



U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs  
Registration Division (7505P)  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

EPA Reg. Number:

66222-260

Date of Issuance:

4/20/15

NOTICE OF PESTICIDE:

Registration  
 Reregistration  
(under FIFRA, as amended)

Term of Issuance:

Conditional

Name of Pesticide Product:

MANA 31304

Name and Address of Registrant (include ZIP Code):

Karina Castro  
Makhteshim Agan of North America, Inc.  
3120 Highwoods Blvd., Suite 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 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 her 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 section 3(c)(7)(A). You must comply with the following conditions:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product under FIFRA when the Agency requires all registrants of similar products to submit such data.

Signature of Approving Official:

Reuben Baris, Product Manager 25  
Herbicide Branch, Registration Division (7505P)

Date:

4/20/15

2. You are required to comply with the data requirements described in the DCI and EDSP Orders identified below:
  - a. Flumioxazin GDCI-129034-1236
  - b. Metribuzin GDCI-101101-1304
  - c. Metribuzin EDSP-101101

You must comply with all of the data requirements within the established deadlines. If you have questions about the Generic DCI or EDSP Orders listed above, you may contact the Chemical Review Manager in the Pesticide Reevaluation Division:

[http://www.epa.gov/oppsrrd1/contacts\\_prd.htm](http://www.epa.gov/oppsrrd1/contacts_prd.htm)

3. Make the following label changes before you release the product for shipment:
  - Revise the EPA Registration Number to read, “EPA Reg. No. 66222-260.”
4. Submit one copy of the final printed label for the record before you release the product for shipment.

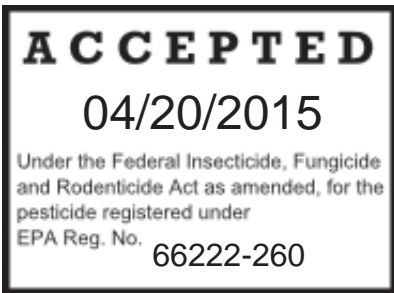
Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

If you fail to satisfy these data requirements, EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 04/01/2015

If you have any questions, you may contact Emily Schmid at 703-347-0189 or via email at [schmid.emily@epa.gov](mailto:schmid.emily@epa.gov).

Enclosure



GROUP	14	5	HERBICIDE
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# MANA 31304

[Alternate Brand Name: Ransom™]  
FOR WEED CONTROL IN SOYBEANS

<b>ACTIVE INGREDIENT:</b>	<b>% BY WT.</b>
Flumioxazin *	12.92%
Metribuzin **	56.00%
<b>OTHER INGREDIENTS:</b>	<b>31.08%</b>
<b>TOTAL:</b>	<b>100.00%</b>

\*2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione  
 \*\* 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one

MANA 31304 is a water dispersible granule containing 12.92% flumioxazin and 56.00% metribuzin.

## KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID	
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice</li> <li>Have person sip glass of water if able to swallow.</li> <li>Do not induce vomiting unless told to by a poison control center or doctor.</li> <li>Do not give anything to an unconscious person.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes</li> <li>Call a poison control center or doctor for further 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 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact Prosar at 1-877-250-9291 for emergency medical treatment information.</p>	

MANUFACTURED FOR:  
 Makhteshim Agan of North America, Inc. (d/b/a ADAMA)  
 3120 Highwoods Blvd., Suite 100  
 Raleigh NC 27604

**How can we help? 1-866-406-6262**

EPA Reg. No. 66222-XXX

EPA Est. No. XXXXXXXXXX

NET CONTENTS: \_\_\_\_\_

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

Harmful if swallowed or if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. 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:**

- Long-sleeve shirt and long pants
- Shoes plus socks
- Waterproof gloves

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

**ENGINEERING CONTROLS**

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

**USER SAFETY RECOMMENDATIONS**

**Users should:**

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

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to terrestrial and aquatic plants in neighboring areas. Do not apply where run-off is likely to occur. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate.

- This pesticide is toxic to plants and should be used strictly in accordance with the drift and run-off precautions on this label in order to minimize off-site exposures.

Under some conditions, this product may have a potential to run-off to surface water or adjacent land. Where possible, use methods which reduce soil erosion, such as no till, limited till and contour plowing; these methods also reduce pesticide run-off. Use of vegetation filter strips along rivers, creeks, streams, wetlands or on the downhill side of fields where run-off could occur will minimize water run-off and is recommended.

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

**PHYSICAL AND CHEMICAL HAZARDS**

Do not mix or allow coming in contact with oxidizing agent. Hazardous Chemical reaction may occur.

