

Quartz 4L™

GROUP 27 HERBICIDE



For Control of Annual Broadleaf Weeds in Field Corn, Seed Corn, Yellow Popcorn, Sweet Corn, and Other Listed Crops

ACTIVE INGREDIENT:	
Mesotrione; (CAS No. 104206-82-8)	40.0%
OTHER INGREDIENTS:	60.0%
TOTAL:	100.0%
Contains 4 lbs. of active ingredient mesotrione per gallon	

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID

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 mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
IF SWALLOWED:	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to by the poison control center or doctor.• Do not give anything to an unconscious person.

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

Emergency Phone numbers:	(800) 424-9300 CHEMTREC (transportation and spills), (800) 900-4044 Poison Control Center
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See additional precautionary statements and directions for use inside booklet.

NET CONTENTS: 2.5 Gallons (9.46 L)

Manufactured for:
SIPCAM AGRO USA, INC.
2525 Meridian Parkway, Suite 350
Durham, NC 27713

2.5G



SIPCAM AGRO
USA, INC.

EPA Reg. No. 42750-315-60063
EPA Est. No. 70815-GA-02

EPA07272017(1/18)

**READ THE LABEL
CAREFULLY
BEFORE OPENING
THE CONTAINER**

HERBICIDE

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

Personal Protective Equipment (PPE) Applicators and other handlers must wear:

1. Long-sleeved shirt and long pants
2. Shoes plus socks
3. Chemical-resistant gloves

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

ENGINEERING CONTROL STATEMENTS

When handlers use closed systems or enclosed cabs 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/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.

ENVIRONMENTAL HAZARDS

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 contaminate water when disposing of equipment wash water or rinseate.

SURFACE WATER ADVISORY

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from runoff. 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 contribution to surface water contamination.

PHYSICAL AND CHEMICAL HAZARDS

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

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

AGRICULTURAL USE REQUIREMENTS

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

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

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

1. Coveralls
2. Shoes plus socks
3. Chemical-resistant gloves

PRODUCT INFORMATION

Quartz™ 4L is a systemic preemergence and postemergence herbicide for the selective contact and residual control of broadleaf weeds in field corn, seed corn, yellow popcorn, sweet corn, and other listed crops. When used preemergence, weeds take up the product through the soil during emergence. Dry conditions following application may reduce the preemergence activity of Quartz™ 4L. If an activating rain (0.25 inches) is not received within 7-10 days after a preemergence application, where appropriate, rotary hoeing is suggested to activate the herbicide. When used postemergence, susceptible weeds take up the herbicide through the treated foliage and cease growth soon after application. Complete death of the weeds may take up to 2 weeks. The product is absorbed through the soil and/or by the foliage of emerged weeds.

Quartz™ 4L is not effective for the control of most grass weeds. Preemergence grass herbicides or postemergence grass herbicides can be tank mixed with Quartz™ 4L to provide broad spectrum weed control in corn (see appropriate section of label for this information). Quartz™ 4L can be applied postemergence following a preemergence grass herbicide application. Quartz™ 4L can also be used in combination with a burndown herbicide, prior to planting, to provide added burndown and residual weed control in field corn, seed corn, yellow popcorn, and sweet corn.

RESISTANCE MANAGEMENT

Quartz™ 4L is a Group 27 Herbicide (contains the active ingredient mesotrione). Naturally occurring biotypes of certain broadleaf weed species with resistance to triazines, glyphosate, PPO, HPPD and ALS inhibiting herbicides are known to exist.

Performance of Quartz™ 4L is not affected by the presence of biotypes resistant to triazines, glyphosate, PPO or ALS inhibiting herbicides.

To prevent the risk of weeds developing resistance to Quartz™ 4L in corn, always use full labeled rates. If applying Quartz™ 4L postemergence after a mesotrione-containing preemergence herbicide, always add atrazine as a tank mix partner. No more than 0.24 lb. of mesotrione active ingredient must be applied per acre of corn per year (equivalent of 7.7 fl. oz. per acre per year of Quartz™ 4L). If additional herbicide must be applied, it is recommended that a different mode of action be used, i.e., other than an HPPD inhibitor (Group 27 Herbicide). Quartz™ 4L must be applied at full label rates to help prevent selection for, or population shifts toward, marginally tolerant weed species and/or species biotypes.

INTEGRATED PEST (WEED) MANAGEMENT

Quartz™ 4L should be integrated into an overall weed and pest management strategy whenever the use of a herbicide is required. Practices known to reduce weed development (tillage, crop competition) and herbicide use (weed scouting, proper application timing, banding) should be followed wherever possible. Consult local agricultural and weed authorities for additional IPM strategies established for your area.

USE RESTRICTIONS

Do not apply Quartz™ 4L to white popcorn or ornamental (Indian) corn.

Do not cultivate corn within 7 days before or after a Quartz™ 4L application as weed control from the Quartz™ 4L application may be reduced.

Do not apply this product through any type of irrigation system unless specified otherwise under the specific crop section on the label.

Do not apply this product with suspension fertilizers as the carrier.

Do not apply Quartz™ 4L postemergence in a tank mix with emulsifiable concentrate grass herbicides, unless specifically addressed under one of the tank mix sections of this label, or injury may occur.

Do not use aerial application to apply Quartz™ 4L unless specified otherwise under the specific crop section on the label.

USE PRECAUTIONS

Severe corn injury resulting in yield loss may occur if Quartz™ 4L is applied postemergence to corn that was treated with Counter® or Lorsban®.

Severe corn injury resulting in yield loss may occur if Quartz™ 4L is applied foliar postemergence to corn in a tank mix with any organophosphate or carbamate insecticide.

Severe corn injury resulting in yield loss may occur if any organophosphate or carbamate insecticide is applied foliar postemergence within 7 days before or 7 days after Quartz™ 4L application.

When weeds are stressed due to drought, heat, lack of fertility, flooding, or prolonged cool temperatures, control can be reduced or delayed since the weeds are not actively growing. Weed escapes or regrowth may occur when application is made under prolonged stress conditions. Optimum weed control will be obtained if an application of Quartz™ 4L is made following label directions when weeds are actively growing.

Quartz™ 4L may be applied with pyrethroid type insecticides (e.g., Warrior®).

SPRAY DRIFT DIRECTIONS

Avoid drift onto adjacent crops and other nontarget areas.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

Do not apply when weather conditions may cause drift to nontarget areas. Drift may result in injury to adjacent crops and vegetation. To avoid spray drift, DO NOT apply when wind speed is greater than 10 mph or during periods of temperature inversions. Use of larger droplet sizes will also reduce spray drift.

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR.

The interaction of equipment and weather related factors determine the potential for spray drift. The applicator is responsible for considering all these factors when making a decision.

Information on Droplet Size

The most effective way to reduce spray drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions. Refer to the Aerial Application section for specific instructions regarding droplet size.

Controlling Droplet Size

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. When higher flow rates are needed, use higher rate nozzles instead of increasing pressure.

Number of Nozzles – Use the minimum number of nozzles that provide uniform coverage.

Sensitive Areas

The pesticide must 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).

ADDITIONAL SPRAY DRIFT DIRECTIONS FOR AERIAL APPLICATIONS

The distance of the outer-most nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.

Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they must be observed.

Spray must be released at the lowest height consistent with effective weed control and flight safety.

For best results, ensure that each specific aerial application vehicle used is quantifiably pattern tested for aerial application of Quartz™ 4L initially and every year thereafter.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

For some use patterns, reducing the effective boom length to less than $\frac{3}{4}$ of the wingspan or rotor length may further reduce drift without reducing swath width.

Do not make applications at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Increase swath adjustment distance with increasing drift potential (higher wind, smaller drops, etc.).

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 speed. Avoid application below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Ensure that every applicator is familiar with local wind patterns and how they affect drift.

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.

Do not apply during a temperature inversion, because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light 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 connected cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing.

The pesticide must 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, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

APPLICATION INFORMATION

PREEMERGENCE GROUND APPLICATION

Apply Quartz™ 4L preemergence with a carrier volume of 10-60 gals./A.

