



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

November 10, 2021

Jacob S. Moore  
Federal Regulatory Manager  
Makhteshim Agan of North America, Inc. (d/b/a ADAMA)  
3120 Highwoods Blvd., Suite 100  
Raleigh, NC 27604

Subject: Registration Review Label Amendments for Atrazine Incorporating Mitigation Measures from the Interim Decision and the Technical Registrants' Commitments for the Endangered Species Act (ESA) Biological Evaluation  
*Product Name:* MANA Atrazine 90DF  
*EPA Registration Number:* 66222-229  
*Application Date:* December 14, 2020  
*Decision Number:* 568758

Dear Mr. Moore:

The Agency, in accordance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, has completed reviewing all the information submitted with your application to support the Registration Review of the above referenced product in connection with the Atrazine Interim Decision and with the technical registrants' commitments for the ESA Biological Evaluation. The Agency has concluded that your submission is acceptable. The label referred to above, submitted in connection with registration under FIFRA, as amended, is acceptable.

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.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only

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distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

If you have any questions about this letter, please contact Ana Pinto at [pinto.ana@epa.gov](mailto:pinto.ana@epa.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Linda Arrington", with a stylized flourish at the end.

Linda Arrington, Branch Chief  
Risk Management and Implementation Branch 4  
Pesticide Re-Evaluation Division  
Office of Pesticide Programs

Enclosure

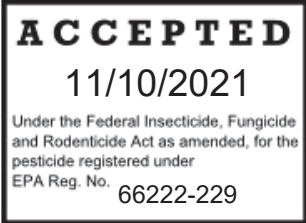
**RESTRICTED USE PESTICIDE**

(DUE TO GROUND AND SURFACE WATER CONCERNS)

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

This product is a restricted-use herbicide due to ground and surface water concerns. Users must read and follow all precautionary statements and instructions for use in order to minimize potential for atrazine to reach ground and surface water.

Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York, Hawaii, Alaska, and the U.S. territories (Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, and the North Mariana Islands) is prohibited.



Atrazine	GROUP	5	HERBICIDE
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**MANA Atrazine 90DF**

(Alternate Brand Name: Atrazine DF)  
Herbicide

For season-long weed control in corn, sorghum, and certain other crops

ACTIVE INGREDIENTS:	% BY WT.
Atrazine: 2-chloro-4-ethylamino-6-isopropylamino-s-triazine .....	88.2%
Related Compounds: .....	1.8%
<b>OTHER INGREDIENTS:</b> .....	<u>10.0%</u>
	Total 100.0%

MANA ATRAZINE 90DF is a water-dispersible granule.  
This product contains .9 lbs. of atrazine per 1 lb. of product.

EPA Reg. No. 66222-229  
EPA Est. No. [REDACTED]

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

**NET WEIGHT: 25 POUNDS**

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

**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 a 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 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> <li>• Call a poison control center or doctor for further treatment advice.</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 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>

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.

**NOTE TO PHYSICIAN:** There is no specific antidote for atrazine. If this product is ingested, induce emesis or lavage stomach. The use of an aqueous slurry of activated charcoal may be considered.

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

Harmful if swallowed. Do not breathe dust or spray mist. Avoid contact with eyes, skin, or clothing.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

**Mixers, loaders, cleaners of equipment or spills, and other handlers exposed to the concentrate must wear:**

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or vitron ≥ 14 mils.
- Chemical-resistant footwear plus socks
- Chemical-resistant apron
- Wear a minimum of a NIOSH-approved particulate filtering facepiece respirator with any R or P filter; OR a NIOSH-approved elastomeric particulate respirator with any R or P filter; OR a NIOSH-approved powered air purifying respirator with HE filters.

**Applicators using spray equipment mounted on their backs must wear:**

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant footwear plus socks
- Chemical-resistant gloves, such as barrier laminate, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or vitron ≥ 14 mils.

**All other applicators and all other handlers exposed to the dilute must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves, such as barrier laminate, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or vitron ≥ 14 mils.

**Aerial application is prohibited.**

See engineering controls for additional requirements.

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. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**ENGINEERING CONTROLS:** When applicators use enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(5)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**

**Users should:**

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

**ENVIRONMENTAL HAZARDS**

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

This product must not be mixed or loaded within 50 ft. of intermittent streams and rivers, natural or impounded lakes, and reservoirs. This product must not be applied within 66 ft. of points where field surface water runoff enters perennial or intermittent streams and rivers or within 200 ft. of natural or impounded lakes and reservoirs. If this

product is applied to highly erodible land, the 66-ft. buffer or setback from runoff entry points must be planted to crop, seeded with grass, or other suitable crop.