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## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all label directions before using this product.

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 interval (REI) of 12 hours.**

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

- Coveralls
- Shoes plus socks
- Waterproof gloves

## PRODUCT INFORMATION

MANA 31304 is a selective herbicide for preemergence control or suppression of susceptible broadleaf weeds and certain annual grass weeds and sedges in soybeans. MANA 31304 also offers control of certain emerged broadleaf weeds when applied as part of a burndown treatment. MANA 31304 has two modes of action and rapidly inhibits the growth of susceptible weed species.

Preemergence applications of MANA 31304 require rainfall or irrigation to activate the herbicide. The amount of rainfall or irrigation required for activation following application depends on existing soil moisture, organic matter content and soil texture. MANA 31304 must be activated by 1/2 to 1 inch of rainfall or irrigation water or erratic weed control will result. If adequate moisture (1/2" to 1") is not received within 7 to 10 days after the MANA 31304 treatment, a shallow cultivation may be needed to aid in activation to obtain desired weed control. When sufficient moisture is received after dry conditions, MANA 31304 will provide control of susceptible germinating weeds. Activity on established weeds is dependent on the weed species and the depth of the root system in the soil. Soil applications of MANA 31304 must be made before the crop emerges. Following application, susceptible weed species may germinate and emerge. Seedling weeds will then either turn brown or die shortly after being exposed to light, or will cease growing, turn yellow and then turn brown from the growing point out. Susceptible species usually do not grow past the cotyledon stage before they die from either mode of action.

## RESISTANCE MANAGEMENT

MANA 31304 contains a Group 14 herbicide (a protoporphyrinogen oxidase (PPO) inhibitor) and a Group 5 herbicide (an photosynthetic inhibitor) based on the mode of action classification system of the Weed Science Society of America and as classified by the Herbicide Resistant Action Committee (HRAC). Any weed population may contain or develop plants naturally resistant to Group 14 and/or Group 5 herbicides. Weed species with natural or acquired resistance to Group 14 and/or Group 5 herbicides may eventually dominate the weed population if Group 14 and/or Group 5 herbicides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. Such resistant weed plants may not be effectively managed using Group 14 and 5 herbicides but may be effectively managed utilizing another herbicide alone or in mixtures from a different Group and/or by using cultural or mechanical practices. However, the herbicide mode of action classification by itself may not adequately address specific weeds that are resistant to specific herbicides.

To delay herbicide resistance, consider using diversified weed control strategies to minimize selection for weed populations resistant to one or more herbicides:

- Avoiding the consecutive use of MANA 31304 or other Group 5 and/or 14 herbicides that have a similar mode of action, on the same weed species.
- Using tank mixtures or premixes with herbicides from different modes of action Groups as long as the involved products are all registered for the same use, have different sites of action and are both effective at the tank mix or premix rate on the weed(s) of concern.
- Basing herbicide use on a comprehensive Integrated Pest Management (IPM) program and Integrated Resistance Management (IRM) program.
- Use labeled rate and directions for use to delay selection for resistance.
- Monitor treated weed populations to facilitate the early identification of weeds shifts and/or weed resistance development (also provides direction on future weed management practices).
- Control escaped weeds by implementing measures to avoid allowing weeds to reproduce by seed or to proliferate vegetatively is one of the best ways to contain resistant populations.



- Contacting your local extension specialist, certified crop advisors and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes.

### **PRODUCT RESTRICTIONS**

- Do not apply this product when weather conditions favor spray drift from treated areas.
- Do not apply during low-level inversion conditions, including fog.
- Do not apply to frozen or snow covered soil.
- Low-pressure and high volume hand wand equipment is prohibited.
- Do not make more than one application of MANA 31304 per growing season.
- Do not apply more than 12 oz of MANA 31304 per acre during a single growing season.
- Do not graze treated fields or feed treated forage or hay to livestock.
- Preemergence application of MANA 31304 must be made within 3 days after planting and prior to soybean emergence. Application after the soybeans have begun to crack, or are emerged, will result in severe crop injury. Do not make applications when soybeans have begun to crack.
- Do not irrigate when soybeans are cracking if applications of MANA 31304 have been made.
- Do not tank mix MANA 31304 with chloroacetamide-containing products such as: Flufenacet (Axiom®), s-metolachlor (Dual II Magnum®); metolachlor (Parallel®), dimethenamid-P(Outlook®), Acetochlor (Warrant®) or alachlor (INTRRO®), unless directed by state 2(ee) or 24(c) labeling. Soybean injury may occur if the above products are used on a field previously treated with MANA 31304.
- Spray equipment used to apply MANA 31304 must not be used for other foliar applications until proper cleanout procedures have been followed. See MIXING PROCEDURES section for sprayer cleanup instructions.
- Do not apply within 300 yards of non-dormant pears.
- Do not allow sprays to drift on to adjacent desirable plants.
- When applying by air, observe drift management restrictions and precautions listed under the SPRAY DRIFT MANAGEMENT section.