Spray nozzles must be uniformly spaced, the same size and type, and must provide accurate and uniform application. Use spray nozzles that provide medium to coarse droplet size to provide good coverage and avoid drift. Apply in a spray volume of 10-60 gals./A using water or liquid fertilizer (excluding suspension fertilizers) as the carrier. Use a pump that can maintain a pressure of at least 35-40 psi at the nozzles and provide proper agitation within the tank to keep the product dispersed. Lower pressures may be used with extended range or drift reduction nozzles.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

POSTEMERGENCE GROUND APPLICATION

Spray nozzles must be uniformly spaced, the same size and type, and must provide accurate and uniform application. Use spray nozzles that provide medium to coarse droplet size to provide good coverage and avoid drift. Good weed coverage is essential for optimum weed control. Boom height for broadcast over-the-top applications must be based on the height of the crop – at least 15 inches above the crop canopy.

Apply in a spray volume of 10-30 gals./A using water as a carrier. Use a pump that can maintain a pressure of at least 35-40 psi at the nozzles and provide proper agitation within the tank to keep the product dispersed. Lower pressures may be used with extended range or drift reduction nozzles. When weed foliage is dense, use a minimum of 20 gals.

Flat fan nozzles of 80q or 110q are recommended for optimum postemergence coverage. Do not use floodjet nozzles or controlled droplet application equipment for postemergence applications.

Nozzles may be angled forward 45 degrees to enhance penetration of the crop and provide better coverage. Ensure that all in-line strainer and nozzle screens in the sprayer are 50-mesh or coarser.

Always ensure that agitation is maintained until spraying is completed, even if stopped for brief periods of time. If the agitation is stopped for more than 5 minutes, resuspend the spray solution by running on full agitation prior to spraying.

Aerial Application

RESTRICTION: Quartz™ 4L can be applied aerially only to corn and sugarcane.

RESTRICTION: For aerial application use only nozzles producing coarse-ultra coarse droplets. Do not use nozzles producing fine-medium size droplets.

Quartz™ 4L may be applied aerially for preemergence or postemergence weed control in corn only in the following states: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Nebraska, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Quartz™ 4L may be applied aerially for preemergence or postemergence weed control in sugarcane only in the following states: Florida, Louisiana and Texas.

Applications must be made in a minimum of 2 gallons of water per acre.

SPRAY ADDITIVES POSTEMERGENCE ADJUVANTS

When an adjuvant is to be used with this product, the use of an adjuvant that meets the standards of the Chemical Producers and Distributors Association (CPDA) adjuvant certification program is recommended.

The following adjuvant recommendations are intended primarily for Quartz™ 4L use in corn. Refer to the use directions section of each crop section for specific adjuvant recommendations.

POSTEMERGENCE APPLICATIONS TO FIELD CORN AND SEED CORN

For postemergence applications made after the crop has emerged, add crop oil concentrate (COC) to the spray solution at the rate of 1.0 gal./100 gals. of water (1.0% v/v). The use of a nonionic surfactant (NIS) at 1 qt./100 gallons of water (0.25% v/v) instead of COC is allowed, but the weed control achieved with COC is consistently better than NIS. The use of methylated seed oil (MSO) adjuvants or MSO blend adjuvants for postemergence applications of Quartz™ 4L may cause severe crop injury to occur. Do not use MSO adjuvants for postemergence use unless directed for a specific tank mix under the Quartz™ 4L TANK MIXTURES FOR CORN section of this label, or unless permitted by a supplemental Quartz™ 4L label. In addition to COC, always add spray grade UAN (e.g., 28-0-0) to the spray solution at a rate of 2.5% (v/v) or AMS at 8.5 lb/100 gals. of spray solution, except if precluded elsewhere on this label or by a supplemental Quartz™ 4L label.

POSTEMERGENCE APPLICATIONS TO SWEET CORN AND YELLOW POPCORN

Do not add UAN or AMS when making postemergence applications of Quartz™ 4L to yellow popcorn or sweet corn, or severe crop injury may occur.

For postemergence applications to yellow popcorn and sweet corn, the use of a nonionic surfactant (NIS) instead of a crop oil concentrate (COC) is recommended, so as to minimize the risk of crop injury. A COC may be used, and will increase the level of weed control achieved, especially under dry growing conditions, but the risk of crop injury is increased significantly under lush growing conditions. For optimum control, the addition of atrazine is recommended wherever rotational or local atrazine restrictions allow.

PREEMERGENCE ADJUVANTS

For Quartz™ 4L preplant or preemergence applications, and where weeds are present, the use of any adjuvant for agricultural use is permitted. In these situations, MSO type adjuvants are typically better than COC type adjuvants, which are typically better than NIS type adjuvants for enhancing weed control. UAN or AMS can be added and typically provides better weed control than not adding one of these. If Quartz™ 4L is being tank mixed with another registered herbicide in this situation, refer to the tank mix partner label for adjuvant precautions and restrictions.

SPRAY EQUIPMENT

Cleaning Equipment after Quartz™ 4L Application

Special attention must be given to cleaning equipment before spraying a crop other than corn. Mix only as much spray solution as needed.

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of 1 gal. of household ammonia per 25 gals. of water. Many commercial spray tank cleaners may be used.
3. Use a pressure washer to clean the inside of the spray tank with this solution.
4. Take care to wash all parts of the tank, including the inside top surface. If a pressure washer is not available, completely fill the sprayer with the cleaning solution to ensure contact of the cleaning solution with all internal surfaces of the tank and plumbing. Start agitation in the sprayer and thoroughly recirculate the cleaning solution for at least 15 minutes. All visible deposits must be removed from the spraying system.
5. Flush hoses, spray lines, and nozzles for at least 1 minute with the cleaning solution.
6. Dispose of rinsate from steps 1-3 in an appropriate manner.
7. Repeat steps 2-5.
8. Remove nozzles, screens, and strainers and clean separately in the ammonia solution after completing the above procedures.
9. Rinse the complete spraying system with clean water.

MIXING PROCEDURES

Refer to the Crop Use Directions sections of this label for recommended tank mixes.

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

It is recommended that the compatibility of any tank mix combination be tested on a small scale such as a jar test before actual tank mixing.

RESTRICTION: This product cannot be mixed with any product containing a label prohibition against such mixing. Do not tank mix Quartz™ 4L with any other insecticide, fungicide, fertilizer solution, or adjuvant not recommended on the label without testing compatibility, as poor mixing may result.

Follow the mixing instructions for adding Quartz™ 4L to the spray tank:

1. Only use sprayers in good running condition with good agitation. Ensure the sprayer is cleaned according to instructions on the label of the product used prior to Quartz™ 4L. For postemergence applications, use only clean water for the spray solution. Ensure that all in-line strainer and nozzle screens in the sprayer are 50- mesh or coarser. Do not use screens finer than 50-mesh.
2. Liquid fertilizer (excluding suspension fertilizers) may be used as the carrier for preemergence applications.
3. Begin to fill sprayer tank or premix tank with clean water and engage agitator. Agitation must be continued throughout the entire mixing and spraying procedure.
4. When the sprayer or premix tank is half full of water, add AMS and agitate until completely dispersed.
5. Next add Quartz™ 4L slowly and agitate until completely dissolved. Wait at least 1 minute after the last of the Quartz™ 4L has been added to the tank to allow for complete dispersion. A longer agitation period may be required to disperse Quartz™ 4L when using cold water from sources such as deep drilled wells.
6. If tank mixing, add the tank mix product next.
7. Finally, add adjuvant and UAN, if needed, and then continue to fill tank to desired level with water.

WEEDS CONTROLLED

Quartz™ 4L applied as directed in this label will control or partially control the weeds listed in Tables 1 and 2.

Where reference is made to weeds partially controlled, partial control can either mean erratic control (good to poor) or consistent control at a level below that generally considered acceptable for commercial weed control.

For best postemergence results, apply Quartz™ 4L to actively growing weeds. Dry weather following preemergence application of Quartz™ 4L may reduce residual weed control effectiveness. If irrigation is available, apply ½ to 1 inch of water after preemergence application. If irrigation is not available, a uniform shallow cultivation is recommended as soon as weeds emerge.

Quartz™ 4L applied alone or in mixture with atrazine will not provide consistent or effective control of weeds identified as resistant to postemergence HPPD inhibiting herbicides.

Refer to the crop sections on this label for specific rates and use directions.