This product must not be mixed or 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 this product 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 washwater, 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 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 to the mixing/loading sites.

Additional state imposed requirements regarding well-head setbacks and operational area containment must be observed.

Users of atrazine in the state of Minnesota are encouraged to reference the Minnesota Water Quality Best Management Practices for Agricultural Herbicides found at [www.mda.state.mn.us/herbicidebmps](http://www.mda.state.mn.us/herbicidebmps).

One of the following restrictions must be used in applying atrazine to tile-outletted terraced fields containing standpipes:

- Do not apply this product within 66 ft. of standpipes in tile-outletted terraced fields.
- Apply this product to the entire tile-outletted terraced field and immediately incorporate it to a depth of 2-3 inches in the entire field.
- Apply this product to the entire tile-outletted terraced field under a no-till practice only when a high crop residue management practice is practiced. High crop residue management is described as a crop management practice where little or no crop residue is removed from the field during and after crop harvest.

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. Do not apply when weather conditions favor drift from treated areas. Runoff and drift from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

**NON-TARGET ORGANISM ADVISORY STATEMENT:** This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

See additional precautionary statements and directions for use below.

## **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.

### **ENDANGERED SPECIES**

It is a Federal offense to use any pesticide in a manner that results in an unauthorized "take" (e.g., kill or otherwise harm) of an endangered species under the Endangered Species Act section 9. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult <http://www.epa.gov/espp/>, call 1-844-447-3813, or email [ESPP@epa.gov](mailto:ESPP@epa.gov). You must use the Bulletin valid for the month in which you will apply the product.

## RESTRICTIONS

- Not for use in the states of Hawaii or Alaska, or in the U.S. territories (Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, and the North Mariana Islands).
- Use on roadsides; Conservation Reserve Program (CRP) land; conifers, including Christmas Tree plantings; timber; forestry; and, Miscanthus and other perennial bioenergy crops is prohibited.
- Application via mechanically pressurized handguns on sweet corn, guava, and macadamia nuts is prohibited.
- **DO NOT** apply atrazine and propazine products to the same sorghum acre.
- Users must only apply to fallow land in the following states according to the prescribed rotation pattern in the table below:

Fallow Rotation Pattern	Fallow Use Authorized in these States only
Wheat-Corn-Fallow	CO, KS, ND, NE, SD & WY
Wheat-Fallow-Wheat	CO, KS, ND, NE, SD & WY
Wheat-Sorghum-Fallow	AR, CO, GA, IL, KS, LA, MS, MO, NE, NM, NC, OK, SD & TX

### AGRICULTURAL USE REQUIREMENTS

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

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

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
- Chemical-resistant gloves made of any waterproof material

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter or allow others to enter until sprays have dried.

**ANY USE OF THIS PRODUCT IN AN AREA WHERE USE IS PROHIBITED IS A VIOLATION OF FEDERAL LAW.** Before using this product, you must consult the Atrazine Watershed Information Center (AWIC) to determine whether the use of this product is prohibited in your watershed. AWIC can be accessed through [www.atrazine-watershed.info](http://www.atrazine-watershed.info) or 1-866-365-3014. If use of this product is prohibited in your watershed, you may return this product to your point of purchase or contact ADAMA for a refund.

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

Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.

**CHEMIGATION STATEMENT:** Do not apply this product through any type of irrigation system.

### USE INFORMATION

This herbicide controls many annual broadleaf and grass weeds in corn, sorghum, sugar cane, and certain other crops specified on this label. This product may be applied before or after weeds emerge.

Following many years of continuous use of this product and chemically related products, biotypes of some of the weeds listed on this label have been reported which cannot be effectively controlled by this and related herbicides. Where this is known or suspected and weeds controlled by this product are expected to be present along with resistant biotypes, we recommend the use of this product in combinations or in sequence with other registered herbicides which are not triazines. If only resistant biotypes are expected to be present, use a registered non-triazine herbicide. Consult your state Agricultural Extension Service for specific recommendations.

Since this product acts mainly through root absorption, its effectiveness depends on moisture to move it into the root zone. If weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control.

This product is noncorrosive to equipment and metal surfaces, is nonflammable, and has low electrical conductivity.

