

66222-245

12/21/2012

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs
Registration Division (7505P)
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, D.C. 20460

EPA Reg. Number: 66222-245

Date of Issuance: DEC 21 2012

NOTICE OF PESTICIDE:

[x] Registration
[ ] Reregistration
(under FIFRA, as amended)

Term of Issuance: Unconditional

Name of Pesticide Product: MANA 14223

Kristen B. Knox
Makhteshim Agan of North America, Inc
3120 Highwoods Blvd #100
Raleigh, NC 27604

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

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

This product is conditionally registered in accordance with FIFRA sec. 3(c)(5) provided that you:

- 1. Submit and/or cite all data required for registration/re-registration review of your product when the Agency requires all registrants of similar products to submit data.
2. Revise the EPA Reg. No. to 66222-245
3. Assure that the establishment number and net content are also added to the label.
4. Make the following label revisions:
- Swap the order of the If in Eyes and If Swallowed statements in the First Aid box
- Under the Precautionary statements:
- Remove the sentence, "Avoid contact with eyes or clothing."
- Remove the protective clothing description, as it is reiterated in the PPE section
- In the PPE section, add the following after "chemical-resistant gloves": (such as Barrier Laminate, Butyl Rubber, Nitrile Rubber, Viton or other Selection Category F)"
- On page 12, correct the lb a.i./A for the 4.95 pints rate to 3.25 lb ai.
5. Within 12 months from the date of this registration, submit storage stability (830.6317) and corrosion characteristics (830.6320) data. It is recommended that the observation be made at 0,3,6,9 and 12 month intervals.

Comments Continued on Page 2

Kathryn V. Montague
Product Manager 23
Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

[Handwritten signature of Kathryn V. Montague]

Date: DEC 21 2012

66222-245

Page 2

A stamped copy of the label is enclosed for your records. Submit one (1) copy of the final printed label before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancelation in accordance with FIFRA sec. 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

If you have any questions regarding this notice, please contact Grant Rowland at (703) 347-0254 or at [rowland.grant@epa.gov](mailto:rowland.grant@epa.gov).

Jacket 3/27

GROUP 5 15 HERBICIDES

# MANA 14223

- Herbicide
- For use in (potatoes), (tomatoes) and (soybeans) for control of certain grasses and broadleaf weeds

ACTIVE INGREDIENT:	% BY WT.
Metolachlor*	58.52%
Metribuzin**	13.93%
<b>OTHER INGREDIENTS***</b>	<u>27.55%</u>
<b>TOTAL:</b> .....	100.00%

Contains 5.25 lbs. of metolachlor and 1.25 lbs. of metribuzon per gallon.

\*CAS No. 51218-45-2

\*\*\*Contains 15.13% petroleum distillates.

\*\*CAS No. 21087-64-9

**ACCEPTED**  
**with COMMENTS**  
**In EPA Letter Dated:**  
**DEC 21 2012**  
 Under the Federal Insecticide,  
 Fungicide, and Rodenticide Act  
 as amended, for the pesticide  
 registered under EPA Reg. No.

66222-245

## 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 don't understand the label, find someone to explain it to you in detail).*

Manufactured for:  
 Makhteshim Agan of North America, Inc. (MANA)  
 3120 Highwoods Blvd., Suite 100  
 Raleigh, NC 27610

EPA Reg. No. 66222-~~xxx~~ 245

EPA Est. No. \_\_\_\_\_

**NET CONTENTS: 2.5 GALLONS**

### FIRST AID

<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice</li> </ul>
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>• Do not induce vomiting unless told to do so by a poison control centre or doctor.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not give anything by mouth to an unconscious person.</li> <li>• Call a poison control center or doctor for further treatment advice</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li> </ul>

9/27

- Call a poison control center or doctor for further treatment advice.

**NOTE TO PHYSICIAN**

May pose an aspiration pneumonia hazard. Contains petroleum distillate.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact Prozar at 1-877-250-9291 for emergency medical treatment information.

**NOTE: It is illegal to sell, use or distribute MANA 14223 within, or into, Nassau County or Suffolk County, New York.**

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**WARNING.** Causes skin irritation. Harmful if swallowed. Cause moderate eye irritation. Do not get on skin or on clothing. ~~Avoid contact with eyes or clothing. Wear coveralls over short-sleeved shirt and short pants, socks and chemical resistant footwear.~~ Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**Applicators and other handlers must wear:**

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves (selection cat. F)
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

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

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 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**

**For Terrestrial Uses Only.** 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 waters or rinsate. Do not apply when weather conditions favor drift from target area.

**GROUND WATER ADVISORY**

Metolachlor has the potential to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

Metribuzin is a chemical which can travel (seep or leach) through soil and can contaminate ground water which may be used as drinking water. Metribuzin has been found in ground water as a result of agricultural use. Users are advised not to apply metribuzin where the water table (ground water) is close to the surface and where the soils are very permeable, i.e., well-drained soils such as loamy sands. Your local agricultural agencies can provide further information on the type of soil in your area and the location of ground water.

**SURFACE WATER ADVISORY**

Metolachlor has the potential to contaminate surface water through ground spray drift. Under some conditions, metolachlor may also have a high potential for runoff into surface water (primarily via

5/27

dissolution in runoff water) for several months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, and areas overlaying extremely shallow ground water, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlaying tile drainage systems that drain to surface water.

**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 24 hours.** Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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, wear:

- Coveralls.
- Chemical-resistant gloves such as nitrile, butyl, neoprene and/or barrier laminate.
- Shoes plus socks.

**IMPORTANT: FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES. MANA 14223 IS NOT FOR SALE, USE, OR DISTRIBUTION IN NEW YORK'S NASSAU OR SUFFOLK COUNTIES.**

**SPRAY DRIFT MANAGEMENT**

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the **Spray Drift Reduction Advisory Information** section below.

**Spray Drift Reduction Advisory Information**

**Importance of Droplet Size**

The most effective way to reduce drift potential is to apply large droplets (> 150 - 200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made

6/27

improperly or under unfavorable environmental conditions (See **Wind, Temperature and Humidity, and Temperature Inversions** sections of this label).

**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. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **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.
- **Number of Nozzles** - Use the minimum number of nozzles 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.
- **Boom Length** - For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.
- **Application Height** - Applications should not be made 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.

**Swath Adjustment**

When applications are made with a crosswind, the swath will be displaced downward. 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. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

**Wind**

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

**Temperature and Humidity**

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

**Temperature Inversions**

Application should not occur during a temperature inversion because of potential drift. 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 variable winds common during inversions. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, 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**

Apply MANA 14223 only when the potential for drift to adjacent sensitive areas (e.g., non-target crops, bodies of water, residential areas, known habitat for threatened or endangered species) is minimal (e.g., when wind is blowing away from the sensitive areas). Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

**CHEMIGATION APPLICATION**

MANA 14223 may be applied through a center pivot irrigation system only. Do not apply MANA 14223 through any other type of irrigation system. See the **Center Pivot Application** section of this label for more information.

**INTEGRATED PEST MANAGEMENT**

MANA 14223 may be used as part of an Integrated Pest Management (IPM) program that can include biological, cultural, and genetic practices aimed at preventing economic pest damage. Application of this product should be based on IPM principles and practices including field scouting or other detection methods, correct target pest

identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.

**RESISTANCE**

When herbicides that affect the same biological site of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. Adequate control of these resistant weed biotypes cannot be expected. If weed control is unsatisfactory, it may be necessary to retreat the problem area using a product affecting a different site of action.

To better manage herbicide resistance through delaying the proliferation and possible dominance of herbicide resistant weed biotypes, it may be necessary to change cultural practices within and between crop seasons such as using a combination of tillage, retreatment, tank-mix partners and/or sequential herbicide applications that have a different site of action. Weed escapes that are allowed to go to seed will promote the spread of resistant biotypes.

It is advisable to keep accurate records of pesticides applied to individual fields to help obtain information on the spread and dispersal of resistant biotypes. Consult your agricultural dealer, consultant, applicator, and/or appropriate state agricultural extension service representative for specific alternative cultural practices or herbicide recommendations available in your area.

**PRODUCT INFORMATION**

**Mode of Action:** MANA 14223 is a selective herbicide for the control or suppression of certain grass, broadleaf and sedge weeds in potatoes, tomatoes and soybeans. MANA 14223 is a mixture of the active ingredients metolachlor and metribuzin. Metolachlor is a biosynthesis inhibitor (Group 15 mode of action) preventing cell division in emerging weeds. Metribuzin is a photosynthetic inhibitor (Group 5 mode of action) leading to disruption of photosynthesis and ultimately plant death.