Table 1. Weeds Controlled With Postemergence Applications of Quartz™ 4L

Weed Common Name	Weed Scientific Name	Quartz™ 4L 3 fl. oz./A	Quartz™ 4L 2.5-3.0 fl. oz./A + Atrazine ¹
		Apply to Weeds <5 Inches Tall ²	
Amaranth, palmer	<i>Amaranthus palmeri</i>	PC ³	C ³
Amaranth, powell	<i>Amaranthus powellii</i>	C	C
Amaranth, spiny	<i>Amaranthus spinosus</i>	C	C
Atriplex	<i>Chenopodium orach</i>	C	C

(continued)

Weed Common Name	Weed Scientific Name	Quartz™ 4L 3 fl. oz./A	Quartz™ 4L 2.5-3.0 fl. oz./A + Atrazine ¹
		Apply to Weeds <5 Inches Tall ²	
Broadleaf signalgrass	<i>Urochloa platyphylla</i>	C ³	C ³
Buckwheat, wild	<i>Polygonum convolvulus</i>	PC	PC
Buffalobur	<i>Solanum rostratum</i>	C	C
Burcucumber	<i>Sicyos angulatus</i>	PC	C ³
Carpetweed	<i>Mollugo verticillata</i>	C	C
Carrot, wild	<i>Daucus carota</i>	PC	C
Chickweed, common	<i>Stellaria media</i>	C	C
Cocklebur, common	<i>Xanthium strumarium</i>	C	C
Crabgrass, large	<i>Digitaria sanguinalis</i>	C ³	C ³
Dandelion	<i>Taraxacum officinale</i>	NC	PC
Dock, curly	<i>Rumex crispus</i>	PC	PC
Galinsoga	<i>Galinsoga parviflora</i>	C	C
Hemp	<i>Cannabis sativa</i>	C	C
Horsenettle	<i>Solanum carolinense</i>	PC	C
Jimsonweed	<i>Datura stramonium</i>	C	C
Horseweed (marestalk)	<i>Conyza canadensis</i>	PC	C
Knotweed, prostrate	<i>Polygonum aviculare</i>	PC	PC
Kochia	<i>Kochia scoparia</i>	PC ³	C ³
Lambsquarters, common	<i>Chenopodium album</i>	C	C
Mallow, Venice	<i>Hibiscus trionum</i>	NC	C
Morningglory, entireleaf	<i>Ipomoea hederacea</i>	PC	C
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC	C
Morningglory, pitted	<i>Ipomoea lacunosa</i>	PC	C
Mustard, wild	<i>Brassica kaber</i>	C	C
Nightshade, black	<i>Solanum nigrum</i>	C	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C	C
Nightshade, hairy	<i>Solanum sarrachoides</i>	C	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	PC	PC
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C	C
Pigweed, tumble	<i>Amaranthus albus</i>	C	C
Pokeweed, common	<i>Phytolacca americana</i>	PC	PC
Potatoes, volunteer	<i>Solanum spp.</i>	C	C
Pusley, Florida	<i>Richardia scabra</i>	C ³	C ³
Ragweed, common	<i>Ambrosia artemisiifolia</i>	PC	C
Ragweed, giant	<i>Ambrosia trifida</i>	C ³	C
Sesbania, hemp	<i>Sesbania exaltata</i>	C	C
Sida, prickly (teaweed)	<i>Sida spinosa</i>	NC	C ³
Smartweed, ladythumb	<i>Polygonum persicaria</i>	C ³	C
Smartweed, pale	<i>Polygonum lapathifolium</i>	C ³	C

(continued)

Weed Common Name	Weed Scientific Name	Quartz™ 4L 3 fl. oz./A	Quartz™ 4L 2.5-3.0 fl. oz./A + Atrazine¹
		Apply to Weeds <5 Inches Tall²	
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C³	C
Sunflower, common	<i>Helianthus annuus</i>	C	C
Thistle, Canada	<i>Cirsium arvense</i>	NC	PC
Veilvetleaf	<i>Abutilon theophrasti</i>	C	C
Waterhemp, common	<i>Amaranthus rudis</i>	C³	C
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C³	C

¹Quartz™ 4L tank mixture with atrazine is approved only for use on corn and sugarcane.

²Under certain situations weeds can be controlled at larger than listed sizes, however to protect crop yield, manage weed resistance and provide consistent control, treat weeds before they exceed 5 inches in height.

³Apply before weed exceeds 3 inches in height.

C = Control PC = Partial Control NC = Not Controlled

Table 2. Weeds Controlled With Preemergence Applications of Quartz™ 4L

Common Name	Scientific Name	Quartz™ 4L Applied Alone	Quartz™ 4L + Atrazine¹
Amaranth, palmer	<i>Amaranthus palmeri</i>	C	C
Amaranth, powell	<i>Amaranthus powellii</i>	C	C
Amaranth, spiny	<i>Amaranthus spinosus</i>	C	C
Broadleaf signalgrass	<i>Urochloa platyphylla</i>	PC	PC
Buffalobur	<i>Solanum rostratum</i>	C	C
Burclover, California	<i>Medicago polymorpha</i>	C	-
Carpetweed	<i>Mollugo verticillata</i>	C	C
Carrot, wild	<i>Daucus carota</i>	C	-
Chickweed, common	<i>Stellaria media</i>	C	C
Chickweed, mouseear	<i>Cerastium vulgatum</i>	C	-
Cocklebur, common	<i>Xanthium strumarium</i>	PC	C
Crabgrass, large	<i>Digitaria sanguinalis</i>	PC	PC
Dandelion, common (seedling)	<i>Taraxacum officinale</i>	C	-
Deadnettle, purple	<i>Lamium purpureum</i>	C	-
Dock, curly	<i>Rumex crispus</i>	C	-
Eveningprimrose, cutleaf	<i>Oenothera laciniata</i>	C	-
Fiddleneck, coast	<i>Amsinckia intermedia</i>	C	-
Filaree, redstem	<i>Erodium cicutarium</i>	C	-
Filaree, whitestem	<i>Erodium moschatum</i>	C	-
Fleabane, hairy	<i>Conyza bonariensis</i>	C	-
Galinsoga	<i>Galinsoga parviflora</i>	C	C
Geranium, Carolina	<i>Geranium carolinianum</i>	C	-
Groundcherry, smooth	<i>Physalis subglabrata</i>	C	-
Groundsel, common	<i>Senecio vulgaris</i>	C	-
Henbit	<i>Lamium amplexicaule</i>	C	-
Horsenettle	<i>Solanum carolinense</i>	PC	-
Horseweed/marestail	<i>Conyza canadensis</i>	C	-

(continued)

Common Name	Scientific Name	Quartz™ 4L Applied Alone	Quartz™ 4L + Atrazine ¹
Jimsonweed	<i>Datura stramonium</i>	C	C
Kochia	<i>Kochia scoparia</i>	PC	C
Lambsquarters, common	<i>Chenopodium album</i>	C	C
Lettuce, prickly	<i>Lactuca serriola</i>	C	-
Mallow, common	<i>Malva neglecta</i>	C	-
Mayweed, chamomile	<i>Anthemis cotula</i>	C	-
Morningglory, entireleaf	<i>Ipomoea hederacea</i>	PC	C
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	PC	C
Morningglory, pitted	<i>Ipomoea lacunosa</i>	PC	C
Nettle, burning	<i>Urtica urens</i>	C	-
Nightshade, eastern black	<i>Solanum ptycanthum</i>	C	C
Nightshade, hairy	<i>Solanum sarrachoides</i>	C	C
Pansy	<i>Viola tricolor</i>	C	-
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C	C
Pigweed, tumble	<i>Amaranthus albus</i>	C	C
Pineappleweed	<i>Matricaria matricariodes</i>	C	-
Puncturevine, common	<i>Tribulus terrestris</i>	C	-
Purslane, common	<i>Portulaca oleracea</i>	C	-
Pusley, common	<i>Richardia scabra</i>	PC	-
Ragweed, common	<i>Ambrosia artemisiifolia</i>	C	C
Ragweed, giant	<i>Ambrosia trifida</i>	PC	C
Redmaids	<i>Calandria caulescens</i>	C	-
Rocket, London	<i>Sisymbrium irio</i>	C	-
Shepherd's-purse	<i>Capsella bursa-pastoris</i>	C	-
Smartweed, ladysthumb	<i>Polygonum persicaria</i>	C	C
Smartweed, pale	<i>Polygonum lapathifolium</i>	C	C
Smartweed, Pennsylvania	<i>Polygonum pensylvanicum</i>	C	C
Sowthistle, annual	<i>Sonchus oleraceus</i>	C	-
Spanishneedles	<i>Bidens bipinnata</i>	C	-
Sunflower, common	<i>Helianthus annuus</i>	PC	C
Swinecress	<i>Coronopus didymus</i>	C	-
Tassefflower, red	<i>Emilia sonchifolia</i>	C	-
Velvetleaf	<i>Abutilon theophrasti</i>	C	C
Waterhemp, common	<i>Amaranthus rudis</i>	C	C
Vetch, common	<i>Vicia sativa</i>	C	-
Vetch, purple	<i>Vicia benghalensis</i>	PC	-
Waterhemp, tall	<i>Amaranthus tuberculatus</i>	C	C
Willowherb, panicle	<i>Epilobium brachycarpum</i>	C	-

¹Quartz™ 4L tank mixture with atrazine is approved only for use on corn grain sorghum and sugarcane. Refer to the crop sections on this label for specific use directions.