Avoid using near adjacent desirable plants or in greenhouses, or injury may occur.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap, as crop injury may result.

Where the use directions give a range of rates, use the lower rate in coarse-textured soil and soil low in organic matter; use the higher rate on fine-textured soil and soil high in organic matter.

**Note:** ADAMA does not recommend applications in combination with other herbicides or oils except as specifically described on the label or in literature published by ADAMA.

When tank mixing or sequentially applying atrazine or products containing atrazine to corn or sorghum, the total lbs. of active ingredient per acre must not exceed 2.5 lbs. active ingredient (or 2.77 lbs. of this product) per acre per year.

When tank mixing or sequentially applying atrazine or products containing atrazine to crops other than corn or sorghum, the total pounds of atrazine applied (lbs. a.i. per acre) must not exceed the specific seasonal rate limits as noted in the use directions for each crop.

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

## MANDATORY SPRAY DRIFT MANAGEMENT

### **Ground Boom Applications:**

- User must only apply with the release height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a coarser or coarser droplet size (ASABE S572).
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.
- User must maintain a 15 foot (4.6 meter) in-field downwind buffer (in the direction in which the wind is blowing) from the edge of streams and rivers, as well as high-tide line for all estuarine/marine environments.

### **Boomless Ground Applications:**

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) for all applications.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.
- Users must maintain a 15 foot (4.6 meter) in-field downwind buffer (in the direction in which the wind is blowing) from the edge of streams and rivers, as well as high-tide line for all estuarine/marine environments.

## **SPRAY DRIFT ADVISORIES**

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-TARGET SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

### **Importance of Droplet Size**

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

### **Controlling Droplet Size – Ground Boom**

- Volume – Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure – Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle – Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

### **Boom Height – Ground Boom**

For ground equipment, the boom should remain level with the crop and have minimal bounce.

### **Shielded Sprayers**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

### **Temperature and Humidity**

When making applications in hot and dry conditions, use larger droplets to reduce the effects of evaporation.

### **Temperature Inversions**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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.

### **Wind**

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

### **Boomless Ground Applications**

Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

### **Handheld Technology Applications**

Take precautions to minimize spray drift.

## **WEED RESISTANCE MANAGEMENT**

For resistance management, please note that Parallel Plus contains both a Group 5/atrazine and Group 15/metolachlor herbicide. Any weed population may contain plants naturally resistant to Group 5 and/or Group 15 herbicides. The resistant individuals may dominate the weed population if these herbicides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

### **Weed Management**

To delay herbicide resistance, take one or more of the following steps:

- Rotate the use of this product or other Group 5 or Group 15 herbicides within a growing season sequence of among growing seasons with different herbicide groups that control the same weeds in the field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that consider tillage (or other mechanical control methods), cultural (e.g., higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties), and other management practices.
- Scout before and after herbicide application to monitor weed populations for early signs or resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed



production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.

- If a weed pest population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.
- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact ADAMA at **1-866-406-6262**.

### APPLICATION PROCEDURES

**Ground application:** Use conventional ground sprayers equipped with nozzles that provide accurate and uniform application. Be certain that nozzles are uniformly spaced and are the same size. Calibrate sprayer before use and recalibrate at the start of each season and when changing carriers. Unless otherwise specified, use a minimum of 10 gals. of spray mixture per acre for all preplant incorporated, preplant surface, preemergence, and postemergence applications (with or without oil or surfactant) with ground equipment.

Use a pump with capacity to: (1) maintain 35-40 psi at nozzles, (2) provide sufficient agitation in tank to keep mixture in suspension, and (3) to provide a minimum of 20% bypass at all times. Use centrifugal pumps which provide propeller shear action for dispersing and mixing this product. The pump should provide a minimum of 10 gals./minute/100 gal. tank size circulated through a correctly positioned sparger tube or jets.

Use screens to protect the pump and to prevent nozzles from clogging. Screens placed on the suction side of the pump should be 16-mesh or coarser. Do not place a screen in the recirculation line. Use 50-mesh or coarser screens between the pump and boom, and where required, at the nozzles. Check nozzle manufacturer's recommendations. For band applications, calculate amount to be applied per acre as follows:

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

**Application in water or liquid fertilizer:** Nitrogen solution or complete liquid fertilizer may replace all or part of the water as a carrier for preemergence, preplant incorporated, or preplant surface ground application on corn and sorghum. Check the compatibility of this product with liquid fertilizer and/or nitrogen solution as shown below before use. Do not apply in nitrogen solution or complete liquid fertilizer after corn or sorghum emerges, or crop injury may occur.