**Activation:** MANA 14223 must be activated by a small amount of soil moisture following application. In areas of low rainfall, a preemergence application should be followed with light irrigation of 0.25 to 0.5 inch of water. Do not apply heavy irrigation immediately after application. As with many surface-applied herbicides, weed control and crop tolerance may vary with rainfall and/or soil texture.

**Crop Rotation:** See the **Crop Rotation** section of this label for specific instructions on crop rotation. Crop injury may result if crop rotation guidelines are not followed.

**Replanting:** If replanting is necessary in fields previously treated with MANA 14223, the field may be replanted to potatoes, tomatoes, or soybeans. Before replanting, refer to the specific crop use sections for directions, precautions and restrictions about replanting.

**Application Rate Ranges:** Where a rate range is provided within a soil texture or organic matter classification, use a lower rate on soils that are relatively coarse-textured and/or low in organic matter. Use a higher rate on soils that are relatively fine-textured and/or high in organic matter.

**MIXING INSTRUCTIONS AND EQUIPMENT CLEANUP**

**General:** Prepare no more spray mixture than is needed for the immediate operation. Thoroughly clean the spray equipment before using MANA 14223. Vigorous agitation is necessary to maintain uniformity of the spray mixture. Maintain maximum agitation throughout the spraying operation. Do not allow the spray mixture to stand overnight in the spray tank. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

**Mixing and Loading:** Use care when mixing or loading MANA 14223 to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates. Check-valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

MANA 14223 may not be mixed or loaded within 50 ft. of perennial or intermittent streams and rivers, natural or impounded lakes and reservoirs. MANA 14223 may not be mixed/loaded or used within 50 ft. of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of MANA 14223 into or from pesticide handling or application equipment or containers within 50 ft. of any well are prohibited, unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment

rinse or wash water, and rain water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

**Mixing MANA 14223 in Water or In Liquid Fertilizers:** When mixing MANA 14223 alone, add 1/3 of the required amount of water or fluid fertilizer to the spray or mixing tank and then, with the agitator running, add MANA 14223 to the spray tank. Continue agitation while adding the remainder of the water or fluid fertilizer. Begin application of the spray solution after MANA 14223 has completely dispersed in the water or fluid fertilizer. Maintain agitation until all of the mixture has been applied.

When mixing MANA 14223 with tank mixtures, add 1/3 of the required amount of water or fluid fertilizer to the mix tank. Start the agitator running before adding any tank mix partners. In general, tank mix partners should be added in this order: products packaged in water-soluble packaging, wettable powders, wettable granules (dry flowables); liquid flowables, liquids such as MANA 14223, and emulsifiable concentrates. Always allow each tank mix partner to become fully dispersed before adding the next product. Provide sufficient agitation while adding the remainder of the water. Maintain agitation until all of the mixture has been applied.

**Important:** When using MANA 14223 in tank mixtures, all products in water-soluble packaging should be added to the tank and mixed with plain water before any other tank mix partner, including MANA 14223. Allow the water-soluble packaging to completely dissolve and the product(s) to completely disperse before adding any other tank mix partner to the tank. Water-soluble packets will not properly dissolve in most spray solutions that contain fluid fertilizers.

If using MANA 14223 in a tank mixture, observe all directions for use, crop/sites, use rates, dilution ratios, precautions, and limitations that appear on the tank mix product label. No label dosage rate should be exceeded, and the most restrictive label precautions and limitations should be followed.

MANA 14223 is compatible with most common tank mix partners. However, the physical compatibility with tank mix partners should be tested before use. To determine the physical compatibility of MANA 14223 with other products, use a jar test, as described below.

**MANA 14223 Compatibility Testing:** To ensure compatibility of MANA 14223 with other pesticides, perform a jar test before tank mixing. The following test assumes a spray volume of 25 gallons per acre. For other spray volumes, make appropriate changes in the ingredients.

**Note:** Nitrogen solutions or complete fluid fertilizers may replace all or part of the water in the spray for preplant surface, preplant incorporated, or preemergence applications only. Because liquid fertilizers vary, even within the same analysis, **always check compatibility with pesticide(s) before use.** Incompatibility of tank mixtures is more common with suspensions of fertilizer and pesticides.

**Test Procedure:**

1. Add 1.0 pint of carrier (fertilizer or water) to each of two one quart jars with tight lids. **Note:** Use the same source of water that will be used for the tank mix and conduct the test at the temperature the tank mix will be applied.
2. To one of the jars, add 1/4 teaspoon or 1.2 milliliters of a compatibility agent approved for this use, such as Compex® or Unite® (1/4 teaspoon is equivalent to 2.0 pints per 100 gallons spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of pesticide(s) in their relative proportions based on recommended label rates. If more than one pesticide is used, add them separately with dry pesticides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix.
4. After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15 to 30 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture



9/27

separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (a) Slurry the dry pesticide(s) in water before addition, or (b) add 1/2 the compatibility agent to the fertilizer or water and the other 1/2 to the emulsifiable concentrate or flowable pesticide before addition to the mixture. If incompatibility is still observed, do not use the mixture.

5. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the **Storage and Disposal** section of this label.

**Equipment Cleanup After MANA 14223 Application:** Before application of MANA 14223, the spray equipment must be cleaned. Follow the cleanup procedures specified on the labels of the previously applied products. If no clean-up directions are provided, follow the steps provided below for cleaning up after spraying MANA 14223.

After application of MANA 14223 equipment cleanup is very important. Because some crops, are sensitive to low rates of MANA 14223, special attention must be given to cleaning equipment before spraying a crop other than those registered for use and on this label. Mix only as much spray solution as needed. Immediately after spraying, clean equipment thoroughly using the following procedure:

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of one gallon of household ammonia per 50 gallons of water. Many commercial spray tank cleaners may be used as well. Consult your MANA representative for a partial listing of approved tank cleaners and more information about proper tank cleaning procedures. Do not use chlorine-based cleaners such as Clorox®.
3. When available, use a pressure washer to clean the inside of the spray tank with this solution. Take care to wash all parts of the tank, including the inside top surface. 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.
4. Flush hoses, spray lines, and nozzles for at least one minute with the cleaning solution.
5. Dispose of rinsate from steps 1 to 3 as described under the **Environmental Hazards** section of the **Precautionary Statements**.
6. Repeat steps 2 to 5.
7. Remove nozzles, screens, diaphragm check valves and strainers and clean separately in the ammonia cleaning solution after completing the above procedures.
8. Rinse the complete spraying system with clean water.

**APPLICATION INSTRUCTIONS**

MANA 14223 may be applied by ground spray equipment (including center pivot) and aerial spray equipment. As discussed below, use a minimum of 10 gallons per acre of spray mixture for ground application and 2 gallons per acre for aerial application. Apply in 0.5 to 1 inch of water when using center pivot application.

Prepare no more spray mixture than is needed for the immediate operation. Clean spray equipment is very important so be sure to thoroughly clean before mixing MANA 14223. Vigorous agitation is necessary to maintain uniformity of the spray mixture. Maintain maximum agitation throughout the spraying operation. Do not allow spray mixture to stand overnight in the spray tank. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

**Ground Application:** Apply MANA 14223 alone or in tank mixtures by ground spray equipment in a minimum of 10 gallons spray mixture per acre, unless otherwise specified. Use sprayers that provide accurate and uniform application. Sprayers should be calibrated often. If MANA 14223 is applied in combination with wettable powder or dry flowable formulations, screens and strainers with a minimum 50-mesh size should be used.

If MANA 14223 is applied in a band, calculate the amount of herbicide needed for band treatment by the formula below:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{broadcast rate per acre} = \text{amount needed per acre of field}$$

10/27

**Aerial Application:** Apply MANA 14223 in water using a minimum of 2 gallons per acre. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. Make applications at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi. Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

**Center Pivot Application:** If chemigating, apply MANA 14223 only through a center pivot irrigation system. Do not apply MANA 14223 through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension 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.

**Operating Instructions for Center Pivot Application**

1. 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.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check-valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. 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.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump or piston pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.
8. Prepare a mixture with a minimum of 1 part water to 1 part herbicide(s) and inject this mixture into the center pivot system. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide in suspension.
9. Meter into irrigation water during entire period of water application.
10. Apply in 0.5 to 1 inch of water. Use the lower water volume (0.5 inch) on **coarse-textured soils** and the higher volume (1 inch) on **fine-textured soils**. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

**Important:** When chemigating with MANA 14223 through center pivot, unacceptable weed control may result if the sprinkler distribution patterns do not overlap sufficiently. In addition, if sprinkler distribution patterns overlap excessively, crop injury may result.