### **PERFORMANCE RELATIVE TO ENVIRONMENTAL AND BIOLOGICAL CONDITIONS**

#### **Preemergence Application**

Crop injury may occur from applications made to poorly drained soils under cool, wet conditions. Risk of crop injury can be minimized by not using on poorly drained soils, planting at least 1 ½ inches deep, using high quality seed and completely covering seeds with soil prior to preemergence applications.

Moisture is necessary to activate MANA 31304 in soil for residual weed control. If weeds begin to emerge, irrigate (1/4 inch of water) or cultivate uniformly with shallow tillage equipment, such as a rotary hoe, that will not damage the crop. Deep cultivation reduces the effectiveness of MANA 31304.

#### **Burndown Application**

Applying MANA 31304 under conditions that do not promote active weed growth will reduce herbicide effectiveness. Do not apply MANA 31304 when weeds are under stress due to drought, excessive water, extremes in temperature, disease or low humidity. Weeds under stress tend to become less susceptible to herbicidal action. MANA 31304 is most effective when applied under sunny conditions at temperatures above 60°F. MANA 31304 is rainfast 1 hour after application. Do not make applications if rain is expected within 1 hour of application or efficacy may be reduced. Adjuvants are required when applying MANA 31304 if weeds have emerged, refer to the labeled adjuvants for weed burndown application. Reduced weed control may occur when burndown applications are made to fields where heavy crop/or weed residue exist.

#### **Herbicide Rate**

MANA 31304 application rate for preemergence application, as well as when used as part of a burndown residual program, is based upon soil characteristics and the most difficult-to-control weed species being targeted for preemergence control. Refer to the SOYBEAN WEED CONTROL section for the proper application rate and lists of weeds that are controlled or suppressed by MANA 31304.

#### **Timing to Soybeans**

MANA 31304 may be applied up to 3 days after planting but before soybean emergence. Application after the soybeans emerge will result in severe crop injury. Apply in accordance with the appropriate soil texture and organic matter.

#### **Soil Characteristics**

Application of MANA 31304 to soils with high organic matter and/or high clay content may require a higher rate than soils with low organic matter and/or low clay content. Application to cloddy seedbeds can result in reduced weed control.

### **APPLICATION PROCEDURES**

#### **Preemergence Application**

Use 10 to 30 gals of spray solution per acre for conventional tillage application. Nozzle selection must meet manufacturer's volume and pressure specification for preemergence herbicide application.



## **Burndown Application**

Use 10 to 30 gals of spray solution per acre. Use 20 to 30 gals per acre if dense vegetation or heavy crop residue is present. Nozzle selection must meet manufacturer's volume and pressure specifications for post-emergence herbicide application.

### **Adjuvant Requirements for Burndown**

A crop oil concentrate (COC) or methylated seed oil (MSO), which contain at least 15% emulsifiers and 80% oil, or MSO surfactant blend, may be used when applying MANA 31304 as part of a burndown program. Certain tank mixes and/or use patterns may require the use of a non-ionic surfactant (NIS) in place of a MSO or MSO blends. The NIS must contain at least 80% active ingredient. Also, spray grade ammonium sulfate (AMS) may be added to the spray mixture along with either a MSO & MSO blends or NIS to enhance weed control. The addition of AMS does not replace the need for MSO & MSO blends or NIS. Mixing compatibility qualities should be verified by a jar test.

### **Adjuvant Rates for Burndown**

MSO, MSO blends or COC at 1 to 2 pts/A or NIS at 0.25-0.50% v/v. The addition of spray grade AMS at 8.5 to 17 lbs per 100 gals of spray solution may be added in addition to the MSO, MSO blends, COC or NIS.

## **SPRAY DRIFT MANAGEMENT**

### **Avoiding spray drift at the application site is the responsibility of the applicator and the grower.**

The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions regarding spraying.

Apply only as a medium or coarser spray (ASABE standard 572.1) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles.

Apply only when the wind speed is 2 – 10 mph at the application site.

### **For ground applications:**

- Do not apply with a nozzle height greater than 4 feet above the crop canopy.