**Compatibility Test:** Since liquid fertilizers can vary even within the same analysis, always **check compatibility with herbicide(s) each time before use**. Be especially careful when using **complete** suspension or fluid fertilizers, as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gals. per acre. For other spray volumes, make appropriate changes on the ingredients. Check compatibility using this procedure:

- Add 1 pt. of fertilizer to each of 2 one-qt. jars with tight lids.
- To **one** of the jars, add ¼ tsp. or 1.2 milliliters of a compatibility agent approved for this use such as Complex or Unite (¼ tsp. is equivalent to 2 pts./100 gals. spray). Shake or stir gently to mix.
- To **both** jars, add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:  
**Dry herbicides:** For each pound to be applied per acre, add 1.5 level teaspoons to each jar.  
**Liquid herbicides:** For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.
- After adding all ingredients, put lids on and tighten, and invert each jar 10 times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film in the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the 2 jars. If either mixture 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 herbicide(s) in water before addition, or (B) add ½ of the compatibility agent to the fertilizer and the other ½ to the emulsifiable concentrate or flowable herbicide before addition to the mixture. If incompatibility is still observed, do not use the mixture.

**Application in water plus emulsifiable oil or oil concentrate:** Adding emulsifiable oil (petroleum-derived, petroleum-derived oil concentrate, or single or mixed crop-derived oil concentrate) to postemergence water-based

sprays in corn and sorghum may improve weed control. However, under certain conditions, the use of either type of oil may seriously injure the crop. To minimize this possibility, observe the following directions:

Use one of the following properly emulsified:

- A suitable oil concentrate containing a least 1%, but not more than 20% suitable emulsifier or surfactant blend.
- Petroleum-derived oil containing at least 1% suitable emulsifier.

**Note:** In the event of a compatibility problem when mixing oil with MANA Atrazine 90DF and water, a compatibility agent such as Complex or Unite should be used. Any of the above oils contaminated with water or other materials can cause compatibility problems and/or crop injury.

**Mixing Procedures--All Uses:** (1) Be sure sprayer is clean and not contaminated with any other materials or crop injury or sprayer clogging may result. (2) Fill tank ¼ full with clean water, nitrogen solution, or complete liquid fertilizer. (3) Start agitation. (4) Be certain that the agitation system is working properly and creates a rippling or rolling action on the liquid surface. (5) Pour product directly from bag into tank. (6) Continue filling tank until 90% full. Increase agitation if necessary to maintain surface action. (7) Add emulsifiable oil, oil concentrate, or tank mix herbicide(s) after this product is thoroughly suspended. (8) Finish filling tank. (9) Empty tank as completely as possible before refilling to prevent buildup of oil or emulsifiable concentrate residue. Maintain agitation to avoid separation of materials. (10) If an oil or emulsifiable concentrate film starts to build up in the tank, drain it and clean with strong detergent solution or solvent. (11) Clean sprayer thoroughly immediately after use by flushing system with water containing a detergent.

**Rotational Crops—All Uses:** (1) Do not rotate to any crop except corn or sorghum until the following year, or injury may occur. (2) If applied after June 10, do not rotate with crops other than corn or sorghum the next year, or crop injury may occur. (3) In the High Plains and Intermountain areas of the West where rainfall is sparse and erratic or where irrigation is required, use only when corn or sorghum is to follow corn or sorghum or when a crop of untreated corn or sorghum is to precede other rotational crops. (4) In eastern parts of the Dakotas, KS, western MN, and NE, do not rotate to soybeans if the rate applied to corn or sorghum was more than 2.2 lbs./A or equivalent band application rate, or soybean injury may occur. (5) Injury may occur to soybeans planted the year following application on soils having a calcareous surface layer. (6) Do not plant sugar beets, tobacco, vegetables (including dry beans), spring-seeded small grains, or small-seeded legumes and grasses the year following application, or injury may occur.