**Application By Impregnated Dry Bulk Granular Fertilizers:** MANA 14223 may be impregnated or coated on many dry bulk granular fertilizers and applied with the fertilizers to control weeds. When applying MANA 14223 with dry bulk fertilizers, follow all directions for use and precautions on the MANA 14223 label regarding target crops, rates per acre, soil texture, application methods, and rotational crops.

It is the responsibility of the individual and/or company selling the herbicide/fertilizer mixture to comply with all individual state regulations relating to dry bulk granular fertilizer blending, registration, labeling, and application.

Prepare the herbicide/fertilizer mixture by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray MANA 14223 onto the fertilizer must be spaced to provide

11/27

uniform spray coverage. Care should be taken to aim the spray onto the fertilizer only, avoiding the walls of the blender.

If the herbicide/fertilizer mixture is too wet, add a highly absorptive material, such as Agsorb® FG or Celatom MP-79®, or similar granular clay or diatomaceous earth materials, to obtain a dry, free-flowing mixture. Absorptive materials should be added only after the herbicide has been thoroughly blended into the fertilizer mixture. Best application results will be obtained by using a granule of 6/30 particle size or of a size similar to that of the fertilizer materials being used. Generally, less than 2% by weight of absorptive material will be needed. Avoid using more than 5% absorptive material by weight.

Calculate the amount of MANA 14223 to be used per ton of fertilizer by using the following formula:  
2,000 / pounds of fertilizer desired per acre X number of pints MANA 14223 required per acre = pints of MANA 14223 per ton of fertilizer.

**Application by Pneumatic (Compressed Air) Equipment:** High humidity, high urea concentrations, low fertilizer use rates, and dusty fertilizer may cause fertilizer mixtures to build up or plug the distributor head, air tubes, or nozzle deflector plates. To minimize buildup, premix MANA 14223 with Exxon Aromatic 200 at a rate of 2.0 to 2.5 pints per gallon of MANA 14223. Aromatic 200 is a noncombustible/nonflammable petroleum product. Aromatic 200 may be used in either a fertilizer blender or through direct injection systems. Drying agents should not be used when using Aromatic 200.

**Restrictions and Precautions:**

1. Mixtures of MANA 14223 and Aromatic 200 must be used on dry fertilizer only. Poor results or crop injury may result if these mixtures are used in water or liquid fertilizer solutions for spraying applications.
2. When impregnating MANA 14223 in a blender before application, a drier mixture can be obtained by substituting a drying agent for Aromatic 200. The use of Agsorb FG or another drying agent of 6/30 particle size is recommended.
3. Drying agents are not recommended for use with On-The-Go impregnation equipment.
4. **To avoid potential for explosion,**
  - a. Do not impregnate MANA 14223 on ammonium nitrate, potassium nitrate, or sodium nitrate, either alone or in blends with other fertilizers.
  - b. Do not combine MANA 14223 with a single superphosphate (1-20-0) or treble superphosphate (0-46-0).
  - c. Do not use MANA 14223 on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

**Application of Impregnated Dry Bulk Granular Fertilizer:** Apply 200 to 700 pounds of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Uniform application of the herbicide/fertilizer mixture is essential in order to prevent possible crop injury to subsequent rotational crops. Non-uniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil is recommended to obtain satisfactory weed control. On fine- or medium-textured soils in areas where soil incorporation is not planned, i.e., reduced-tillage situations or in some conventional till situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse-textured soils, make applications approximately 14 days prior to planting. To help avoid rotational crop injury, make applications as early as possible, since MANA 14223 impregnated onto dry bulk fertilizers can be expected to last longer in the soil than MANA 14223 applied as a spray in water or fluid fertilizer.

**PRECAUTIONS FOR MANA 14223 USE ON POTATOES, TOMATOES AND SOYBEANS**

When making an application of MANA 14223, observe all precautions and limitations on the MANA 14223 label as well as on the labels of each product that might be used in tank mixtures. Tank mixture partners must be registered in states where they are used. Refer to and follow the label for each tank mix product used.

Do not apply MANA 14223 under conditions which favor runoff or wind erosion of soil containing MANA 14223 to non-target areas.

In order to prevent off-site movement of MANA 14223 in runoff or wind erosion the following guidelines should be observed:

1. Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
2. Do not apply to impervious substrates, such as paved or highly compacted surfaces.
3. Do not use tailwater from the first flood or furrow irrigation of treated fields to treat non-target crops, unless at 0.5 inch of rainfall has occurred between application and the first irrigation.

**POTATOES (EXCEPT KERN COUNTY, CA)**

MANA 14223 may be used on potatoes for preemergence weed control if applied prior to or after potato emergence. Although MANA 14223 has some postemergence activity, the spectrum of weeds controlled, level of control and consistency of control is better when it is applied preemergence to weeds. Do not apply MANA 14223 as a preplant incorporated application because of the increased risk for crop injury. Do not rotate to food or feed crop other than listed. When used according to label directions, MANA 14223 provides control or suppression of the weeds listed in Table 1

**Table 1. Weeds Controlled (C) or Suppressed<sup>1</sup> (S) in Potatoes by MANA 14223.**

<b>ANNUAL GRASSES</b>	<b>BROADLEAVES<sup>2</sup></b>
Barley, volunteer (S)	Anoda, spurred (C)
Barnyardgrass (C)	Beggarweed, Florida (C)
Bluegrass, annual (C)	Carpetweed (C)
Crabgrass (C)	Chickweed, common (C)
Crowfootgrass (C)	Cocklebur (S)
Cupgrass, prairie (C)	Copperleaf, hophornbeam (C)
Cupgrass, southwestern (C)	Galinsoga spp. (C)
Foxtail spp. (C)	Henbit (C)
Goosegrass (C)	Jimsonweed (C)
Johnsongrass, seedling (S)	Knotweed spp. (C)
Junglerice (C)	Kochia (S)
Panicum, fall (C)	Ladythumb (C)
Panicum, Texas (S)	Lambsquarters, common (C)
Sandbur spp. (S)	Lettuce, prickly (C)
Shattercane (S)	Mallow, Venice (C)
Rice, red (C)	Mustard spp. (C)
Signalgrass, broadleaf (C)	Nightshade, black (C)
Sorghum, volunteer (S)	Nightshade, hairy (S)
Wheat, winter (S)	Pennycress, field (C)
Witchgrass (C)	Pepperweed, Virginia (C)
<b>SEDGES</b>	Pigweed spp. (C)
Yellow nutsedge (C)	Purslane, common (C)
	Pusley, Florida (C)
	Ragweed, common (S)
	Redweed (C)
	Sesbania spp. (C)
	Shepherd's purse (C)
	Sicklepod (C)
	Sida, prickly/teaweed (C)
	Smartweed, Pennsylvania (C)
	Spurge, spotted (C)
	Starbur, bristly (C)
	Sunflower, common (S)
	Thistle, Russian (C)
	Velvetleaf (S)
	Waterhemp spp. (C)

13/27

1. Suppression means significant activity, but not always at a level considered acceptable for commercial weed control.
2. MANA 14223 will provide control of these annual broadleaf weeds except triazine-resistant biotypes other than *Galinsoga* spp., black nightshade, pigweed spp. and waterhemp spp..

**Preemergence Applications:** Apply MANA 14223 after planting but before crop emergence, or apply after drag-off if this operation is part of the usual cultural practice. MANA 14223 may be applied with ground spray equipment, aerial spray equipment, or by center pivot irrigation equipment that is capable of making a uniform broadcast application.

**Postemergence Applications:** Apply MANA 14223 only in center pivot irrigation water, after drag-off if that is the usual cultural practice. Do not apply MANA 14223 within 60 days of harvest. Refer to the **Center Pivot Application** section of this label for application information.

**Application Rates:** Application rates for MANA 14223 use in potatoes are provided in **Tables 2 and 3**. If a rate range is given, use lower rates on the more coarse-textured soils within that group and/or where weed pressures are known to be light; use the high end of the rate range on the more fine-textured soils listed within the group and/or where the weed pressure is known to be heavy.

**Table 2: Preemergence Use Rates for MANA 14223 in Potatoes**

Soil Texture	0.5 to 3% Organic Matter Pts./A	Over 3% Organic Matter Pts./A
COARSE <sup>1</sup> (Sand, loamy sand, sandy loam)	1.5-2.0	2.0-2.4
MEDIUM or FINE (Loam, silt loam, silt, sandy clay, sandy clay loam, silty clay, silty clay loam, clay, clay loam)	2.4-2.75	2.75-2.9

1. On soils that classify as a "sand" texture do not use more than 1.5 pints per acre of MANA 14223, or more than 0.5 lb. a.i./A of metribuzin in total, or crop injury may occur.

