with the most restrictive use directions and precautions. Do not exceed any labeled dose rate.

TORAC Insecticide is physically and biologically compatible with many registered pesticides, fertilizers, or micronutrients. Contact your supplier for advice when considering mixing **TORAC** Insecticide with other pesticides, fertilizers, or micronutrients. If you have no experience with the combination you are considering, you should conduct a test to determine physical compatibility. To determine physical compatibility, add the recommended proportions of each chemical with the same proportion of water as will be present in the chemical supply tank into a suitable container; mix thoroughly and allow to stand for five minutes. If the combination remains mixed, or can be readily remixed, the mixture is considered physically compatible.

TORAC Insecticide Alone: Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and then turn on agitation. Pour recommended amount of product on the surface of water in the spray tank. Add the remaining water volume to the spray tank with agitation running. Keep agitation running during filling and spraying operations. If spraying must be stopped before emptying the sprayer, resume agitation before spraying the remainder of the load.

TORAC Insecticide Tank Mixtures: It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. Begin with clean equipment. Fill spray tank with ¾ of the amount of water needed for the intended application and turn on agitation. If using a buffering agent, add after filling the tank with ¾ amount of water.

Add the recommended amount of tankmix products in the following order while maintaining agitation:

1) products in water soluble packets
2) wettable powders
3) water dispersible granulars and/or soluble powders
4) flowable liquids
5) emulsifiable concentrates (including **TORAC** Insecticide)
6) adjuvants and/or oils
7) remaining amount of water to achieve the desired level

COMPATIBILITY STATEMENT REGARDING CERTAIN FUNGICIDE PRODUCTS

TORAC Insecticide has been found to be compatible in mixes with several different fungicide products and has been found to be safe to labeled crops under most conditions. However, care should be taken when applying **TORAC** Insecticide in tankmixes with fungicide products in FRAC Group 3 (sterol biosynthesis inhibitors) and FRAC Group 11 (QoI) if environmental conditions are known to be conducive to adverse crop response to those products.

SPRAY DRIFT MANAGEMENT

Avoid spray drift to all other crops and nontarget areas. **Do not apply when weather conditions may cause drift. Do not allow this product to drift onto nontarget areas.** Drift may result in illegal residues or injury to adjacent crops and vegetation. To avoid spray drift, **DO NOT apply aerially when wind speed is greater than 10 mph or during periods of temperature inversions.** Use of larger droplet size will also reduce spray drift.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making decisions.

Droplet size, boom height, and wind speed are the primary factors determining drift. The specific application conditions required for the use of this product are described below.

Controlling Droplet Size – General Techniques

Volume

Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

Pressure

Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.

Controlling Droplet Size – Aircraft

Number of Nozzles

Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.

Nozzle Orientation

Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.

Nozzle Type

Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Height and Length – Ground and Aircraft

Boom Height (ground): Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. For ground equipment, the boom should remain level with the crop and have minimal bounce.

Boom Height (aircraft): Application more than 10 feet above the canopy increases the potential for spray drift.

Boom Length (aircraft): The minimum boom length should not exceed ¾ of the wing length; using shorter booms decreases drift potential. For helicopters, the minimum boom length should not exceed 9/10 of the rotary blade to prevent droplets from entering the rotor vortices.

Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. Application must be avoided below 2 mph due to variable wind direction and high inversion potential. AVOID GUSTY OR WINDLESS CONDITIONS. **Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. This cloud can move in unpredictable directions due to the light and variable winds common during inversions. Temperature inversions are characterized by increasing temperatures 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, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. 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 air mixing.

Sensitive Areas
The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, nontarget crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Shielded Sprayers
Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with the uniform deposition of the product.

Air Assisted (Air Blast) Field Crop Sprayers
Air assisted field crop sprayers carry droplets to the target via a downward directed air stream. Some may reduce the potential for drift, but if a sprayer is unsuitable for the application and/or set up improperly, high drift potential can result. It is the responsibility of the applicator to determine that a sprayer is suitable for the intended application, is configured properly, and that drift is not occurring.
Note: Air assisted field sprayers can affect product performance by affecting spray coverage and canopy penetration. Consult the application equipment section of this label to determine if use of an air assisted sprayer is recommended.

APPLICATION RATE CHART FOR TORAC INSECTICIDE

Brassica Head and Stem Vegetable (Crop Group 5-16)
broccoli; Brussels sprouts; cabbage; cabbage, Chinese, Napa; cauliflower; cultivars, varieties, and hybrids of these commodities

Pest	Rate/Acre	Use Directions
Leafhoppers Planthoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • **Do not apply by air on brassica head and stem vegetables.** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day
Aphids Diamondback moth Flea beetle Garden symphylan Imported cabbageworm	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	
Cabbage maggot Thrips Alfalfa caterpillar* Armyworms* Bagrada bug* Cabbage webworm* Cloverworm, green* Corn earworm* Cross-striped cabbageworm* Cutworm species* Garden webworm* Saltmarsh caterpillar* Southern cabbageworm* Tobacco budworm* Tomato hornworm* Whitefly*	21.0 fl oz/acre (0.21 lb ai/acre)	
*suppression only		