**MANA ATRAZINE 90DF APPLIED ALONE-CORN OR GRAIN SORGHUM\***

**Preplant Surface-Applied, Preplant Incorporated, or Preemergence (or Postemergence at 2.2 lbs./A of This Product With Oil)**

**Broadleaf and Grass Weeds Controlled**

Barnyardgrass	Cocklebur**	Nightshade
(watergrass)***	Groundcherry	Pigweed
Giant foxtail**	Jimsonweed	Purslane
Green foxtail***	Kochia	Ragweed
Large (hairy) crabgrass**	Lambsquarters	Sicklepod**
Wild oats	Annual morningglory	Velvetleaf
Witchgrass	Mustards	(buttonweed)***
( <i>Panicum capillare</i> )***		
Yellow foxtail***		

**Postemergence with Emulsifiable Oil or Oil Concentrate in Water (at 1.3 lbs./A of This Product)**

**Broadleaf Weeds Controlled**

Annual morningglory	Pigweed	Cocklebur
Ragweed	Jimsonweed	Smartweed
Lambsquarters	Wild buckwheat	
Mustards	Velvetleaf**	

\*Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

\*\*Partial control only.

\*\*\*Partial control only on medium- and fine-textured soils.

**CORN**

**Preplant Surface-Applied (broadleaf and grass control):** Use on medium- and fine-textured soil with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the

specified rate of MANA Atrazine 90DF shown in Table 1 up to 45 days prior to planting. If an unsatisfactory length of weed control results from adverse environmental conditions following early treatment, a follow-up application of an appropriately labeled herbicide may be used. If the follow-up treatment includes atrazine, do not exceed the labeled rate for corn indicated in Table 1. On coarse-textured soils, do not apply more than 2 weeks prior to planting.

If weeds are present at the time of treatment, apply in tank-mix combination with a contact herbicide (for example, Gramoxone Inteon or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

**Note:** To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

**Preplant Incorporated (Broadleaf and grass control):** Broadcast in spring after plowing at rate in Table 1. Apply to the soil and incorporate before, during, or after final seedbed preparation. Avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

**Preemergence or At-Planting (Broadleaf and grass control):** Apply during or shortly after planting before weed emergence at rate in Table 1.

**Postemergence (Broadleaf and grass control):** Apply before weeds exceed 1½ inches in height and before corn exceeds 12 inches in height at rate in Table 1.

**TABLE 1: BROADLEAF AND GRASS WEED CONTROL IN CORN\***

<b>FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE</b>	
<ul style="list-style-type: none"> <li> <b>On Highly Erodible Soils (as defined by the Natural Resource Conservation Service)</b>                      If conservation tillage is practiced (leaving at least 30% of the soil covered with plant residues at planting), apply a maximum of 2.2 lbs./A of this product (2.0 lbs. active ingredient) as a single broadcast spray.                      If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.77 lbs./A of this product (1.6 lbs. active ingredient) may be applied.                 </li> <li> <b>On Soils Not Highly Erodible</b>                      Apply 2.2 lbs./A of this product (2.0 lbs. active ingredient) as a single broadcast spray                 </li> </ul>	
<b>FOR POSTEMERGENCE APPLICATION</b>	
If no atrazine was applied prior to corn emergence, apply a maximum of 2.2 lbs./A of this product (2.0 lbs. active ingredient) broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 2.5 lbs. active ingredient (2.77 lbs. of this product) per acre per calendar year.	

**\*Broadleaf control (eastern CO, western KS, western NE, NM, OK Panhandle, west TX, and eastern WY):** On sand, loamy sand, sandy loam, mild to strongly alkaline soil, and all recently leveled soil, apply no more than 1.3 lbs./A of this product, either preplant surface, preplant incorporated, or preemergence. On other soils in these areas, apply rate in Table 1 for broadleaf and grass control.

Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

**Postemergence with emulsifiable oil or oil concentrate in water:** Add the following volume of one of the type oils indicated for ground application unless the oil label specifies otherwise:

Type Oil	Ground Application
Oil Concentrate (Crop or Petroleum-derived)	1 qt./A
Petroleum-derived oil	1 gal./A

**Note:** Crop-derived or petroleum-derived oil concentrates should contain at least 1% but not more than 20% suitable emulsifier or surfactant blend. Petroleum-derived oils should contain at least 1% suitable emulsifier.

**Broadleaf and grass control:** For postemergence control of those weeds listed under **Preplant Incorporated and Preemergence**, broadcast 2.2 lbs./A of this product plus emulsifiable oil or oil concentrate after weed emergence but before weeds reach 1½ inches in height and before corn exceeds 12 inches in height.