**Table 3: Postemergence Use Rates for MANA 14223 in Potatoes (for application in center pivot irrigation water only)**

Soil Texture	0.5% Organic Matter and Above Pts./
COARSE <sup>1</sup> (Sand, loamy sand, sandy loam)	1.5
MEDIUM or FINE (Loam, silt loam, silt, sandy clay, sandy clay loam, silty clay, silty clay loam, clay, clay loam)	1.5-2.2

1. Crop injury may occur on soils that classify as a "sand" texture and have less than 0.5% organic matter.

**Precautions and Restrictions When Using MANA 14223 on Potatoes**

**Precautions:**

1. To avoid crop injury, postemergence applications should be made only on russeted or white skinned varieties of potatoes that are not early maturing. Avoid postemergence applications on Atlantic, Bellchip, Centennial, Chipbelle, Shepody and Superior varieties. Preemergence applications on these varieties may cause crop injury under adverse weather conditions, on coarse soils, under high soil pH and with higher use rates.
2. Potato varieties may vary in their response to a given herbicide application. When using MANA 14223 for the first time on a particular variety, always determine crop tolerance before using on a field-scale.
3. The planting of sensitive crops such as lettuce, cole crops and cucurbits during the next growing season following application of MANA 14223 may result in injury to that crop.
4. Certain cereal varieties are sensitive to metribuzin (e.g. see cereal section of the Sencor 4 or Sencor DF label) and should not be planted during the next growing season unless the following cultural practices occur:

14/27

- a. Potato vines left in the row as a result of harvest must be uniformly distributed over the soil surface prior to plowing, and
- b. Plow with a moldboard plow to a depth sufficient to mix the upper 8 inches of soil.

**Restrictions:**

- 1. Do not apply MANA 14223 as a preplant incorporated application in potatoes, or crop injury may occur.
- 2. Do not make more than two applications per year. For potatoes grown in soils with organic matter between 3% and 10% do not apply more than 5.1 pints (3.35 lb. a.i. metaolachlor) per acre/year; and in soils with organic matter between 0.5% and 3.0% do not apply more than 4.95 pints (3 lb. a.i. metaolachlor) per acre/year. Do not apply more than 1.0 lb. a.i. of metribuzin per acre/year. Do not apply MANA 14223 to muck or peat soils.
- 2. Do not apply MANA 14223 postemergence if the weather in the next 3 days is predicted to be cool, wet or cloudy, as crop injury may occur.
- 3. Do not harvest within 60 days of the last MANA 14223 application.
- 4. Do not apply after June 30 in Idaho, Oregon, or Washington if the treated land will be planted to a crop other than potatoes in the fall.
- 5. Do not apply MANA 14223 to sweet potatoes or yams.

**Tank Mixtures With Other Products Registered for Use in Potatoes**

MANA 14223 may be tank mixed with other pesticide products and applied preemergence in potatoes. Make sure the other products are registered for preemergence use in potatoes and follow the directions for use, observe the stated precautions, and abide by the limitations and restrictions on the most restrictive of the product labels. If you have no previous experience mixing these products under your conditions, perform a compatibility test before attempting large-scale mixing (see the **MANA 14223 Compatibility Testing** section of this label).

For postemergence applications (center pivot irrigation applications only), i.e. where potato vines are exposed, there may be increased risk of crop injury from certain product mixtures. At this application timing, tank mix MANA 14223 only with pesticide products which allow tank mixing and postemergence chemigation on their product label. Follow the directions for use, observe the stated precautions, and abide by the limitations and restrictions on the most restrictive of the product labels.

**SOYBEANS (EXCEPT CALIFORNIA)**

**Product Information:** To control or suppress the weeds listed below in **Table 4**, MANA 14223 may be applied to soybeans as a preplant surface, preplant incorporated, preemergence, or as a sequential application.

- 1. Treated soybean plants may be grazed or fed to livestock 40 days after the last application of MANA 14223.
- 2. Where a rate range is shown, use a lower rate of MANA 14223 on soils that are coarse-textured and/or low in organic matter. Use a higher rate on soils that are relatively fine-textured and/or high in organic matter.
- 3. If replanting is necessary in fields previously treated with MANA 14223, the field may be replanted to soybeans. A minimum of tillage is recommended. Do not apply a second treatment as injury to soybeans may occur.

**Precautions for Use of MANA 14223 in Soybeans:** Soybean injury or reduced weed control may occur when MANA 14223 is applied under certain conditions. The following conditions should be avoided wherever possible when making applications of MANA 14223 to soybeans:

- 1. Application to any soil with less than 0.5% organic matter.
- 2. Where soil incorporation is deeper than recommended.
- 3. When sprayers were not calibrated accurately.
- 4. When soils have a calcareous surface area or a pH of 7.5 or higher.
- 5. When applied in conjunction with soil-applied organic phosphate pesticides.
- 6. Where high soil levels of atrazine are present.
- 7. Due to the sensitivity of certain soybean varieties, MANA 14223 is not recommended for use on Altona, AP 55, AP 71, Asgrow 6520, Burlison, Coker 102, Coker 156, Dassel, GL 3202, Govan, Maple Amber, NB 3665, NKS 1884, Paloma 350, Portage, Regal, Semmes, Terra-Vig 505, Terra-Vig606, Tracy, Vansoy, and Vinton 81. If you choose to plant a newly released soybean variety, consult your seed supplier for information on its tolerance to metribuzin (an active ingredient in MANA 14223) before using MANA 14223.

15/27

- 8. Uneven application or improper incorporation of MANA 14223 can decrease the level of weed control and/or increase the level of crop injury.
- 9. When heavy rains occur soon after application, especially in poorly drained areas where water may stand for several days.
- 10. When soybeans are planted less than 1.5 inches deep, particularly when MANA 14223 is applied preemergence.
- 11. When using poor quality soybean seed.

**Table 4. Weeds Controlled (C) or Suppressed (S)<sup>1</sup> by MANA 14223 in Soybeans.**

<b>ANNUAL GRASSES</b>	<b>BROADLEAVES<sup>2</sup></b>
Barley, volunteer (S)	Anoda, spurred (C)
Barnyardgrass (C)	Beggarweed, Florida (C)
Bluegrass, annual (C)	Carpetweed (C)
Crabgrass spp. (C)	Chickweed, common (C)
Crowfootgrass (C)	Cocklebur (S)
Cupgrass, prairie (C)	Copperleaf, hophornbeam (C)
Cupgrass, southwestern (C)	<i>Galinsoga</i> spp. (C)
Foxtail spp. (C)	Henbit (C)
Goosegrass (C)	Jimsonweed (C)
Johnsongrass, seedling (S)	Knotweed spp. (C)
Junglerice (C)	Kochia (C)
Panicum, fall (C)	Ladythumb (C)
Panicum, Texas (S)	Lambsquarters, common (C)
Rice, red (C)	Lettuce, prickly (C)
Sandbur spp. (S)	Mallow, Venice (C)
Shattercane (S)	Mustard spp. (C)
Signalgrass, broadleaf (C)	Nightshade, black (C)
Sorghum, volunteer (S)	Nightshade, hairy (S)
Wheat, volunteer (S)	Pennycress, field (C)
Witchgrass (C)	Pepperweed, Virginia (C)
<b>SEDGES</b>	Pigweed spp. (C)
Yellow nutsedge (S)	Purslane, common (C)
	Pusley, Florida (C)
	Ragweed, common (S)
	Redweed (C)
	<i>Sesbania</i> spp. (C)
	Shepherd's purse (C)
	Sicklepod (C)
	Sida, prickly/teaweed (C)
	Smartweed, Pennsylvania (C)
	Spurge, spotted (C)
	Starbur, bristly (C)
	Sunflower, common (S)
	Thistle, Russian (C)
	Velvetleaf (S)
	Waterhemp spp. (C)

- 1. Suppression means significant activity, but not always at a level considered acceptable for commercial weed control.
- 2. MANA 14223 will provide control of these annual broadleaf weeds except triazine-resistant biotypes other than *Galinsoga* spp., black nightshade, pigweed spp. and waterhemp spp..

16/27

**Foundation Treatment With MANA 14223 for Planned Two-pass Weed Control Systems:** MANA 14223 may be applied preplant incorporated or preemergence at 1.5 to 1.8 pints per acre on all soils to reduce competition from the weeds listed in **Table 4** for a 30-day period when followed by a planned postemergence weed control treatment. Recommended postemergence treatments include any product or combination of products labeled to control the specific weeds remaining in the field including Roundup® brand (for use only on Roundup Ready® or glyphosate tolerant soybean varieties). Follow all application directions for MANA 14223 used alone, either preplant incorporated or preemergence. For the postemergence herbicide application, consult the selected postemergence herbicide manufacturer's label for a list of weeds controlled, weed size, application rate, additional use directions, precautions, and limitations before use.