(continued)

APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Brassica Leafy Greens (Crop Subgroup 4-16B)
arugula; broccoli, Chinese; broccoli raab; cabbage, abyssinian; cabbage, Chinese, bok choy; cabbage, seakale; collards; cress, garden; cress, upland; hanover salad; kale; maca, leaves; mizuna; mustard greens; radish, leaves; rape greens; rocket, wild; shepherd's purse; turnip greens; watercress; cultivars, varieties, and hybrids of these commodities

Pest	Rate/Acre	Use Directions
Leafhoppers Planthoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • **Do not apply by air to brassica leafy greens.** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day
Aphids Diamondback moth Flea beetle Garden symphylan Imported cabbageworm	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	
Cabbage maggot Thrips Alfalfa caterpillar* Armyworms* Bagrada bug* Cabbage webworm* Cloverworm, green* Corn earworm* Cross-striped cabbageworm* Cutworm species* Garden webworm* Saltmarsh caterpillar* Southern cabbageworm* Tobacco budworm* Tomato hornworm* Whitefly*	21.0 fl oz/acre (0.21 lb ai/acre)	

*suppression only

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APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Bulb Vegetables Group (Crop Group 3-07)
chive, fresh leaves; chive, Chinese, fresh leaves; daylily, bulb; elegans hosta; fritillaria, bulb; fritillaria, leaves; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; kurrat; lady's leek; leek; leek, wild; lily, bulb; onion, Beltsville bunching; onion, bulb; onion, Chinese, bulb; onion, fresh; onion, green; onion, macrostem; onion, pearl; onion, potato, bulb; onion, tree, tops; onion, Welsh, tops; shallot, bulb; shallot, fresh leaves; cultivars, varieties, and/or hybrids of these

Pest	Rate/Acre	Use Directions
Thrips	24.0 fl oz/acre (0.24 lb ai/acre)	**USE RESTRICTIONS** • For **ground applications**, apply using a minimum of 20 gallons of water per acre. • For **aerial applications**, apply using a minimum of 5 gallons of water per acre. See **Chemigation** statement in **Application Directions**. • Do not apply more than 72.0 fl oz (0.73 lb ai) per acre per year. • Allow at least 7 days between applications. • Do not make more than 3 applications per year. • Preharvest Interval (PHI): 7 days

Cottonseed Subgroup (Crop Subgroup 20C)
(limited to states of Arizona, New Mexico)
cottonseed; cultivars, varieties, and/or hybrids of these

Pest	Rate/Acre	Use Directions
Aphids	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	• Apply by ground using a minimum of 10 gallons of water per acre. • Apply by air using a minimum of 5 gallons of water per acre. **USE RESTRICTIONS** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per growing season. • Do not make more than 2 applications per growing season. • Allow at least 14 days between applications. • Preharvest Interval (PHI): 14 days
Fleahopper	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre	
Thrips Armyworms* Bollworms* Pink bollworm* Plant bugs* Stink bugs* Tobacco budworm* Whitefly*	21.0 fl oz/acre (0.21 lb ai/acre)	
*suppression only		

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APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Cucurbit Vegetables (Crop Group 9)
chayote (fruit); Chinese waxgourd (Chinese preserving melon); citron melon; cucumber; gherkin; gourd, edible (includes hyotan, cucuzza, hechima, Chinese okra); *Momordica* spp (includes balsam apple, balsam pear, bitter melon, Chinese cucumber); muskmelon (hybrids and/or cultivars of *Cucumis melo*, includes true cantaloupe, cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, and snake melon); pumpkin; squash, summer (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini); squash, winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash); watermelon (includes hybrids and/or varieties of *Citrullus lanatus*)

Pest	Rate/Acre	Use Directions
Leafhoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • **Do not apply by air on curcurbits.** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day
Aphids Flea beetle	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	
Powdery mildew Thrips Armyworms* Cucumber beetle* Melonworm* Pickleworm* Whitefly* Downy mildew*	21.0 fl oz/acre (0.21 lb ai/acre)	
*suppression only		

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APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Fruiting Vegetable (Crop Group 8-10)
African eggplant; bush tomato; cocona; currant tomato; eggplant; garden huckleberry; goji berry; groundcherry; martynia; naranjilla; okra; pea eggplant; pepino; pepper, bell; pepper, nonbell; roselle; scarlet eggplant; sunberry; tomatillo; tomato; tree tomato; cultivars, varieties, and/or hybrids of these

Pest	Rate/Acre	Use Directions
Broad mite Colorado potato beetle Diamondback moth Leafhoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • **Do not apply by air on fruiting vegetables.** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day
Aphids Flea beetle Pepper weevil Psyllids, tomato/potato	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	
Thrips Armyworms* Cutworm species* European corn borer* Garden webworm* Lyriomyza leafminers* Melonworm* Pickleworm* Plant bugs* Rindworm species* Saltmarsh caterpillar* Southwestern corn borer* Tobacco budworm* Tobacco hornworm* Tomato fruitworm* Tomato hornworm* Tomato pinworm* Whitefly* Downy mildew* Powdery mildew*	21.0 fl oz/acre (0.21 lb ai/acre)	