### **For aerial applications:**

- The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
- Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45°.

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

The applicator must be familiar with and take into account the information covered in the ***Spray Drift Management*** section.

Avoid spray overlaps as crop injury may result.

### **Information on Droplet Size**

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see **Wind, Temperature and Humidity, and Temperature Inversions**).

### **Controlling Droplet Size**

- **Volume**-Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure**-Do not exceed the nozzle manufacturer's specified 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.
- **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. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

### **Boom Length**

For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing swath width.

### **Application Height**

Make applications at the lowest height consistent with efficacy and flight safety. Do not make at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making application 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 downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance must increase with increasing drift potential (higher wind, smaller drops, etc.)

## Wind

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

## Temperature and Humidity

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

## Temperature Inversions

Applications must not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

## Sensitive Areas

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

## RUNOFF AND WIND EROSION RESTRICTIONS

Do not apply under conditions which favor runoff or wind erosion of soil containing MANA 31304 to non-target areas. Do not treat powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, allow the soil surface to be settled by rainfall or irrigation.

To prevent off-site movement due to runoff or wind erosion:

- Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow-covered ground.
- Do not apply to soils when saturated with water.
- Do not use tail water from the first flood or furrow irrigation of treated fields to treat non-target crops unless at least ½ inch of rainfall has occurred between application and the first irrigation.

## MIXING PROCEDURES

### Jar Test to Determine Compatibility of Adjuvants and MANA 31304

When using MANA 31304 and an adjuvant, such as in stale seed bed, burndown or reduced tillage situations, a jar test should be performed before mixing commercial quantities of MANA 31304, when using MANA 31304 for the first time, when using new adjuvants or when a new water source is being used.

1. Add 1 pt of the water to a quart jar. The water should be from the same source and temperature that will be used in the spray tank mixing operation.
2. Add 1/2 tsp of MANA 31304 to the quart jar, gently mix until product dissolves.
3. Add 4 Tbsp or about 2 fl oz of the MSO/MSO blend, COC to the quart jar, gently mix. If a NIS is being used in a tank mix, add 1/2 tsp of the NIS in place of the MSO/MSO blend.
4. If AMS is being used, add 0.66 oz to the quart jar.
5. Place cap on jar, invert 10 times, let stand for 15 minutes, evaluate.
6. An ideal tank mix combination will be uniform and free of suspended particles. If any of the following conditions are observed, the choice of adjuvant should be questioned:
  - a. Layer of oil or globules on the mixture's surface
  - b. Clabbering: thickening texture (coagulated) like gelatin
  - c. Flocculation: fine particles in suspension or as a layer on the bottom of the jar.

When an adjuvant is to be used with this product, ADAMA suggests the use of a Chemical Producers and Distributors Association (CPDA) certified adjuvant.

## Sprayer Preparation and Cleanup

Before applying MANA 31304 start with clean, well maintained application equipment. The spray tank, as well as all hoses and booms, should be cleaned to ensure no residues from the previous spraying operation remain in the sprayer. Some pesticides, including the sulfonyleurea and phenoxy herbicides, are active at very small amounts and can cause crop injury when applied to susceptible crops. The spray equipment should be cleaned according to the manufacturer's directions for the last product used before the equipment is used to apply MANA 31304.

## Sprayer Cleaning

Spray equipment, including mixing vessels and nurse tanks, must be cleaned each day following MANA 31304 application. After MANA 31304 is applied, the following steps should be used to clean the spray equipment:

1. Completely drain the spray tank, rinse the sprayer thoroughly, including the inside and outside of the tank and all in-line screens.
2. Fill the spray tank with clean water and flush all hoses, booms, screens and nozzles.
3. Top off tank, add 1 gal. of 3% household ammonia or its equivalent for every 100 gals. Of water, circulate through the sprayer for 5 minutes and then flush all hoses, booms, screens and nozzles for a minimum of 15 minutes. If diaphragms are being used on the spray boom, loosen diaphragms before flushing the spray system, allowing clean solution to spray through the open diaphragm. If spray lines have any end caps, they must be loosened before flushing the system, allowing cleaning solution to spray through the loosened caps. To enhance removal of MANA 31304 from the spray system, add a tank cleaner, in place of ammonia and allow the cleaning solution to remain in the pressurized spray system (spray tank, hoses and boom) overnight before flushing the system for a minimum of 15 minutes.
4. Drain tank completely.
5. Add enough clean water to the spray tank to allow all hoses, booms, screens and nozzles to be flushed for 2 minutes.
6. Remove all nozzles and screens and rinse them in clean water.