**Restriction:** On soils with pH above 7.0, use only the 1.5 pints per acre rate of MANA 14223.

**MANA 14223 Use in Conventional Soybean Tillage Systems**

**Preplant Incorporated Application:** Incorporate MANA 14223 uniformly into the top 2 inches of soil within 14 days before planting using a disk, field cultivator, rolling cultivator, or similar implement. Apply MANA 14223 preplant incorporated if furrow irrigation is used or when a period of dry weather after application is expected. If soybeans are planted on beds, apply and incorporate the tank mixture after bed formation.

**Preemergence Application:** Dry weather following preemergence application of MANA 14223 may reduce effectiveness. If weeds develop, cultivate uniformly with shallow tilling equipment that will not damage the soybeans.

For information on applying MANA 14223 in fluid or dry fertilizer, refer to the sections of the label on **Mixing in Water or Liquid Fertilizers, Application of Impregnated Dry Bulk Granular Fertilizers and Application by Impregnated Dry Bulk Granular Fertilizers.**

**Table 5: Use Rates for MANA 14223 in Conventional Soybean Tillage Systems (Broadcast Rates).**

Soil Texture	0.5 to 3% Organic Matter (Pts./A)	Over 3% Organic Matter <sup>2</sup> (Pts./A)
<b>COARSE</b> <sup>1</sup> (Loamy sand, sandy loam)	1.2-1.5 <sup>3</sup>	1.5-1.8
<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.8-2.1	2.1-2.4
<b>FINE</b> (Silty clay, silty clay loam <sup>4</sup> , clay, clay loam)	2.4-2.7	2.4-3.0

1. Do not use on sand soils. On coarse-textured soils, do not use on loamy sand soils with less than 2% organic matter.
2. For preplant incorporated application, use the lower rate.
3. For Southern and Southeastern states, see section below **In Coarse (Light) Soils.**
4. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine textured soil".

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**In Coarse (Light) Soils**

(Only in AL, AR, FL, GA, LA, MS, MO, NC, OK, SC, TN, TX, VA)

MANA 14223 is recommended for use as a preplant incorporated or preemergence application in coarse-textured, low organic matter soils in the states listed above. Refer to the appropriate sections of this label for specific directions on use, recommendations, and restrictions. Refer to **Table 4** for the list of weeds controlled or suppressed.

**Table 6: Use Rates for Preemergence Application of MANA 14223 in Soybeans (Broadcast Rates)**



17/27

Soil Texture	Organic Matter	MANA 14223 (Pints/A)
COARSE (Sand <sup>1</sup> , loamy sand, sandy loam)	0.5% or above	1.2-2.1

1. Not recommended for use on sand with less than 1% organic matter.
2. Use the higher rate under heavy weed pressures and/or on soils higher in organic matter. For maximum control of sicklepod, use a preemergence application.

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**MANA 14223 Plus Canopy® 75 DG Tank Mix Application**

MANA 14223 may be applied with Canopy herbicide as a preplant surface, preplant incorporated, or preemergence application for the control of certain broadleaf weeds and grasses in soybeans. Consult the Canopy herbicide label for specific directions on use, recommendations, and restrictions not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see Table 4), MANA 14223 plus Canopy will improve control of cocklebur and velvetleaf and provide additional suppression (reduce competition) of giant ragweed, common ragweed, and morningglory spp.

**Table 7: MANA 14223 Plus Canopy 75 DG Application (Broadcast Rates)**

Soil Texture <sup>1</sup>	MANA 14223 <sup>2</sup> (Pts./A)	Canopy <sup>5</sup> 75 DG (Oz./A)
COARSE (Loamy sand or sandy loam)	1.2-1.5 <sup>3</sup>	N/A
MEDIUM (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.5-2.1	3
FINE (Silty clay, silty clay loam <sup>4</sup> , clay, clay loam)	2.1-2.7	3-4

1. Do not use on soils with pH greater than 7.0.
2. Use higher rate on soils with more the 3% organic matter.
3. For Southern and Southeastern states in coarse soils, see **In Coarse (Light) Soils** section of this label for rates of MANA 14223.
4. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine textured soil".
5. Do not use Canopy 75 DG as a mix partner on soils with pH above 6.8.

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**MANA 14223 Plus Command® 3ME Tank Mix Application**

MANA 14223 may be applied with Command as a preplant or shallow incorporated broadcast application for the control of certain broadleaf weeds and grasses in soybeans. Command may also be applied preemergent. Consult the Command label for specific directions for use, recommendations, and restrictions not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 (see Table 4), MANA 14223 plus Command will provide improved control of heavy infestations of velvetleaf, jimsonweed, and common ragweed.

**Table 8: MANA 14223 Plus Command Application (Broadcast Rates)**

Soil Texture	MANA 14223 <sup>1</sup> (Pts./A)	Command 3ME (Pts./A)
COARSE (Loamy sand or sandy loam)	1.2-1.5 <sup>2</sup>	2/3-1
MEDIUM (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.5-2.1	2/3-1

18/27

<b>FINE</b> (Silty clay, silty clay loam <sup>3</sup> , clay, clay loam)	2.1-2.7	2/3-1
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1. Higher rate is recommended on soils with organic matter greater than 3%.
2. For Southern and Southeastern states in coarse soils, see the **In Coarse (Light) Soils** section of this label for MANA 14223 rates.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured."

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**Precautions:** (1) Do not plant wheat, oats, barley, rye, or alfalfa in the fall or following spring after application as crop injury may occur. (2) Do not apply where weather conditions favor drift.

**MANA 14223 Plus FirstRate® 84 WDG Tank Mix Application**

MANA 14223 may be applied with FirstRate 84 WDG herbicide as a preplant, preplant incorporated, or preemergence application for the control of certain broadleaf weeds and grasses in soybeans. Consult the FirstRate label for specific directions on use, recommendations, and restrictions not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see **Table 4**), MANA 14223 plus FirstRate will improve control of cocklebur, giant ragweed, common ragweed, common sunflower, and velvetleaf and provide additional suppression (reduce competition) of morningglory species.

**Table 9: MANA 14223 Plus FirstRate Application (Broadcast Rates)**

Soil Texture	MANA 14223 (Pts./A)	FirstRate 84 WDG <sup>1</sup> (Oz./A)
<b>COARSE</b> (Loamy sand or sandy loam)	1.2-1.5 <sup>2</sup>	0.3-0.45
<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.5-2.1	0.3-0.45
<b>FINE</b> (Silty clay, silty clay loam <sup>3</sup> , clay, clay loam)	2.1-2.7	0.3-0.45

1. Higher rate is recommended on soils with organic matter greater than 3%.
2. For Southern and Southeastern states in coarse soils, see the **In Coarse (Light) Soils** section of this label for MANA 14223 rates.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured."

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**MANA 14223 Plus Prowl® 3.3 EC Tank Mix Application**

MANA 14223 may be applied with Prowl as a preplant surface, preplant incorporated, or preemergence broadcast application for the control of certain broadleaf weeds and grasses in soybeans. Consult the Prowl label for specific directions for use, recommendations, and restrictions not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see **Table 4**), MANA 14223 plus Prowl will provide improved control for triazine-resistant weeds such as common lambsquarters, pigweed spp., etc.

**Table 10: MANA 14223 Plus Prowl Application (Broadcast Rates)**

Soil Texture	MANA 14223 <sup>1</sup> (Pts./A)	Prowl 3.3 EC (Pts./A)
<b>COARSE</b> (Loamy sand or sandy loam)	1.5-1.8 <sup>2</sup>	1.2-2.4

<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.8-2.1	1.8-3.6
<b>FINE</b> (Silty clay, silty clay loam <sup>3</sup> , clay, clay loam)	2.1-2.7	1.8-3.6

1. Higher rate is recommended on soils with organic matter greater than 3%.
2. For Southern and Southeastern states in coarse soils, see the **In Coarse (Light) Soils** section of this label for MANA 14223 rates.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured."

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**MANA 14223 Plus Python® 80 WDG Tank Mix Application**

MANA 14223 may be applied with Python Herbicide preplant surface, preplant incorporated, or preemergence for the control of certain broadleaf weeds and grasses in soybeans. Consult the Python label for specific directions on use, recommendations, and restrictions not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see **Table 4**), MANA 14223 plus Python will improve control of Palmer amaranth, velvetleaf, common ragweed, wild sunflower, waterhemp spp., kochia, and triazine-resistant common lambsquarters. (**Note:** Python will not improve control of ALS-resistant weeds.)