*suppression only

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APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Leafy Greens Subgroup (Crop Subgroup 4-16A)
amaranth, Chinese; amaranth, leafy; aster, Indian; blackjack; cat's whiskers; cham-chwi; cham-na-mul; chervil, fresh leaves; chipilin; chrysanthemum, garland; cilantro, fresh leaves; corn salad; cosmos; dandelion, leaves; dang-gwi, leaves; dillweed; dock; dol-nam-mul; ebolo; endive; escarole; fameflower; feather cockscomb; Good King Henry; huauzontle; jute, leaves; lettuce, bitter; lettuce, head; lettuce, leaf; orach; parsley, fresh leaves; plantain, buckhorn; primrose, English; purslane, garden; purslane, winter; radicchio; spinach; spinach, Malabar; spinach, New Zealand; spinach, tanier; Swiss chard; violet, Chinese, leaves; cultivars, varieties, and hybrids of these commodities

Pest	Rate/Acre	Use Directions
Leafhoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • **Do not apply by air on leafy greens in Texas or east of the Mississippi River.** • Do not apply until at least fourteen (14) days after emergence or after transplanting to allow time for root establishment. This period of time should be extended if conditions at time of emergence or transplanting are not favorable to crop growth. • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day **USE RECOMMENDATIONS - DISEASES** • Begin applications prior to onset of disease. • Use of an agriculturally approved nonionic surfactant at 0.25% v/v may improve disease control. • If weather conditions remain conducive to disease development, apply another registered fungicide product with a different mode of action 7 to10 days later. • Consult local extension recommendations or your agricultural consultant for information specific to your area.
Aphids (excluding lettuce aphid)	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre	
Powdery mildew Thrips Armyworms* Corn earworm* Cutworm species* European corn borer* Flea beetle* Imported cabbageworm* Tobacco budworm* Tomato hornworm* Whitefly* Downy mildew*	21.0 fl oz/acre (0.21 lb ai/acre)	

*suppression only

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APPLICATION RATE CHART FOR TORAC INSECTICIDE *(continued)*

Leaf Petiole Vegetable Subgroup (Crop Subgroup 22B); Celtuce; Florence Fennel cardoon; celery; celery, Chinese; fuki; rhubarb; udo; zuiki; cultivars, varieties, and hybrids of these commodities		
Pest	**Rate/Acre**	**Use Directions**
Aphids Lygus	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	**USE RESTRICTIONS** • **Do not apply by air on leaf petiole vegetables in Texas or east of the Mississippi River.** • Do not apply until at least fourteen (14) days after emergence or after transplanting to allow time for root establishment. This period of time should be extended if conditions at time of emergence or transplanting are not favorable to crop growth. • Apply by ground **only**, using a minimum of 20 gallons of water per acre. • Do not apply more than 42.0 fl oz (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Do not make more than 4 applications per year. • Preharvest Interval (PHI): 1 day
Thrips Flea beetle*	21.0 fl oz/acre (0.21 lb ai/acre)	
*suppression only		

Tuberous and Corm Vegetables Subgroup (Crop Subgroup 1C) arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; canna, edible; cassava, bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; potato; sweet potato; tanier; turmeric; yam bean; yam, true		
Pest	**Rate/Acre**	**Use Directions**
Colorado potato beetle Leafhoppers	14.0 to 21.0 fl oz/acre (0.14 to 0.21 lb ai/acre	• Apply by ground using a minimum of 20 gallons of water per acre. • Apply by air using a minimum of 5 gallons of water per acre. • See **Chemigation** statement in **Application Directions**. **USE RESTRICTIONS** • Do not apply more than 42.0 fluid ounces (0.42 lb ai) per acre per crop cycle. • Do not make more than 2 applications per crop cycle. • Allow at least 14 days between applications. • Preharvest Interval (PHI): 14 days
Aphids Potato psyllid Thrips	17.0 to 21.0 fl oz/acre (0.17 to 0.21 lb ai/acre)	

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container, and keep tightly closed when not in use. Store in a cool, dry place.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then, offer for recycling if available, or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

In case of fire or spills, information may be obtained by calling 1-800-424-9300.

IMPORTANT: READ BEFORE USE

By using this product, user or buyer accepts the following conditions, warranty, disclaimer of warranties and limitations of liability.

CONDITIONS: The directions for use of this product are believed to be accurate and must be followed carefully. However, because of extreme weather and soil conditions, use methods and other factors beyond the control of Nichino America, Inc. (NAI), it is impossible for NAI to eliminate all risks associated with the use of this product. As a result, crop injury or ineffectiveness is always possible. To the extent consistent with applicable law, all such risks are assumed by the user or buyer.

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