Spray equipment, including all tanks, hoses, booms, screens and nozzles, should be thoroughly cleaned before it is used to apply post-emergence pesticides. Equipment with MANA 31304 residue remaining in the system may result in crop injury to the subsequently treated crop.

#### **Mixing Instructions**

1. Fill clean spray tank 1/3 to 1/2 of desired level with clean water. A preslurry may be used to ensure optimal mixing.
2. While agitating, add the required amount of MANA 31304. Agitation creates a rippling or rolling action on the water surface. If tank mixing MANA 31304 with other labeled herbicides, add water soluble bags first, followed by dry formulations, flowables, emulsifiable concentrates and then solutions. Prepare no more spray mixture than is required for the immediate spray operation.
3. Add any required adjuvants.
4. Fill spray tank to desired level with water. Continue agitation until spray solution has been applied.
5. Mix only the amount of spray solution that can be applied the day of mixing. MANA 31304 should be applied within 6-8 hours of mixing.

#### **Aerial Carrier Volume and Spray Pressure**

When used as part of a burndown weed control program, apply MANA 31304 in 7 to 10 gals of water per acre. Application at less than 7 gallons per acre may provide inadequate control. When used for preemergence weed control, apply MANA 31304 in 5 to 10 gals of water per acre. The higher volume applications generally afford more consistent weed control. Do not exceed the nozzle manufacturer's specified 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.

#### **Aerial Application Nozzle Selection and Orientation**

Formation of very small drops may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible and by avoiding excessive spray pressure. Use nozzles that produce flat or hollow cone spray patterns. Use non-drip type nozzles, such as diaphragm type nozzles, to avoid unwanted discharge of spray solution. The nozzles must be directed toward the rear of the aircraft, at an angle between 0 and 15° downward. Do not place nozzles on the outer 25% of the wings or rotors.

#### **Adjuvants and Drift Control Additives**

Refer to tank mix partner's label for adjuvant directions. Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

### **APPLICATION INSTRUCTIONS**

#### **Broadcast Applications**

Apply MANA 31304, and MANA 31304 tank mixes, with ground equipment using standard commercial sprayers equipped with flat fan or flood nozzles (preemergence applications only) designed to deliver the desired spray pressure and spray volume.

#### **Band Applications**

When banding, use proportionately less water and MANA 31304 per acre.

#### **Aerial Applications**

MANA 31304 may be applied by air using properly calibrated nozzle types and arrangements that will provide optimum coverage while producing minimal amounts of fine droplets. Apply sufficient spray volume to achieve adequate coverage. Apply a minimum of five (5) gals of finished spray per acre. Do not apply when wind speed favors drift beyond the area intended for treatment. Spray drift away from the site of application may cause damage to non-target vegetation. To minimize drift, apply the largest droplet size consistent with uniform coverage and satisfactory weed control. To obtain satisfactory application and avoid drift, the following directions must be observed:

- Do not apply during low-level inversion conditions, when winds are gusty or under other conditions that favor drift.
- Do not spray when wind velocity is less than 2 mph or more than 10 mph.
- Do not apply this product by air within 40 ft of non-target plants including non-target crops.

- Do not apply MANA 31304 by air within 100 ft of emerged cotton crops.
- Do not apply this product within 40 ft of streams, wetlands, marshes, ponds, lakes and reservoirs.

### CROP FAILURE

If the crop treated with MANA 31304 is lost due to a catastrophe, such as hail or other forms of inclement weather, soybeans can be replanted immediately. Do not replant treated fields with any crop at intervals that are inconsistent with the crop rotation intervals listed in the CROP ROTATION INTERVALS section. Where a tank mix is used, refer to the tank mix product's label(s) for any additional replant instructions.

### ROTATIONAL RESTRICTIONS

Prior to using MANA 31304, consideration should be given to crop rotation plans. Shown below are the minimum intervals in months from the time of MANA 31304 application until MANA 31304 treated soil may be replanted with the crops listed. When MANA 31304 is tank mixed with other herbicide(s), follow the labeled rotation interval(s) and re-cropping instructions for the respective product(s). The most restrictive interval must be followed.

### CROP ROTATION INTERVALS

The following rotational crops may be planted after applying MANA 31304 at directed rates in soybeans.

Crops To Be Planted <sup>1</sup>	Minimum Rotation Interval (Months After Last MANA 31304 Application)
Barley, Field Corn, Sugarcane, Sweet Corn, Soybeans & Wheat	4
Alfalfa (tilled)	5
Lentils and Peas	8
Alfalfa (not tilled)	10
Potatoes and Rice	12
Cotton, Sugar Beets, Onions, other root crops not listed and all other crops not listed	18

<sup>1</sup>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.