**Table 11: MANA 14223 Plus Python 80 WDG Application (Broadcast Rates)**

Soil Texture	MANA 14223 <sup>1</sup> (Pt./A)	Python 80 WDG <sup>1</sup> (Oz./A)
<b>COARSE</b> (Loamy sand or sandy loam)	1.2-1.5	0.8-0.89
<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.5-2.1	0.89-1.0
<b>FINE</b> (Silty clay, silty clay loam <sup>3</sup> , clay loam)	2.1-2.7	0.89-1.0

1. Higher rate is recommended on soils with organic matter greater than 3%.
2. For Southern and Southeastern states in coarse soils, see the **In Coarse (Light) Soils** section of this label for MANA 14223 rates.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured."

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**MANA 14223 Plus Scepter® 70 DG Tank Mix Application**

MANA 14223 may be applied with Scepter herbicide preplant surface, preplant incorporated, or preemergence for the control of certain broadleaf weeds and grasses in soybeans. Consult the Scepter label for specific directions on use, recommendations, restrictions, and any additional weeds not specified on this label.

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see **Table 4**), MANA 14223 plus Scepter improves control of a number of annual broadleaf weeds including buffalobur, cocklebur, pitted morningglory, smallflower morningglory, common ragweed, sicklepod and sunflower. MANA 14223 plus Scepter will provide suppression (reduce the competition) of ivyleaf and tall morningglory and giant ragweed.

**Table 12: MANA 14223 Plus Scepter Application (Broadcast Rates)**

Soil Texture	MANA 14223 <sup>1</sup> (Pts./A)	Scepter 70 DG <sup>2</sup> (Oz./A)
<b>COARSE</b> (Loamy sand or sandy loam)	1.2-1.5 <sup>3</sup>	1.4-2.1

<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	1.5-2.1	1.4-2.1
<b>FINE</b> (Silty clay, silty clay loam <sup>4</sup> , clay, clay loam)	2.1-2.7	1.4-2.1

1. Higher rate is recommended on soils with organic matter greater than 3%.
2. For preemergence application, use the higher rate. For maximum control of moderate to heavy infestations of cocklebur, giant ragweed, and sicklepod, use the higher rate and a preplant incorporated application.
3. For Southern and Southeastern states in coarse soils, see the **In Coarse (Light) Soils** section of this label for MANA 14223 rates.
4. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured."

**Restrictions:** On soils with pH above 7.0, soybean injury caused by the metribuzin in MANA 14223 may occur at rates higher than 1.5 pints per acre. To avoid injury, do not use MANA 14223 at rates greater than 1.5 pints per acre on soils above pH 7.0.

**Herbicides That May Be Applied Postemergence Following MANA 14223**

If needed to provide additional control of certain weeds, a postemergence herbicide may be applied following an application of MANA 14223 alone or in tank mixture. Postemergence herbicides that may be applied with MANA 14223 include: Aim®, Arrow®, Assure® II, Basagran®, Classic®, Cobra®, Extreme®<sup>1</sup>, FirstRate®, Flexstar®, Fusilade® DX, Frontrow®, Fusion®, Harmony® GT XP, Liberty®<sup>2</sup>, Poast®, Poast Plus®, Pursuit®, Raptor®, Reflex®, Resource®, Rezult® A&B, Roundup® Brands<sup>1</sup>, Scepter®, Select®, Storm®, Synchrony® XP<sup>3</sup>, Touchdown® brands<sup>1</sup> and Ultra Blazer®.

1. Use on Roundup-Ready or glyphosate-tolerant soybean varieties only.
2. Use on LibertyLink® soybean varieties only.
3. Use on STS™ soybean varieties only.

Refer to the above information and the individual product labels for use directions, use rates, and special precautions/restrictions.

**Reduced Rate Scepter 70 DG Application Following MANA 14223**

If required, application of MANA 14223 alone or in tank mixture may be followed by an early postemergence application of a reduced rate of Scepter herbicide for improved control of cocklebur. Apply 0.7 to 1.4 ounces of Scepter 70 DG. Use the lower rate of Scepter if cockleburs are less than 3 inches tall or have fewer than 3 leaves and are actively growing and use the higher rate if cockleburs are 3 to 6 inches tall and actively growing. Do not use Scepter when plants have been subjected to stress conditions. Use of a NIS or C O C crop is recommended for Scepter applications. Refer to the Scepter 70 DG label for additional use directions and special precautions/restrictions.

**Burndown Weed Control**

MANA 14223 can be used as part of a burndown herbicide program for control of existing vegetation prior to soybean emergence in conservation tillage (reduced-tillage/no-till) systems. MANA 14223 may be tank mixed with Defy® 2,4-D low volatile ester (LVE), Parazone®, Roundup brands, Fusion, Poast Plus, or Arrow for control of emerged weeds prior to crop emergence. MANA 14223 burndown tank mixes can be applied before planting or prior to crop emergence. Apply MANA 14223 up to 30 days before planting or preemergence. Apply only by ground equipment when MANA 14223 is used for burndown of existing vegetation in conservation tillage systems. Use the high end of the rate range for MANA 14223 applications made 14 to 30 days before planting. Refer to Table 15 for rates of MANA 14223 and to the following table for rates of tank mix partners.

**Table 13: Burndown Rates of Tank Mix Partners With MANA 14223**

Product	Rate	Directions and Remarks
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2,4-D LVE (Such as Defy)	0.25-1 lb. a.i./A	Apply at least 7 days preplant when using 2,4-D LVE at 0.25 to 0.5 lb. a.i./A and at least 30 days preplant with rates greater than 0.5 lb. a.i./A. Include COC at the rate of 1 gallon per 100 gallons of spray solution (1% v/v).
Parazone	1.3 – 2.7 fl. oz./A	Must be applied prior to crop emergence. Use 1.3 to 2.7 fl. oz. of Parazone for weeds less than 4 inches in height and 40 to 64 fl. oz. when weeds are 4 to 6 inches in height. Apply in 20 to 60 gallons of water per acre. Include either a NIS at 1 quart per 100 gallons (0.25% v/v) or COC at 1 gallon per 100 gallons (1% v/v) of spray solution.
Parazone + 2,4-D LVE	1.3 – 2.7 fl. oz./A + 0.25-1 lb. a.i./A	Follow the <b>Directions and Remarks</b> section above for 2,4-D LVE and Parazone paying special attention to crop planting restrictions with 2,4-D LVE. Include either NIS or COC in this tank mix.
Roundup brands	Refer to product label for use rates	Must be applied prior to crop emergence. Use the higher rates as weeds approach the maximum weed heights listed in <b>Table 14</b> . Apply in 10 to 20 gallons of water per acre. Refer to the Touchdown or Roundup label for spray adjuvant recommendations. Any glyphosate formulation registered and labeled for use in soybeans may be tank mixed with MANA
Roundup brands + 2,4-D LVE	Refer to the Touchdown or Roundup label for use rates + 0.25 lb. a.i./A	Follow the <b>Directions and Remarks</b> section above for 2,4-D LVE and Touchdown/Roundup paying special attention to planting restrictions with 2,4-D LVE. Refer to the Touchdown or Roundup label for spray adjuvant recommendations. Do not use COC.
Fusion + 2,4-D LVE	4-8 fl. oz./A + 0.25-1 lb. a.i./A	Follow the planting restrictions under the <b>Directions and Remarks</b> section above for 2,4-D LVE. Fusion rates of 4, 6, and 8 fl. oz. will control certain grasses up to 2, 4, and 6 inches in height, respectively. Include either COC at 1 gallon per 100 gallons (1.0% v/v) or NIS at 1 to 2 quarts per 100 gallons (0.25 to 0.5% v/v) of spray solution. Refer to the Fusion label for additional information.
Poast Plus + 2,4-D LVE	8-16 fl. oz./A + 0.25-1 lb. a.i./A	Follow the planting restrictions under the <b>Directions and Remarks</b> section above for 2,4-D LVE. The 8 and 12 fl. oz. rates of Poast Plus will control certain grasses up to 2 and 3 inches in height, respectively. Include either COC at 1 gallon per 100 gallons of spray solution (1% v/v) or Dash® HC at 1 pint per acre. Refer to the Poast Plus label for additional information.
Arrow + 2,4-D LVE	3-4 fl. oz./A + 0.25-1 lb. a.i./A	Follow the planting restrictions under the <b>Directions and Remarks</b> section above for 2,4-D LVE. The 3 and 4 fl. oz. rates of Arrow will control certain grasses up to 3 and 4 inches in height, respectively. Include COC at the rate of 1 quart per acre and 28% UAN (urea ammonium nitrate) at a rate of 1 to 2 quarts per acre. Refer to the Arrow label for additional information.