C = Control PC = Partial Control

ROTATIONAL CROPS

When Quartz™ 4L is applied as directed on this label, follow the crop rotation intervals in Table 3. If Quartz™ 4L is tank mixed with other products, follow the most restrictive product's crop rotation interval.

Table 3. Time Interval Between Quartz™ 4L Application and Replanting or Planting of Rotational Crop

Crop	Replant/Rotational Interval
Asparagus Corn (all types) Cranberry Flax Kentucky bluegrass grown for seed Millet, pearl Oats Rhubarb Ryegrass (perennial and annual) grown for seed Sorghum (grain and sweet) Sugarcane Tall fescue grown for seed	Anytime
Small grain cereals including wheat, barley and rye	4 Months
Alfalfa Blueberry Canola Cotton Currant Lingonberry Okra Peanuts Peas* Potato Rice Snap beans* Soybeans Sunflowers Tobacco	10 Months
Cucurbits Dry beans Red clover Sugar beets All other rotational crops	18 Months

*Plant these rotational crops only if the following criteria below have been met. If all criteria are not met, plant peas and snap beans a minimum of 18 months following Quartz™ 4L application:

- A minimum of 20" of rainfall plus irrigation has been received between application and planting of the rotational crop.
- Soil pH is 6.0 or greater.
- Application of Quartz™ 4L at 3 fl. oz./A or less applied no later than June 30 the year preceding rotational crop planting.
- No other HPPD herbicides (e.g., Mesotrione 45C® Xtra, Halex® GT, Lexar® EZ, Lumax® EZ, Zemax®, Armezom™, Balance® Flex, Capreno®, Corvus®, Impact®, Laudis®, or Quartz™ 4L) were applied the year prior to planting peas and snap beans.

ROTATIONAL CROP RESTRICTION:

- Do not plant peas or snap beans on sand, sandy loam or loamy sand soils in Minnesota or Wisconsin.

CROP USE DIRECTIONS

CORN

Quartz™ 4L may be applied by ground for preemergence or postemergence weed control in field corn, seed corn, yellow popcorn, and sweet corn.

Quartz™ 4L may also be applied aerially for preemergence or postemergence weed control only in the following states: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Refer to seed company recommendations for use on field corn inbred lines. Special adjuvant restrictions must be followed for postemergence applications of Quartz™ 4L in yellow popcorn or sweet corn (see the SPRAY ADDITIVES section of this label).

Postemergence applications (after crop emergence) of Quartz™ 4L may cause crop bleaching in some yellow popcorn and sweet corn hybrids. Crop bleaching is typically transitory and has no effect on final yield or quality. However, herbicide sensitivity in yellow popcorn and sweet corn varies widely, and all yellow popcorn and sweet corn hybrids have not been tested. Contact your popcorn or sweet corn company, Fieldman, or University Specialist about hybrid recommendations before making a postemergence application of Quartz™ 4L to yellow popcorn or sweet corn. Do not include nitrogen based adjuvants (UAN or AMS) when making postemergence applications of Quartz™ 4L to yellow popcorn or sweet corn.

Temporary crop response (transient bleaching) from postemergence applications to field corn may occur under extreme weather conditions or when the crop is suffering from stress. Field corn quickly outgrows these effects and develops normally.

CORN RESTRICTIONS:

- Do not apply more than a total of 7.7 fl. oz. (0.24 lb. mesotrione active ingredient) of Quartz™ 4L per acre per year.
- Do not make more than 2 applications of Quartz™ 4L per year.
- Do not exceed 3.0 fl. oz. (0.094 lb. a.i./A) in a single postemergence application.
- Do not make the second application of Quartz™ 4L within 14 days of the first application.
- Do not feed or harvest forage, grain, or stover within 45 days after application.
- Do not apply Quartz™ 4L to white popcorn or ornamental (Indian) corn.

Apply Quartz™ 4L for the control of broadleaf and grass weeds listed in Tables 1 and 2.

Corn may be treated up to 30 inches tall or up to the 8-leaf stage of corn growth.

QUARTZ™ 4L USED ALONE – POSTEMERGENCE

Apply Quartz™ 4L at 3.0 fl. oz./A per application. Always add an appropriate adjuvant to the spray tank (see the SPRAY ADDITIVES section of this label).

For best results, apply Quartz™ 4L to actively growing weeds. For a list of weeds controlled see Table 1. Susceptible weeds which emerge soon after application of Quartz™ 4L may be controlled after they absorb the herbicide from the soil. Quartz™ 4L will not control most grass weeds.

Two postemergence applications of Quartz™ 4L may be made with the following restrictions.

RESTRICTIONS FOR POSTEMERGENCE APPLICATION TO CORN:

- Only one postemergence application may be made if Quartz™ 4L has been applied preemergence.
- Do not exceed a total of two applications per year.
- Do not exceed a total of 7.7 fl. oz./A (0.24 lb. a.i./A) of Quartz™ 4L per year.
- Do not make the second application within 14 days of the first application.
- Do not exceed a total of 6.0 fl. oz./A (0.19 lb. a.i./A) for the two postemergence applications.
- Do not harvest forage, grain, or stover within 45 days after application.

Application of Quartz™ 4L at rates less than 3.0 fl. oz./A (0.094 lb. a.i./A) postemergence may result in incomplete weed control and loss of residual control.

If Quartz™ 4L is applied postemergence to ground that received a preemergence application of a mesotrione-containing herbicide, atrazine must be tank mixed with Quartz™ 4L.

If atrazine is mixed with Quartz™ 4L, do not apply to corn that is more than 12 inches in height.

Corn may be treated up to 30 inches tall or up to the 8-leaf stage of corn growth.

QUARTZ™ 4L USED ALONE – PREEMERGENCE

Apply Quartz™ 4L alone at 6.0-7.7 fl. oz./A (0.188-0.24 lb. a.i./A) by ground sprayers in a spray volume of 10-30 gals. of water (up to 80 gals. if applied with liquid fertilizers) per acre for broadleaf weed control. For a list of weeds controlled, refer to Table 2. Quartz™ 4L may be tank mixed with preemergence grass herbicides for grass control. Refer to the tank mix section for a list of partners.

QUARTZ™ 4L TANK MIXTURES FOR CORN

Quartz™ 4L may be tank mixed with other registered herbicides for improved spectrum of weed control in burndown, preemergence or postemergence applications. Additionally these tank mixtures can be used to include a different mode of action herbicide to help control or manage the development of resistant weed biotypes.

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Burndown Tank Mixtures in Corn

Quartz™ 4L may be applied in tank mixture with other registered herbicides for burndown plus residual weed control.

For improved broadleaf weed control with limited residual control prior to planting corn and before corn emergence, apply Quartz™ 4L at 3.0 fl. oz./A in tank mixes with Gramoxone® brands, Roundup® brands, Touchdown® brands, dicamba brands (e.g. Banvel®) and/or 2,4-D. For greater residual control, use 6.0-7.7 fl. oz./A of Quartz™ 4L (see Table 2) with the above products. Use the adjuvant system recommended by the burndown herbicide. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Preemergence Tank Mixtures in Corn

Quartz™ 4L may be applied at a rate of 5.3-7.7 fl. oz./A in tank mixture with other registered herbicides (Table 4) for preemergence residual weed control. Refer to Table 2 for a list of weeds controlled by Quartz™ 4L and Quartz™ 4L plus AAtrex® applied preemergence.

Table 4. Quartz™ 4L Tank Mixtures for Preemergence Application in Corn¹

AAtrex	Degree Xtra®	Harness Xtra® 5.6L
Bicep Lite II Magnum®	Dual II Magnum®	Keystone®
Bicep II Magnum®	Expert®	Keystone® LA
Cinch®	Fultime®	Outlook®
Cinch® ATZ	Guardman Max™	Prowl®
Cinch® ATZ Lite	Harness®	Surpass® EC
Degree®	Harness Xtra®	TopNotch®

¹Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Postemergence Tank Mixtures in Corn

The tank mixtures with Quartz™ 4L identified in Table 5 may be applied postemergence to corn (i.e., after corn has emerged). Unless specified otherwise on this label or a Syngenta supplemental label, do not apply Quartz™ 4L at less than 3.0 fl. oz./A. Application of Quartz™ 4L at rates less than 3.0 fl. oz. (0.094 lb. ai/A) postemergence may result in a loss of residual control.