### SOYBEAN WEED CONTROL

MANA 31304 may be applied to soybeans prior to planting or preemergence (after planting) and can be used for preemergence surface applications and burndown applications. MANA 31304 can also be used as an overlay application following fall applications of certain products registered for fall application. All these applications can be applied with ground equipment, and some can be applied with aerial spray equipment.

MANA 31304 can be applied broadcast or banded. This application may be made during planting or as a separate operation for up to three days after planting. See the **PRODUCT INFORMATION** section in the front of this label.

**Table 1. Broadleaf weeds controlled by a preemergence application of MANA 31304**

Weeds			
Bristly Starbur	Golden Crownbeard	Mustard, Wild	Purslane, Common
Buffalobur	Hairy Indigo	Nightshades	Radish, Wild
Carpetweed	Hemp Sesbania	Black	Redmaids
Chickweeds	Henbit	Eastern Black	Redweed
Common	Jimsonweed	Hairy	Russian Thistle
Mouseear	Knotweed	Pigweeds,	Sesbania
Coffee Senna	Kochia	Palmer Amaranth	Shepherd's-purse
Common Ragweed	Lambsquarters, Common	Common	Smartweeds
Copperleaf, Hophornbeam	Little Mallow	Redroot	Spotted Spurge
Dandelion	Marestail/Horseweed	Smooth	Spurred Anoda
Eclipta	Morningglories,	Spiny Amaranth	Sunflower, Common
Eveningprimrose, Cutleaf	Entireleaf Ipomoea	Tall	Tropic Croton
False Chamomile	Ivyleaf	Tumble	Velvetleaf
Florida Beggarweed	Red/Scarlet	Waterhemps	Venice Mallow
Florida Pusley	Tall	Prickly Sida (Teaweed)	Wild Poinsettia
Galinsoga	Smallflower Morningglory	Puncturevine	

Note: that PPO or Triazine/Photosystem 2 resistant biotype weeds may not be controlled with MANA 31304.

### Additional Preemergence Broadleaf Control

MANA 31304 can be tank mixed other broadleaf weed control products registered in soybeans including Pursuit, Classic, Firstrate, Rumble (fomesafen), linuron or pendimethalin for additional weed control in soybeans. See respective labels for use patterns and restrictions; always follow the most restrictive label use directions.

**Table 2. Grass Weeds Controlled by a Preemergence Application of MANA 31304**

Bluegrass
Broadleaf Signalgrass
Browntop millet
Crabgrass spp.
Crowfootgrass
Goosegrass
Johnsongrass, Seedling
Junglerice
Note: Grasses may not be controlled season long and should be managed as part of a integrated control program.

**Table 3. Grass and Broadleaf Weeds Suppressed By MANA 31304**

Broadleaf Weeds	Grass Weeds
Bristly Starbur	Barnyardgrass
Cocklebur	Bluegrass, Annual
Copperleaf, Hophornbeam	Cheat
Ragweed, Giant	Crabgrass, Large
Russian Thistle	Downy Brome
Sicklepod	Foxtail spp.
Smartweeds	Goosegrass
Ladysthumb	Lovegrass, California
Pennsylvania	Panicums
Smellmelon	Fall Panicum
Velvetleaf	Texas Panicum
Wild Buckwheat	Ryegrass, Italian
Wormwood, Biennial	Signalgrass, Broadleaf
Note: Grasses will not be controlled season long and should be managed as part of a integrated control program.	

**Additional Preemergence Grass Control**

MANA 31304 can be tank mixed with pendimethalin or Command® for additional grass control. Tank mixes with chloroacetamide containing products such as: flufenacet (Axiom), s-metolachlor (Dual II Magnum, Boundary), metolachlor (Parallel®), dimethenamid-P (Outlook), Acetochlor (Warrant) or alachlor (INTRRO), may result in severe injury to soybeans when application is followed by prolonged periods of cool wet weather and should not be used with MANA 31304, unless directed by state 2(ee) or 24(c) labeling. Read tank mix product label for rates and weeds controlled. Always read and follow label directions for all tank mix products before using. The most restrictive labeling of any tank mix product must be followed.

MANA 31304, when applied according to label use directions, will *control* the broadleaf weeds listed in Table 1 for preemergence treatment of broadleaf weeds, and will *control or suppress* grasses, broadleaves and sedges listed in Tables 2 and 3.