**Precautions for Burndown Weed Control in Soybeans:**

1. Do not apply these treatments after crop emergence.
2. Observe all precautions and limitation on the labeling of all products used in tank mixtures.

3. Apply only 2,4-D low volatile ester formulations which are registered and recommended for pre-plant or burndown use.
4. Do not apply tank mixtures containing 2,4-D LVE if wind is blowing toward desired susceptible plants (i.e., cotton, tobacco, tomato, etc.) or when wind speeds exceed 6 miles per hour. Observe all cautions and limitations of all products used in tank mixtures.

**Weeds Controlled:** MANA 14223 in tank mixtures with the herbicides listed in **Table 13** will provide burndown control of the weeds listed below in **Tables 14 and 15**.

**Table 14. Annual Grasses Controlled by Burndown Rates of MANA 14223 Tank Mixtures – Weed Height (Inches) For Maximum Burndown.**

MANA 14223 +								
Weeds Controlled	2,4-D LVE <sup>1</sup>	Poast Plus + 2,4-D LVE	Arrow + 2,4-D LVE	Fusion + 2,4-D LVE	Touchdown/ Roundup	Touchdown/ Roundup + 2,4-D LVE	Parazone	Parazone + 2,4-D LVE
Barley		-	-	-	8	8	4-6	4-6
Barnyardgrass		2-3	3-4	-	6	6	4-6	4-6
Crabgrass spp.		2-3	-	-	6	6	4-6	4-6
Foxtail spp.		2-3	3-4	2-6	8	8	4-6	4-6
Johnsongrass, seedling		2-3	-	-	8	8	4-6	4-6
Panicum, fall		2-3	3	2-6	6	6	4-6	4-6
Sandbur, field		-	-	-	8	8	4-6	4-6
Shattercane		2-3	-	-	8	8	4-6	4-6
Wheat, volunteer		-	-	-	6	6	4-6	4-6
Witchgrass		2-3	-	-	6	6	4-6	4-6

1. MANA 14223 + 2,4-D LVE does not control these species.

**Table 15. Broadleaf Weeds Controlled by Burndown Rates of MANA 14223 Tank Mixtures – Weed Height (Inches) For Maximum Burndown.**

MANA 14223 +								
Weeds Controlled	2,4-D LVE	Poast Plus + 2,4-D LVE	Arrow + 2,4-D LVE	Fusion + 2,4-D LVE	Touchdown/ Roundup	Touchdown/ Roundup + 2,4-D LVE	Parazone	Parazone + 2,4-D LVE
Buffalobur	-	-	-	-	6	6	4-6	4-6
Chickweed, common	6	6	6	6	6	6	4-6	4-6
Cocklebur, common	6	6	6	6	6	8	4-6	4-6
Dandelion, common	6 dia. <sup>1</sup>	6 dia. <sup>1</sup>	6 dia. <sup>1</sup>	6 dia. <sup>1</sup>	2 dia. <sup>2</sup>	6 dia. <sup>1</sup>	4 dia. <sup>3</sup>	6 dia. <sup>1</sup>
Henbit	4	4	4	4	4	4	4-6	4-6
Horseweed/marestail	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	4 <sup>2</sup>	6	3	6 <sup>1</sup>
Jimsonweed	6	6	6	6	6	6	4-6	4-6
Kochia	4 <sup>1</sup>	4 <sup>1</sup>	4 <sup>1</sup>	4 <sup>1</sup>	4	4	4	4
Ladythumb	6	6	6	6	6	8	4-6	4-6
Lambsquarters, common	6	6	6	6	6	8	4-6	4-6
Lettuce, prickly	6	6	6	6	4	6	4-6	4-6
Mallow, Venice	6	6	6	6	6	6	4-6	4-6
Morningglory spp.	6	6	6	6	2	4	2	4
Mustard, spp.	6	6	6	6	6	8	4-6	4-6
Pennycress, field	6	6	6	6	6	6	4-6	4-6
Pigweed spp.	6	6	6	6	6	8	4-6	4-6

(annual)								
Ragweed, common	6	6	6	6	6 <sup>2</sup>	8	4-6	4-6
Ragweed, giant	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	4 <sup>2</sup>	6	4	6
Shepherd's-purse	6	6	6	6	6	6	4-6	4-6
Sida, prickly	6	6	6	6	4	4	4	4
Smartweed, Pennsylvania	6	6	6	6	6	8	4-6	4-6
Sunflower, common	6	6	6	6	6	6	4-6	4-6
Thistle, Russian	4 <sup>1</sup>	4 <sup>1</sup>	4 <sup>1</sup>	4 <sup>1</sup>	2-4 <sup>2</sup>	4	4	4-6
Velvetleaf	6	6	6	6	6	8	4-6	4-6
Waterhemp spp.	6	6	6	6	6	8	4-6	4-6

1. Use 2,4-D LVE at 0.5 lb. ai/A.
2. Use a minimum of 0.75 lb. ai/A of Touchdown or Roundup.
3. Suppression only.

**MANA 14223 Use Rates For Reduced and No-Till Systems**

**Preplant Surface Application:** MANA 14223 may be used in reduced-till and no-till systems for soybeans. Applications may be made up to 30 days before planting or after planting, but before soybean emergence. Residual herbicides such as Canopy, FirstRate, Scepter, Command, Python, and Prowl may be tank mixed for additional weed control. If weeds are present at time of application, burndown herbicides may be added to the tank mixes (see **Burndown Weed Control** section). Refer to the tank mix product labels for specific rates and use directions.

**Table 16: MANA 14223 Use Rates for Reduced-Till and No-Till Systems (Broadcast Rates)**

Soil Texture	MANA 14223 (Pt./A <sup>1</sup> )
<b>COARSE<sup>2</sup></b> (Loamy sand, sandy loam)	1.2-2.1
<b>MEDIUM</b> (Loam, silt loam, silt, sandy clay, sandy clay loam)	2.1-3.0
<b>FINE</b> (Silty clay, silty clay loam <sup>3</sup> , clay, clay loam)	2.7-3.6

1. Use low rate range for low residue level or soils with less than 3% organic matter. Use the higher rate range for high residue level or soils with greater than 3% organic matter.
2. Do not use on sand soils. On coarse-textured soils, do not use on loamy sand soils with less than 2% organic matter.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured".

**MANA 14223 Sequential Application**

An early preplant (surface-applied or shallow incorporated) application of MANA 14223, followed by a preemergence application of MANA 14223 after planting but before soybean emergence, will provide more consistent control of broadleaf and grass weeds than a single application. A sequential application will decrease the need for tillage and/or burndown herbicides for the control of existing vegetation before planting, while providing residual control of weeds after planting.

Apply an early preplant application of MANA 14223 15 to 30 days before planting soybeans. Follow this application with a preemergence overlay application of MANA 14223 after planting but before crop emergence. Follow directions on this label for sequential applications from 0 to 14 days before planting.

Where a rate range is recommended, the higher rates should be used (a) in fields with a history of severe weed pressure, (b) when the time between early preplant and preemergence overlay applications approaches the maximum 30 days, (c) when the organic matter content of the soil is over 3%, and/or (d) when heavy crop residues are present on the soil surface. When weeds exceed 1 to 1.5 inches in height or diameter at application, use a burndown herbicide, such as Roundup, Parazone, or 2,4-D LVE.

24/27

**Weeds Controlled:** In addition to weeds controlled by MANA 14223 alone (see Table 4), the sequential application improves control of the following annual broadleaf weeds: buffalobur, cocklebur, common ragweed, velvetleaf, and sunflower.

**Table 17: Sequential Application (Broadcast Rates)**

Soil Texture <sup>1</sup>	Early Preplant Application MANA 14223 (Pts./A)	- Followed By -	Preemergence Overlay Application MANA 14223 (Pts./A)
<b>COARSE<sup>1</sup></b> (Sand, loamy sand, sandy loam)	1.2-1.8	- followed by -	0.3-0.9
<b>MEDIUM</b> (Loam, silt loam, sandy clay loam, silt, sandy clay)	1.5-2.1	- followed by -	0.6-1.2
<b>FINE</b> (Silty clay loam <sup>3</sup> , clay loam, silty clay, clay)	1.8-2.4	- followed by -	0.9-1.5

1. On coarse-textured soils, do not use on sand soils with less than 1% organic matter. However, on coarse-textured soils with a calcareous surface area or a pH of 7.5 or higher, do not use on sand soils with less than 2% organic matter, or on loamy sand or sandy loam soils with less than 1% organic matter.
2. Do not exceed a total of 3.9 pints of MANA 14223 per acre per use season.
3. Silty clay loam soils are transitional soils and may be classified as medium-textured soils in some regions of the U.S. When using MANA 14223, treat this soil as "fine-textured".