Always add an appropriate adjuvant to the spray tank (see the SPRAY ADDITIVES section of this label). Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled. Not all of the tank mix pesticides listed are registered for field corn, yellow popcorn, or sweet corn.

Table 5. Quartz™ 4L Tank Mixtures for Postemergence Application in Corn

Tank-Mix Partners ¹	Directions
AAtrex® 4L AAtrex® Nine-O®	Refer to Table 1 on this label for application rates and weeds controlled.
Accent® Accent® Q	Use this mixture for additional grass control. Refer to product label for list of weeds controlled.
Basagran®	Use this mixture for additional broadleaf weed control. Refer to product label for list of weeds controlled.
Basis® Basis Gold®	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Bicep II Magnum Bicep Lite II Magnum	When using these tank mixtures, it is recommended to leave the nitrogen based adjuvant (UAN or AMS) out of the mixture or apply as a post-directed spray to minimize contact with crop foliage. To further reduce the risk of crop injury, the user may also leave out the crop oil concentrate (COC), or replace it with a nonionic surfactant (NIS). In all cases, the control of emerged weeds may be reduced somewhat due to less than optimum adjuvant effect or weed coverage.
Buctril® Moxly®	Use this mixture for additional broadleaf weed control. Add Buctril (2 lb./gal.) or Moxly (2 lb./gal.) or Buctril (4 lb./gal.) at a rate specified on the label.
Expert	For use only in glyphosate tolerant corn (e.g. Agrisure® GT, Roundup Ready®). Application of this mixture to a corn hybrid that is not glyphosate tolerant will result in crop death. Do not add urea ammonium nitrate (UAN) or methylated seed oil (MSO) type adjuvants to this tank mixture or crop injury may occur.
Ignite® Ignite® 280 SL	Use this tank mixture only on corn designated as LibertyLink® or warranted as being tolerant to glufosinate. Application of this mixture to a corn hybrid that is not glufosinate tolerant will result in severe crop injury or death. Do not use crop oil concentrate (COC) as an adjuvant for this mixture or severe crop injury may occur.
Lightning®	For use only on corn designated as Clearfield® corn or warranted by BASF as being tolerant to Lightning Herbicide. Application of this mixture to a corn hybrid that is not Lightning tolerant will result in severe crop injury or death. Do not use a Methylated Seed Oil (MSO), or an MSO blend with this mixture or severe crop injury may result.
Northstar®	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Peak®	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Spirit®	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Steadfast® Steadfast® ATZ Steadfast® Q	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.
Stout®	Use this mixture for additional weed control. Refer to product label for list of weeds controlled.

(continued)

Tank-Mix Partners ¹	Directions
Touchdown Roundup Solo glyphosate products	For use only in glyphosate tolerant corn (e.g. Agrisure GT, Roundup Ready). Application of this mixture to a corn hybrid that is not glyphosate tolerant will result in crop death. Add spray-grade ammonium sulfate (AMS) at a rate that delivers 8.5-17.0 lbs. of AMS/100 gallons of water. If the glyphosate product label calls for an adjuvant in addition to AMS, add a non-ionic surfactant (NIS) at 0.25-0.5% v/v (1-2 quart/100 gallons). Do not add urea ammonium nitrate (UAN), crop oil concentrate (COC), or methylated seed oil (MSO) type adjuvants to this tank mixture or crop injury may occur.

¹Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

ASPARAGUS

Quartz™ 4L can be applied broadcast or banded at a rate of 3.0-7.7 fl. oz./A to asparagus as a spring application prior to spear emergence, as a post-harvest application (after final harvest), or both.

Use the 3.0 fl. oz./A rate for postemergence control or partial control of the emerged weeds listed in Table 1. Use the 6.0-7.7 fl. oz./A rate for preemergence control or partial control of the weeds listed in Table 2. For banded applications, the application must be made to account for band width, i.e. to deliver 3.0-7.7 fl. oz. per treated acre. For the best preemergence weed control with spring applications, Quartz™ 4L must be applied after fern mowing, disking or other tillage operation but prior to asparagus spear emergence.

When making post-harvest applications, the rate applied preemergence in the spring must be taken into account so as not to exceed the 7.7 fl. oz./A/year rate limit. Post-harvest applications must be made in a way that minimizes contact with any standing asparagus spears or ferns and maximizes contact with the weeds and/or soil, e.g. by using a directed or semi-directed type application, or crop injury may occur. With post-harvest applications, the use of an adjuvant will increase the risk of crop injury.

If weeds are emerged at the time of the Quartz™ 4L application, the addition of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v or a nonionic surfactant (NIS) at the rate of 0.25% v/v is recommended. In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at the rate of 2.5% v/v or ammonium sulfate (AMS) at the rate of 8.5 lb./100 gallons of spray solution may be added for improved burndown of emerged weeds. If weeds have not yet emerged, no adjuvant is recommended.

ASPARAGUS RESTRICTIONS:

- Do not apply more than 7.7 fl. oz./A (0.24 lb. a.i./A) of Quartz™ 4L per year.
- Do not make more than two Quartz™ 4L applications per year.

BLUEGRASS, RYEGRASS (ANNUAL AND PERENNIAL) AND TALL FESCUE GROWN FOR SEED

Quartz™ 4L can be applied to bluegrass, annual ryegrass, perennial ryegrass, or tall fescue which is grown for seed. Quartz™ 4L can be applied as a preemergence application to bare soil (new seeding) or as a postemergence application to an emerged grass crop.

Preemergence Application: Apply Quartz™ 4L as a broadcast, surface spray at a rate of 6.0 fl. oz./A to a newly seeded crop. The Quartz™ 4L application must be made prior to crop and weed emergence. Rainfall or irrigation as the newly seeded grass crop emerges from the soil may increase the risk of injury from Quartz™ 4L. Grass crop injury symptoms include temporary bleaching of newly emerged leaves, or in extreme conditions, stunting. For a list of preemergence weeds controlled or partially controlled see Table 2. In addition to the weeds listed in Table 2, Quartz™ 4L applied preemergence will control manna grass.

Postemergence Application: Apply Quartz™ 4L as a broadcast postemergence spray at a rate of 3.0-6.0 fl. oz./A to emerged bluegrass, perennial ryegrass or tall fescue grown for seed. Use the 3.0 fl. oz./A rate for postemergence control or partial control of the weeds listed in Table 1. In addition to the weeds listed in Table 2, Quartz™ 4L applied postemergence will control manna grass (up to 3 tillers).

Use the 6.0 fl. oz./A rate for postemergence weed control plus extended residual weed control (see Table 2). The addition of a crop oil concentrate type adjuvant at 1% v/v or a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v is recommended. Postemergence applications of Quartz™ 4L may result in temporary bleaching of the grass crop.

In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at the rate of 2.5% v/v or ammonium sulfate (AMS) at the rate of 8.5 lb./100 gallons of spray solution may also be added for improved control of emerged weeds. The addition of UAN or AMS will improve consistency of postemergence weed control but will also increase the risk of grass crop injury, especially at Quartz™ 4L rates greater than 3.0 fl. oz./A. If grass crop injury is a concern, do not add UAN or AMS to the spray solution.

Tank mixing other pesticides with Quartz™ 4L postemergence may increase the risk of crop injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Quartz™ 4L for applications made postemergence to the crop.

GRASS GROWN FOR SEED RESTRICTIONS:

- Do not harvest the grass crop for seed or straw within 60 days following the application of Quartz™ 4L.
- Do not graze or feed forage from treated areas within 14 days following harvest of seed or straw and at least 74 days after application of Quartz™ 4L.
- Do not make more than two applications of Quartz™ 4L per year.
- Do not apply more than 6 fl. oz./A (0.187 lb. a.i./A) in a single application and not more than 9 fl. oz./A (0.28 lb. a.i./A) of Quartz™ 4L per year.
- Applications of Quartz™ 4L to grasses grown for seed species not listed on this label

BUSH AND CANEBERRIES (CROP GROUP 13-07A AND 13-07B)

Note: Not all cultivars and types of berries that are included within the Environmental Protection Agencies definition of bush and caneberreries (Crop Subgroups 13-07A and 13-07B) have been tested and shown to have adequate crop safety to Quartz™ 4L Herbicide. Those that have been tested, and are believed to be reasonably fit, are listed below along with use directions for that crop. If Quartz™ 4L is used on bush or caneberreries not listed below, severe crop injury may occur.