**MANA 31304 USE RATE**

**Table 4. MANA 31304 Rate Program; Fall, Early Preplant, Preemergence in Conservation or Conventional Tillage**

OUNCES OF MANA 31304 PER ACRE		
SOIL TEXTURE	ORGANIC MATTER <sup>3</sup>	
	Less than 2%	2 to 4%
<b>COARSE SOILS</b> (sandy loam, loamy sand)	DO NOT USE	6.5 oz
<b>MEDIUM SOILS<sup>1</sup></b> (loam, silt loam, silt, sandy clay, sandy clay loam)	8 oz	8-10 oz
<b>FINE SOILS<sup>1</sup></b> (silty clay, silty clay loam <sup>2</sup> , clay, clay loam)	10 oz	10-12 oz
<sup>1</sup> For Control of other weeds listed on this label use MANA 31304 at rates indicated in the table above, but note that crop injury may occur on soils having a calcareous surface area or a pH of 7.5. Use a maximum of 6.5 oz of MANA 31304 on these soils. <sup>2</sup> Silty clay loam soils are transitional soils and may be classified as medium textured soils in some regions of the U.S. <sup>3</sup> Do not apply to soils with less than 1% O.M.		

**SPECIAL PRECAUTIONS:**

Injury to soybeans may occur when MANA 31304 is used under the following conditions:

- When soils have a calcareous surface or a pH of 7.5 or higher.



- Due to the sensitivity of certain soybean varieties, consult your ADAMA representative or your seed supplier for information on the tolerance of newly released soybean varieties, prior to use of MANA 31304.
- When applied in conjunction with soil-applied organic phosphate pesticides.
- Over application or boom overlapping may result in stand loss and soil residues.
- Uneven application or improper incorporation can decrease the level of weed control and/or increase the level of injury.
- When applied to any soil with less than 1% organic matter.
- When sprayers are not calibrated accurately.
- When heavy rains occur soon after application, especially in poorly drained areas where water may stand for several days
- When soybeans are planted less than 1 1/2" deep, particularly in preemergence application.

### TIMING AND METHOD OF APPLICATION

MANA 31304 may be applied alone or in tank mixture combinations for the control of the weeds listed in conventional or GMO soybean varieties. Always follow the most restrictive label when tank mixing. MANA 31304 can be applied from 30 days prior to planting up to 3 days after planting. Do not apply if soybean seedlings are emerging (cracking) or no more than 3 days after planting or as soybean injury may occur. When applying MANA 31304 in the fall, use the maximum labelled rate for the appropriate soil texture and organic matter. MANA 31304 may be followed by labeled post-emergence soybean herbicides for increased control of grass and broadleaf weeds.

#### Spring Preplant Applications

Apply MANA 31304 30 days preplant, refer to Table 4 for the appropriate soil texture and organic matter by rate specifications. Apply with spray adjuvants if weeds have already emerged (see adjuvant section earlier in this label).

#### Preemergence Applications (PRE)

MANA 31304 may be applied at planting time or within 3 days after planting, but before plant emergence. MANA 31304 may be applied alone or in tank mix combinations with other registered soybean herbicides. When applied in tank mix combinations, follow applicable use directions, including application rates, precautions and restrictions of each product in the mixture. Properly closed seed furrows are necessary before applications.

#### Fall Application

MANA 31304 may be applied as a fall treatment to the stubble of harvested crops for the burndown of existing vegetation and preemergence control of labeled weeds the following spring in no-till and conservation tillage production systems. If weeds are emerged at the time of application, utilize a tank mixture with a suitable burndown herbicide at labeled rates. Fall applied burndown treatments should be made with a minimum of 15 gals per acre to achieve adequate coverage of the weeds being treated. Gallonage should be increased where weed density is high, weeds are large or heavy crop residue levels are present. When making burndown applications to emerged weeds, the addition of adjuvants such as MSO, COC or NIS to the spray mixture can be used to enhance the burndown activity of the application. Refer to product labels for use rates and instructions. For MANA 31304 application rates refer to the tables (Table 4).

### FALL BURNDOWN AND FALLOW SEEDBED PROGRAMS

#### Restrictions

- Do not apply to frozen or snow covered soil.

#### Limitations

- Do not perform any tillage operation after application or residual weed control will be reduced.
- Abnormally warm or wet winters will reduce the length of weed control observed in the spring.