**SOYBEAN FEEDING RESTRICTIONS**

Soybean plants or hay treated with MANA 14223 may be grazed or fed to livestock 40 days after application. Follow the most restrictive preharvest interval of all products used in a tank mixture.

**CROP ROTATION**

Do not rotate to any food or feed crops following application of MANA 14223 other than those listed below in Table 18 or injury could result.

**Table 18. Time Interval Between Treatment With MANA 14223 And Planting Rotation Crops<sup>1, 2, 3</sup>**

Crop	Months
Alfalfa, winter barley, winter wheat	4.5
Corn, cotton, peas, rice, spring barley, spring wheat	8
Asparagus, forage grasses, lentils, sainfoin, sugarcane, tomatoes, other crops not listed (except root crops)	12
Onions, sugar beets and other root crops	18

1. Cover crops for soil building or erosion control may be planted any time, but do not graze or harvest for food or feed. Stand reductions may occur in some areas.
2. Crop rotation recommendations do not include restrictions for the tank mix partner. Refer to the label of the other product for additional restrictions.
3. Refer to the specific crop use sections for additional crop rotation precautions.

**TOMATOES (Except Kern County, CA)**

Apply MANA 14223 herbicide with ground equipment to seeded and transplanted tomatoes as specified below. Aerial application is prohibited.

**Transplanted Tomatoes**

**Preplant incorporated before transplanting:** Apply specified dosage in 10 or more gallons of water per acre as a broadcast spray to the soil surface immediately before transplanting. Incorporate to a depth of 2 to 4 inches with equipment capable of uniformly mixing the chemical into the soil. When transplanting tomatoes, place the root system of the plant below the herbicide incorporation zone or injury may occur.

**Post-directed to transplants:** Application of MANA 14223 may also be made post-directed to transplants after the first settling rain or irrigation. When an application is made post-directed, apply in a minimum of 20 gallons of water per acre avoiding contact with tomato plants. Do not apply until transplants have recovered from



transplant shock and new growth is evident. Do not apply to tomatoes within 24 hours of applications of other pesticides. (See **Special Precautions** below). When banding, see the appropriate section in front of this label.

**Row Middles:** MANA 14223 may also be used to treat row-middles in bedded tomatoes, as long as the total amount of MANA 14223 does not exceed the maximum allowed per crop.

**Seeded Tomatoes**

**Post-directed to seeded tomatoes:** MANA 14223 may be applied post-directed to direct seeded tomatoes. Tomato plants must be at least 4 inches tall at the time of application and the product must be applied in a minimum of 20 gallons of water per acre. Avoid spray contact with tomato plants.

**Tomato Use Rates:**

**Preplant Incorporated to Transplanted Tomatoes:** On course soils, apply MANA 14223 at 1.5 - 2.0 pts/Acre if organic matter content is less than 3% or 2.0 pts/Acre if the organic matter is 3% or greater. On medium soils, apply MANA 14223 at 2.0 - 2.5 pts/Acre. On fine soils, apply MANA 14223 at 2.0 - 2.5 pts/Acre if organic matter content is less than 3% or 2.5 - 3.0 pts/Acre if the organic matter content is 3% or greater.

**Post-emergence Directed Sprays to Established Tomatoes:** On course soils, apply MANA 14223 at 1.5 - 2.0 pts/Acre if organic matter content is less than 3% or 2.0 pts/Acre if the organic matter is 3% or greater. On medium soils, apply MANA 14223 at 2.0 - 2.5 pts/Acre. On fine soils, apply MANA 14223 at 2.0 - 2.5 pts/Acre if organic matter content is less than 3% or 2.5 - 3.0 pts/Acre if the organic matter content is 3% or greater.

**WEEDS CONTROLLED**

**Preplant Incorporated and Preplant Applications to Transplanted Tomatoes:**

Barnyardgrass (watergrass)	Galinsoga	Signalgrass (Brachiaria)
Bristly foxtail	Giant foxtail	Southwestern cupgrass
Carpetweed	Goosegrass	Tall waterhemp
Common purslane*	Green foxtail	
Common waterhemp	Hairy nightshade*	Volunteer sorghum*
Crabgrass	Lambquarters	Wild proso millet*
Crowfootgrass	Pigweed	Witchgrass
Eastern black nightshade	Prairie cupgrass	Woolly cupgrass*
Eclipta*	Red rice	Yellow foxtail
Fall panicum	Robust foxtails (purple, white)	Yellow nutsedge
Florida beggarweed**	Sandbur*	
Florida pusley	Seedling Johnsongrass*	
Foxtail millet	Shattercane*	

\*Weeds partially controlled.

\*\*For partial control of this weed, use a minimum of 3 pts/Acre and apply preemergence.

**Post-emergence Directed Sprays to Established Tomatoes:** (for effective control of weeds with postemergence application, apply MANA 14223 before weeds are 1-inch tall).

Barnyardgrass**	Jimsonweed*	Toadflax
Carpetweed	Ladysthumb*	Velvetleaf*
Common ragweed*	Lambsquarters	Wild mustard
Crabgrass**	Wild mustard	Yellow foxtail*
Fumitory	Pigweeds	
Galinsoga	Purslane	
Goosegrass	Pennsylvania smartweed*	

\* For optimum control of these weeds, use the highest rate recommended on the label for the type of application to be made.

\*\* Partial control only.

Precautions for MANA 14223 on Tomatoes:

- Do not apply to varieties or cultivars with unknown tolerance to MANA 14223.
- MANA 14223 may damage transplants that have been weakened by any cause.
- To prevent damage, plant only healthy transplants. Do not plant when wet, cool, or unfavorable growing conditions exist.
- In transplanted tomatoes, if MANA 14223 is applied preplant incorporated, incorporate to a depth less than the depth of transplanting, and use the lower end of the rate range for the given soil type, or damage may occur.
- For row middle applications where tomatoes are grown on sandy soils and where high soil moisture conditions can exist (i.e., low binding and high evaporation conditions), as may be found in the States of Florida, Georgia, Maryland and Virginia, there is potential for crop injury in the form of leaf epinasty. The risk of this type of injury can be reduced by: (a) incorporating the MANA 14223 immediately following application, (b) applying the MANA 14223 7 or more days before transplanting (but only after the beds have been formed), (c) minimizing the application of MANA 14223 onto the plastic on the bed, or (d) any combination of the above.

Restrictions for MANA 14223 on Tomatoes:

- To avoid possible illegal residues do not apply MANA 14223 within 90 days of tomato harvest.
- Do not exceed the maximum label rate of MANA 14223 for the soil texture per year.
- Do not apply more than 1.0 lbai/A of Metribuzin (one of the components in MANA 14223) per crop per season.
- Do not apply the total amount of 1.0 lbai/A of Metribuzin (one of the components in MANA 14223) within a time span of less than 35 days except in the case of directed sprays.
- Allow at least 14 days between Metribuzin (one of the components in MANA 14223) applications regardless of dosage or method of application or severe crop injury may occur.
- Apply by ground application only.
- Aerial application is prohibited.
- Do not apply more than 1 post-emergence application per year.
- Do not apply within 3 days after periods of cool, wet, or cloudy weather or crop injury will occur.
- Do not use hot caps on tomatoes within 7 days before or at any time after application of MANA 14223. Do not treat seeded tomatoes until plants have reached the 5- to 6-leaf stage or severe crop injury may occur.
- Crop injury or delayed maturity may result from broadcast or directed spray applications if tomatoes are growing under stress conditions such as periods of drought or cool, wet, and cloudy weather preceding application.
- For newly introduced tomato varieties with unknown tolerance to MANA 14223, treat only a small area to determine if MANA 14223 can be used without injury to the crop.

**STORAGE AND DISPOSAL**

Do not contaminate water, foodstuffs, feed, or seed by storage or disposal.

**PESTICIDE STORAGE:** Store product in original container only.

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

**CONTAINER DISPOSAL: Nonrefillable Container (5 gallons or less):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 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. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

**Nonrefillable Container (greater than five gallons):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 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 or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

27/27

**Refillable Container (greater than 55 gallons):** Refill this container with VISE (containing the active ingredients metolachlor and fomesafen) only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

**SPILL, FIRE, LEAK or OTHER CHEMICAL EMERGENCY:** In case of spill or leak on floor or paved surfaces, soak up with sand earth, or synthetic absorbent. Remove to chemical waste area.

**LIMITATION OF WARRANTY AND LIABILITY**

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES and LIMITATIONS OF LIABILITY.**

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Makhteshim Agan of North America, Inc. All such risks shall be assumed by the user or buyer.

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**LIMITATIONS OF LIABILITY:** To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Makhteshim Agan of North America, Inc.'s election, the replacement of product.

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