Quartz™ 4L may be applied as a pre-bloom post-directed spray in high bush blueberry, lingonberry, red currant, black currant, black raspberry, red raspberry, and blackberry. For a list of weeds controlled see Tables 1 and 2. Quartz™ 4L may be applied in bush or caneberrys at a rate up to 6 fl. oz./A.

If a split application weed control program is desired, 3 fl. oz./A followed by 3 fl. oz./A may be used. The use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended, but avoid using COC adjuvants that are injurious to bush or caneberry leaves.

In low bush blueberries, Quartz™ 4L may only be applied in the non-bearing year. This application may be a broadcast application. Up to 6 fl. oz./A of Quartz™ 4L may be applied in a single application, or 3 fl. oz./A followed by 3 fl. oz./A if used in a split application program. The use of a crop oil concentrate (COC) type adjuvant at 1% v/v is recommended. Applications of Quartz™ 4L during dry weather conditions and/or temperatures above 85° can cause injury to Lowbush blueberries. Applications of Quartz™ 4L can cause yellowing or necrosis of leaves and under severe conditions, leaf drop may occur especially on "Sourtop" variety blueberries.

RESTRICTIONS FOR BUSH AND CANEBERRY:

- Do not make more than two applications per crop per year.
- Do not make more than 6 fl. oz./A (0.187 lb ai/A) in total per year.
- If two applications are made, they must be made no closer than 14 days apart.
- Do not apply Quartz™ 4L to bush or caneberrys after the onset of the bloom stage or illegal residues may occur.

CITRUS FRUIT, POME FRUIT, STONE FRUIT AND TREE NUTS

Quartz™ 4L may be used for postemergence and residual control of weeds listed in Tables 1 and 2 in the following crops.

Citrus fruit (Australian desert lime, Australian finger lime, Australian round lime, Brown River finger lime, calamondin, citron, citrus hybrids, grapefruit, Japanese summer grapefruit, kumquat, lemon, lime, Mediterranean mandarin, sour orange, sweet orange, pummelo, Russell River lime, Satsuma mandarin, sweet lime, Tachibana orange, Tahiti lime, tangelo, tangerine (Mandarin), tangor, trifoliolate orange, uni9 fruit, cultivars, Pome fruit (apple, azarole, crabapple, loquat, mayhaw, medlar, pear, Asian pear, quince, Chinese quince, Japanese quince, tejocote, cultivars, varieties and/or hybrids of these)

Stone fruit (apricot, Japanese apricot, capulin, black cherry, Nanking cherry, sweet cherry, tart cherry, Chinese jujube, nectarine, peach, plum, American plum, beach plum, Canada plum, cherry plum, Chickasaw plum, Damson plum, Japanese plum, Klamath plum, prune plum, plumcot, sloe, cultivars, varieties and/or hybrids of these)

Tree nuts (African nut-tree, almond, beech nut, Brazil nut, Brazilian pine, bunya, bur oak, butternut, Cajou nut, candlenut, cashew, chestnut, chinquapin, coconut, Coquito nut, Dika nut, ginkgo, Guiana chestnut, hazelnut (filbert), heartnut, hickory nut, Japanese horse-chestnut, macadamia nut, Mongongo nut, monkey-pot, monkey puzzle nut, Okari nut, Pachira nut, peach palm nut, pecan, pequi, pili nut, pine nut, pistachio, Sapucaia nut, tropical almond, black walnut, English walnut, yellowhorn, cultivars, varieties and/or hybrids of these)

CITRUS PRECAUTIONS

1. To avoid crop injury, apply the spray to the grove or orchard floor and to the weeds, avoiding contact with crop foliage, stems or fruit. Contact of Quartz™ 4L with the crop may result in bleaching injury that is typically temporary. Use trunk guards to protect plants until adequate bark has developed.
2. Specified rates are based on broadcast treatment. For band applications around trees in fruit or nut plantings, reduce the broadcast rate of Quartz™ 4L and carrier per acre in proportion to the area actually sprayed. (See Banded Applications Section.)

CITRUS RESTRICTIONS:

- Quartz™ 4L can only be applied in pome fruit, stone fruit and nut trees that have been established for a minimum of 12 months. Quartz™ 4L can be applied in citrus trees or plantings that are less than 12 months old and are exhibiting normal growth and vigor.
- Do not apply in orchards that are stressed due to poor weather or other abiotic factors.
- Do not exceed a total of 12 fl oz per acre (0.376 lb ai/A) of Quartz™ 4L per year or in a 12-month period.
- Do not exceed 6 fl oz per acre (0.188 lb ai/A) of Quartz™ 4L for the first application.
- Do not exceed 3 applications per year or in a 12-month period.
- Allow at least 5 months between applications of Quartz™ 4L at 6 fl oz/A, and at least 6 weeks between applications of 6 fl oz/A, and subsequent applications of 3 fl oz/A. (Applications must follow one of the four programs listed in Table 6 below.)
- Do not harvest pome fruit, stone fruit or tree nuts within 30 days after application.
- Do not harvest citrus fruit within 1 day after application.
- Do not use on soils with greater than 20% gravel.
- Do not apply Quartz™ 4L through any type of irrigation system.
- Do not apply Quartz™ 4L by air.

SPRAY ADDITIVES

For application to emerged weeds, the use of crop oil concentrate (COC) type adjuvant at 1% v/v or non-ionic surfactant (NIS) at 0.25% v/v is recommended. Addition of ammonium sulfate or other nitrogen-based adjuvants will increase efficacy when used in combination with COC or NIS. For more information see Spray Additives section on this label.

Banded Applications

When applying a row or banded treatment of Quartz™ 4L, the following formula may be used to calculate the amount per acre:

$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{Amount needed per acre of field}$

Tank Mix Instructions

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Quartz™ 4L may be mixed and applied in combination with most commonly used herbicides registered for use in the approved crops in order to expand the postemergence (Gramoxone SL 2.0, Touchdown Total, Touchdown HiTech, Rely® 280 or GoalTender®) or residual (Princep®, Solicam®, Matrix®, Surflan®, GoalTender, Prowl H₂O, Karmex®, Hyvar®, Krovar® or Alion®) weed control spectrum. These tank mixtures can be used to help control or manage the development of resistant weeds. The application of mixtures or sequences of effective herbicides, with different sites of action, can provide the diversity needed for management of herbicide resistance.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled.

Weed Control (Table 1 and 2)

Quartz™ 4L provides both postemergence and preemergence control of susceptible weeds. Best control is obtained if postemergence applications are made before weeds reach 5 inches in height (Table 1) or before germination of seed for preemergence control (Table 2). Rainfall or irrigation soon after application will enhance preemergence activity.

Use Directions

Apply as a directed or shielded spray. Avoid contact with trunk surfaces, fruit or crop foliage. Do not apply when nuts or fruits are on the ground at harvest. Ensure that the soil is settled, firm and relatively free of debris at time of application. Also ensure that the soil is free of depressions around trees where rain or irrigation water can concentrate. Apply the first application of Quartz™ 4L in late fall/early winter or spring and subsequent applications utilizing one of the programs noted in the Table 6.

Table 6. Quartz™ 4L Application Programs, Rates and Intervals

Program	Application Rate (fl oz/A)			Application Interval (wk)
	1st Application	2nd Application	3rd Application	
1	6	6	-	20
2	6	3	-	6
3	6	3	3	6
4	3	3	3	6

For optimum postemergence weed control, apply Quartz™ 4L to actively growing weeds in tank mixture with burndown herbicides such as: Gramoxone SL 2.0, and glyphosate products such as: Touchdown Total or Touchdown HiTech, Rely 280 or GoalTender before weeds exceed 5 inches in height.

For effective residual weed control, Quartz™ 4L must be moved into the weed seed germination zone. For preemergence weed control, apply Quartz™ 4L before rainfall or irrigation. For optimum residual control Quartz™ 4L can be tank-mixed with herbicides such as: Princep, Solicam, Matrix, Goal Tender, Prowl, Karmex, Hyvar, Krovar or Alion, where approved for use.