#### Timing to Weeds

MANA 31304, at 8-12 oz/A, can be used in the fall to provide residual weed control in fields that will be planted the following spring with soybeans. If weeds have emerged at the time of application, use MANA 31304 in combination with a labeled burndown herbicide (Refer to Table Tank Mix Partners for Control of Emerged Weeds in Fall Burndown and Fallow Seedbed). Weeds controlled and suppressed residual activity are listed in Tables 1, 2 and 3.

**Table 5. Tank Mix Partners for Control of Emerged Weeds in Fall Burndown and Fallow Seedbed**

<b>Tank Mix Partners</b>
Defy® (2,4-D LVE)
Defy (2,4-D LVE) + dicamba
Express® XP + 2,4D LVE
Roundup, Glyphosate
Glyphosate + Defy (2,4-D LVE)
Parazone® 3SL
Defy LV 6
Glory

For each MANA 31304 tank mix partner listed, refer to tank mix product labels for specific recommendations for control of emerged weeds present, rotational restrictions, planting intervals and adjuvant recommendations.

**Note: MANA 31304 is not for use after crop has emerged.**

**Precautions**

- Properly closed seed furrows are necessary when applying at planting time of before seed germination.
- The use directions are based on the interactive effects of MANA 31304 and the primary soil and environmental factors, which affect its activity on various weed species and tolerance among crops.
- The user is required to observe the instructions and recommendations presented in the Application Directions and Soybean Weed Control Use Direction sections of this label pertinent to the anticipated use.
- Not all cultivars have been tested with MANA 31304. Consult University or Extension specialists for additional information on specific local varieties and any other pertinent local information.
- If soybeans are furrow irrigated, till the soil prior to planting winter wheat or barley. The beds should be broken up and the soil mixed with tillage equipment set to operate four (4) to six (6) inches deep.

**Restrictions**

- Do not apply more than 12 oz of MANA 31304 per acre per 12 (twelve) month period (0.1 lbs AI/A/yr of flumioxazin and 0.42 lbs AI/A/yr of metribuzin).
- Do not incorporate into soil or apply more than once per season.
- Do not apply to frozen soils.
- Do not feed treated soybean forage, soybean hay or soybean straw to livestock.
- Do not drain or flush equipment on or near desirable trees or plants.
- Do not contaminate any body of water including irrigation water that may be used on other crops.



## STORAGE AND DISPOSAL

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

### **PESTICIDE STORAGE:**

Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food and feed. Store in original container and out of reach of children, preferably in a locked storage area.

Do not store above 100°F for extended periods of time. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

### **PESTICIDE DISPOSAL:**

Open dumping is prohibited. Pesticide wastes are toxic. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the hazardous waste representative at the nearest EPA Regional Office for guidance.

### **CONTAINER HANDLING:**

#### **Rigid, Nonrefillable containers small enough to shake (i.e. with capacities equal to less than five gallons).**

Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 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 if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or a mix tank or collect rinsate at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Once container is rinsed, offer for recycling if available, or puncture and dispose of in a sanitary landfill.

#### **Rigid, Nonrefillable containers that are too large to shake (i.e. with capacities greater than 5 gallons or 50 lbs).**

Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling or reconditioning if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or a mix tank or collect rinsate at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Once container is rinsed, offer for recycling if available, or puncture and dispose of in a sanitary landfill.

### **Refillable Container**

Refill this container with pesticide 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.

### **Refilling or Returning Containers**

If refilling or returning container is planned, end users are not authorized to remove tamper evident cables, one way valves or clean container.

### **Recycle or Disposal of Containers**

End users are authorized to remove tamper evident cable as required to remove the product from the container unless the container is equipped with one way valves and refilling or returning is planned. Instructions for container rinsing and either recycling or disposal are as follows:

#### **Bottom Discharge IBC (e.g. Schuetz Caged IBC or Snyder Square Stackable).**

Pressure rinsing 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 pressure rinse the container before final disposal, empty the remaining contents from the IBC into application equipment or mix tank. Raise the bottom of the IBC by 1.5 inches on the side which is opposite of the bottom discharge valve to promote more complete product removal. Completely pump or drain rinsate into application equipment or rinsate collection system while pressure rinsing. Continue pressure rinsing for 2 minutes or until rinsate becomes clear. Replace the lid and close bottom valve.

#### **Top Discharge IBC, Drums, Kegs (e.g. Snyder 120 Next Gen, Bonar B120, Drums and Kegs).**

Triple rinsing 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 triple rinse 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. Rinse all interior surfaces. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

### **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 ADAMA. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** To the extent consistent with applicable law, ADAMA makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of ADAMA is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, ADAMA disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

**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 ADAMA's election, the replacement of product.

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