Subsequent application(s) of Quartz™ 4L can be made alone or in tank mixture, with the herbicides noted above, if weed emergence occurs.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled.

Apply Quartz™ 4L in a spray volume of 10-40 gal/A.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled.

CRANBERRY

Quartz™ 4L may be applied to bearing or non-bearing cranberry beds for control or suppression of bog St. John's wort (*Hypericum boreale*), rushes (*Juncus canadensis*, *J. effusus*, *J. bufonius*, *J. tenuis*), sedges spp. (*Carex* spp.), yellow loosestrife (*Lysimachia terrestris*) and silverleaf (*Potentilla pacifica*) in addition to the weeds listed in Tables 1 and 2.

Quartz™ 4L may be applied in cranberries at a rate up to 8 fl. oz./A.

The use of a crop oil concentrate (COC) type adjuvant at 1% v/v or non-ionic surfactant (NIS) at 0.25% v/v is recommended. Quartz™ 4L may be applied through irrigation systems (chemigation) including center pivot or solid set.

RESTRICTIONS FOR CRANBERRY:

- Apply no more than two applications per crop per year
- Do not apply more than 16 fl. oz./A (0.5 lb ai/A) in total per year.
- If two applications are made, they must be made no closer than 14 days apart.
- In non-bearing cranberries, make the Quartz™ 4L application(s) after the bud break stage, but not less than 45 days before flooding in fall or winter.
- In bearing cranberries, make the Quartz™ 4L application(s) after the bud break stage, but not less than 45 days prior to flooding or harvest.
- Do not use COC adjuvants that are injurious to cranberry leaves.

CHEMIGATION – Sprinkler Irrigation Application for Cranberry Only

Check the irrigation system to ensure 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 specified rate of Quartz™ 4L herbicide into the irrigation system using a metering device that will introduce a constant flow and by distributing the product to the target areas in 0.1-0.2 acre-inch of water. In general, use the least amount of water in this range required for proper distribution and coverage.

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 specified rate of Quartz™ 4L herbicide 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.

Chemigation Use Precautions – Sprinkler Irrigation Application

1. Apply this product only through sprinkler irrigation systems including center pivot or solid set. 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. 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.
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 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 nonuniform distribution of treated water.

ADDITIONAL RESTRICTIONS FOR CRANBERRY CHEMIGATION:

- 1) Do not apply directly to water or areas where surface water is present outside the bog system.
- 2) Do not contaminate water when disposing of equipment wash water or rinsate.
- 3) Do not apply within 10 feet of surface water outside the bog system.
- 4) Do not spray to runoff.

FLAX

Quartz™ 4L may be applied preemergence in flax, i.e. after planting but before crop emergence, at a rate up to 6 fl. oz./A. For a list of weeds controlled see Tables 1 and 2. If weeds are emerged at the time of application, the use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended. In addition, a spray grade UAN (e.g., 28-0-0) at the rate of 2.5% (v/v) or AMS at the rate of 8.5 lb./100 gals. of spray solution may be added to improve the burndown of existing weeds. Applications of Quartz™ 4L to emerged flax can result in severe crop injury.

RESTRICTIONS FOR FLAX:

- Do not apply more than one application, and not more than 6 fl. oz./A, (0.187 lb ai/A) per crop or per year in flax.

OATS

Quartz™ 4L can be applied preemergence or postemergence (but not both) for weed control in oats.

For preemergence control or partial control of the weeds listed in Table 2, apply Quartz™ 4L broadcast at a rate of 6.0 fl. oz./A prior to oat emergence. For best preemergence weed control, the Quartz™ 4L application must be made prior to weed emergence.

For postemergence (after oat emergence) control or partial control of the weeds listed in Table 1, apply Quartz™ 4L at a rate of 3.0 fl. oz./A. For best results, Quartz™ 4L must be applied to emerged weeds that are less than 5" tall. Postemergence applications of Quartz™ 4L may result in temporary injury of the oat crop. Injury symptoms may include leaf bleaching, leaf burn and in extreme conditions, stunting.

If emerged weeds are present at the time of the Quartz™ 4L application, the addition of a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v or a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v is recommended. In addition to COC or NIS, a spray grade UAN (e.g. 28-0-0) at the rate of 2.5% v/v or ammonium sulfate (AMS) at the rate of 8.5 lb./100 gallons of spray solution may be added for improved weed control. If emerged weeds are not present at the time of the Quartz™ 4L application, no additives are recommended. If oat injury is a concern, eliminating the use of UAN or AMS will reduce the risk for postemergence crop injury. Additionally, the use of NIS instead of COC will also reduce the oat injury risk. However, weed control is also reduced if UAN or AMS is eliminated and when switching from COC to NIS.

Tank mixing other pesticides with Quartz™ 4L postemergence may increase the risk of injury. Avoid adding pesticides with emulsifiable concentrate (EC) type formulations to Quartz™ 4L for applications made postemergence to the crop.

RESTRICTIONS FOR OATS:

- Do not graze or feed forage from treated areas within 30 days following an application of Quartz™ 4L.
- Do not harvest oats within 50 days following the application of Quartz™ 4L.
- Do not make more than one application of Quartz™ 4L per year.
- Do not apply Quartz™ 4L preemergence (prior to oat emergence) at more than 6.0 fl. oz./A/year (0.187 lb ai/A).
- Do not apply Quartz™ 4L postemergence at more than 3.0 fl. oz./A/year.
- If the oat crop treated with Quartz™ 4L is lost or destroyed, oats may be replanted immediately. If Quartz™ 4L was applied to the lost oat crop, no additional Quartz™ 4L can be applied to the replanted oat crop.

OKRA

Quartz™ 4L can be applied as a row-middle or a hooded post-direct treatment (but not both) for weed control in okra.

Preemergence row-middle application: Apply Quartz™ 4L at a rate of 6.0 fl. oz./A as a banded application to the row middles prior to weed emergence. For this banded application, leave one foot of untreated area over the okra row or 6" to each side of the planted row. For banded applications, the application must be made to account for band width, i.e. to deliver 6.0 fl. oz. per treated acre. Injury risk is greatest on coarse textured soils (sand, sandy loam or loamy sand).

Postemergence hooded application: Apply Quartz™ 4L at a rate of 3.0 fl. oz./A as a postemergence directed application using a hooded sprayer for control or partial control of the weeds listed in Table 1. Okra must be at least 3" tall at the time of this application. It is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v be added to the spray solution. For postemergence hooded applications, the spray equipment must be set up to minimize the amount of Quartz™ 4L that contacts the okra foliage or crop injury will occur. For best postemergence results, Quartz™ 4L must be applied to actively growing weeds.

RESTRICTIONS FOR OKRA:

- Do not harvest okra within 28 days following the application of Quartz™ 4L.
- Do not apply Quartz™ 4L directly over the planted okra row or severe crop injury may occur.
- Do not make more than one application of Quartz™ 4L per okra crop.
- Do not apply Quartz™ 4L as a row-middle application at more than 6.0 fl. oz. (0.187 lb ai) per treated acre per year.
- Do not apply Quartz™ 4L as a post-directed application at more than 3.0 fl. oz. (0.093 lb ai) per acre per year.
- Do not apply Quartz™ 4L as a broadcast preemergence or broadcast postemergence application to okra or severe injury will occur.
- If the okra crop treated with Quartz™ 4L is lost or destroyed, okra can be replanted only in the soil band that was not treated with Quartz™ 4L.

PEARL MILLET

Quartz™ 4L may be applied preemergence in pearl millet, i.e. after planting but before crop emergence, at a rate up to 6 fl. oz./A. For a list of weeds controlled see Table 2. If weeds are emerged at the time of application, the use of a crop oil concentrate (COC) type adjuvant at the rate of 1% v/v is recommended. In addition, a spray grade UAN (e.g., 28-0-0) at the rate of 2.5% (v/v) or AMS at the rate of 8.5 lb/100 gals. of spray solution may be added to improve the burndown of existing weeds. Applications of Quartz™ 4L to emerged pearl millet can result in severe crop injury.

RESTRICTIONS FOR PEARL MILLET:

- Do not apply more than one application, and not more than 6 fl. oz./A (0.187 lb ai) per crop or per year in pearl millet.

RHUBARB

Quartz™ 4L can be applied prior to crop emergence for weed control in established rhubarb.

Apply Quartz™ 4L at a rate of 6.0 fl. oz./A to dormant (prior to any spring green-up) rhubarb for control or partial control of the weeds listed in Table 2. If weeds are emerged at the time of application, it is recommended that a crop oil concentrate (COC) type adjuvant at 1% v/v or a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v be added to the spray solution. Applications of Quartz™ 4L to rhubarb that is not dormant may result in a temporary bleaching symptomatology. Rainfall or irrigation after the Quartz™ 4L application may increase the risk of injury to emerging rhubarb.

RESTRICTIONS FOR RHUBARB:

- Do not harvest rhubarb within 21 days following the application of Quartz™ 4L.
- Do not make more than one application of Quartz™ 4L per year.
- Do not apply Quartz™ 4L at more than 6.0 fl. oz./A/year (0.187 lb ai).

SORGHUM (GRAIN AND SWEET)

Preemergence Application: Quartz™ 4L can be applied preemergence or preplant non-incorporated up to 21 days before planting sorghum for control or partial control of the weeds listed in Table 2.

Apply Quartz™ 4L preemergence at a rate of 6.0-6.4 fl. oz./A as a broadcast non- incorporated application prior to sorghum emergence. Applying Quartz™ 4L less than 7 days before sorghum planting will increase the risk of crop injury, especially if irrigation or rainfall is received following the application. Injury symptoms include temporary bleaching of newly emerging sorghum leaves. Applying Quartz™ 4L more than 7 days (but not more than 21) prior to planting will reduce the risk of crop injury.

If Quartz™ 4L is applied prior to planting, minimize disturbance of the herbicide treated soil barrier during the planting process in order to lessen the potential for weed emergence.

If emerged weeds are present at the time of the preemergence application, it is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v or a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v be added to the spray solution. In addition to COC or NIS, a spray grade UAN at a rate of 2.5% v/v or ammonium sulfate (AMS) at a rate of 8.5 lb./100 gallons of spray solution can be added to the spray solution.

RESTRICTIONS FOR SORGHUM PRE-EMERGENCE APPLICATION:

- Do not apply more than 6.4 fl. oz./A (0.20 lb ai/A) of Quartz™ 4L per year.
- Do not make more than one pre-emergence application per year.
- Do not apply Quartz™ 4L to emerged sorghum or severe crop injury may occur.
- Do not use Quartz™ 4L in the production of forage sorghum, sudangrass, sorghum- sudangrass hybrids, or dual purpose sorghum.
- Do not apply Quartz™ 4L to sorghum that is grown on coarse textured soils (e.g. sandy loam, loamy sand, sand).
- In the State of Texas, do not apply Quartz™ 4L to sorghum grown south of Interstate 20 (I-20) or east of Highway 277.

Post-Directed: Quartz™ 4L can be applied post-directed to grain sorghum for control or partial control of the weeds listed in Table 1. For best results, apply Quartz™ 4L to actively growing weeds.

Apply Quartz™ 4L at a rate of 3 fl. oz./A as a post-directed application when the grain sorghum is a minimum of 8 inches tall. Make the application by directing the spray between the crop rows and towards the base of the grain sorghum plant. Direct application of Quartz™ 4L onto grain sorghum foliage can result in crop injury including temporary bleaching. If crop injury does occur, newly emerging leaves following application are typically unaffected.

It is recommended that a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v or a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v be added to the spray solution. In addition to COC or NIS, a spray grade Urea Ammonium Nitrate (UAN) at a rate of 2.5% v/v or ammonium sulfate (AMS) at a rate of 8.5 lb./100 gallons of spray solution can be added to the spray solution.

Quartz™ 4L may be tank mixed with other herbicides registered for grain sorghum for improved spectrum of weed control. Additionally, these tank mixtures can be used to include a herbicide with a different mode of action to help control or manage the development of resistant weed biotypes.

RESTRICTIONS FOR SORGHUM POST-DIRECTED APPLICATIONS:

- Do not apply more than one post-directed application of Quartz™ 4L.
- Do not apply more than 3.0 fl. oz./A (0.093 lb ai/A) of Quartz™ 4L post-directed and not more than 6.4 fl. oz./A (0.187 lb ai/A) of Quartz™ 4L per grain sorghum crop year.
- Do not apply Quartz™ 4L broadcast over-the-top to emerged sorghum or severe crop injury may occur.
- Do not harvest grain sorghum for forage for 30 days following application.
- Do not harvest for grain or stover for 60 days following application.
- Do not apply Quartz™ 4L after the sorghum seedhead has begun to emerge.
- Do not use Quartz™ 4L in the production of forage sorghum, sudangrass, or sorghum-sudangrass hybrids.

SUGARCANE

Quartz™ 4L can be applied by ground for preemergence, postemergence over-the-top or postemergence directed weed control in sugarcane.

Quartz™ 4L may also be applied aerially for preemergence or postemergence weed control only in the following states: Florida, Louisiana and Texas.

Preemergence Applications: Apply Quartz™ 4L for preemergence weed control at 6.0-7.7 fl. oz./A after the planting of plant-cane or after harvest of ratoon-cane. For a list of weeds controlled preemergence, refer to Table 2. If some weeds are already emerged at the time of application, add a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v or a nonionic surfactant (NIS) type adjuvant at a rate of 0.25% v/v to the spray solution. In addition to COC or NIS, a spray grade UAN at a rate of 2.5% v/v or ammonium sulfate (AMS) at a rate of 8.5 lb./100 gallons of spray solution can be added to the spray solution. For improved preemergence weed control, AAtrex or Evik® can be tank mixed with Quartz™ 4L. Refer to the tank mix partner label for specific rates and use directions.

Postemergence Applications: Apply Quartz™ 4L postemergence at 3.0 fl. oz./A for control of the weeds listed in Table 1. Postemergence applications may be made as a post-over-the-top or as a post-directed spray to the base of the sugarcane. If a preemergence application was made earlier in the season, only one postemergence application can be made. If no preemergence application was made earlier in the season, both a post-over-the-top and a post-directed application can be made. For best results, Quartz™ 4L must be applied to actively growing weeds.

For postemergence applications, it is recommended that a crop oil concentrate (COC) type adjuvant at a rate of 1% v/v or a nonionic surfactant (NIS) type adjuvant be added to the spray solution. In addition to COC or NIS, the use of a spray grade UAN (e.g. 28-0-0) at 2.5% v/v or ammonium sulfate (AMS) at a rate of 8.5 lb./100 gallons of spray solution can be added for improved control of weeds.

For additional postemergence weed control, Quartz™ 4L can be tank mixed with atrazine, Asulox® and/or Envoke®. Refer to the tank mix product labels for specific rates and use directions.

RESTRICTIONS FOR SUGARCANE:

- Do not apply more than 7.7 fl. oz./A (0.24 lb ai/A) of Quartz™ 4L as a preemergence application.
- Do not apply more than 3.0 fl. oz./A (0.093 lb ai/A) of Quartz™ 4L in a postemergence application.
- Do not make more than two applications of Quartz™ 4L per year. If a preemergence application of Quartz™ 4L is made, only one postemergence application is allowed.
- Do not make two Quartz™ 4L applications less than 14 days apart.
- Do not apply more than 10.7 fl. oz./A of Quartz™ 4L per year.
- Do not harvest sugarcane within 114 days following a post-over-the-top application of Quartz™ 4L (114 day PHI).
- Do not harvest sugarcane within 100 days following a post-directed application of Quartz™ 4L (100 day PHI).

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Keep container tightly closed when not in use. Do not store near seed, fertilizers, or foodstuffs. Can be stored at temperatures as low as 20 F. Keep away from heat and flame.

PESTICIDE DISPOSAL: Open dumping is prohibited. Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER HANDLING

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or 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 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 puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

WARRANTY AND LIMITATION OF DAMAGES

Conditions of Sale: To the extent consistent with applicable law, Sipcam Agro USA, Inc. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in accordance with the directions under normal conditions of use. This warranty does not extend to the use of this product contrary to label instructions, or under conditions not reasonably foreseeable to Sipcam Agro USA, Inc. Sipcam Agro USA, Inc. disclaims all other warranties, express or implied. To the extent consistent with applicable law, Sipcam Agro USA, Inc. shall not be liable for consequential, special, or indirect damages resulting from the use or handling of this product, and Sipcam Agro USA, Inc.'s sole liability and buyer's and user's exclusive remedy shall be limited to the refund of the purchase price. Buyer and user acknowledge and assume all risks and liability resulting from handling, storage and use of this product. Sipcam Agro USA, Inc. does not authorize any agent or representative to make any other warranty, guarantee or representation concerning this product.

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