**Broadleaf control:** For postemergence control of those weeds listed under **Postemergence with emulsifiable oil or oil concentrate in water**, broadcast 1.3 lbs./A of this product plus emulsifiable oil or oil concentrate before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

*Precautions: For applications with emulsifiable oil or oil concentrate in water:*

- *Inbred lines or any breeding stock may be severely injured by applications with emulsifiable oil or oil concentrate.*
- *Adding other insecticides, herbicides, liquid fertilizers, or other materials is not recommended because they may cause compatibility problems or crop injury.*
- *Store and handle emulsifiable oil and oil concentrate carefully. Oil contaminated with even a small amount of water may not emulsify properly when added to the tank.*
- *Do not apply when crop is under stress from prolonged cold, wet weather, poor fertility, or other factors, or when crop is wet and succulent from recent rainfall.*
- *When tank mixing or sequentially applying atrazine or products containing atrazine to corn or sorghum, do not exceed an application rate of 2.0 lbs. active ingredient (or 2.2 lbs. of this product) per acre for any single application, and the total lbs. of active ingredient per acre must not exceed 2.5 lbs. active ingredient (or 2.77 lbs. of this product) per acre per year.*
- *Do not apply more than 2.5 lbs. active ingredient (2.77 lbs. of this product) per acre per calendar year and do not apply more than 2.0 lbs. active ingredient (2.2 lbs. of this product) per acre for any single application.*
- *Postemergence applications to corn must be made before crop exceeds 12 inches in height.*

### TANK MIXTURES FOR CORN

This product may be tank mixed with these herbicides for control of certain broadleaf and grass weeds in corn:

Dual® (metolachlor)	Dual + Gramoxone Inteon	Dual + Roundup (glyphosate)
Dual + Princep®	Dual + Princep + Gramoxone Inteon	Dual + Princep + Roundup
Lasso® or Lasso EC (alachlor)	Lasso or Lasso EC + Roundup	Lasso or Lasso EC + Gramoxone Inteon
Gramoxone Inteon	Princep	Princep + Gramoxone Inteon
Princep + Round Up	Roundup	Sutan+®
Bexton® or Ramrod® (propachlor)		

Use tank mix directions appearing on the labels of the above herbicides when tank mixing with this product. Observe all precautions and limitations on labeling of products used in a particular tank mix.

**Note:** When the labels of the above herbicides refer to Atrazine 80W, use equivalent rates of MANA Atrazine 90DF. One lb. of atrazine 80W equals 0.9 lb. of MANA Atrazine 90DF.

#### **Princep 80W, Princep 4L, or Princep Caliber 90®**

In addition to the weeds listed under **MANA Atrazine 90DF Applied Alone--Corn or Grain Sorghum--Preplant Surface-Applied, Preplant Incorporated, or Preemergence**, this combination also controls crabgrass, fall panicum, and carpetweed.

Broadcast tank mix before planting, at planting, or after planting, but before crop and weeds emerge, at rates in Table 2. Use the 1:1 ratio for control of most weeds. Use the 1:2 ratio for expected heavy infestations of crabgrass and fall panicum. Cultivate shallowly if weeds develop.

**Preplant Surface Applied:** Use on medium- and fine-textured soils with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the specified rate of MANA Atrazine 90DF and Princep shown in Table 2 up to 45 days prior to planting. Refer to the MANA Atrazine 90DF alone section for information if weeds should develop following the early treatment. On coarse-textured soils, do not apply more than 2 weeks prior to planting. Refer to the **MANA Atrazine 90DF Applied Alone--Preplant Surface-Applied** section of the corn label for additional details.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (like Gramoxone Inteon or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

**Note:** To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting or weed control will be diminished.

**Preplant Incorporated:** Apply to the soil and incorporate in the spring before, during, or after final seedbed preparation. Avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

**Preemergence:** Apply during or shortly after planting but before crop and weeds emerge.

Refer to **Corn** sections of this label and to Princep 80W, Princep Caliber 90, or Princep 4L labels for further directions, limitations, and precautions.

**TABLE 2: TANK MIXTURES WITH PRINCEP ON CORN**

Soil Texture	Broadcast Rate Per Acre			
	1:1 Ratio*		1:2 Ratio**	
	This product	Princep 80W <sup>1</sup>	This product	Princep 80W <sup>1</sup>
Sand, loamy sand, sandy loam	1.1 lbs.	1.25 lbs.	0.73 lb.	1.67 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with low organic matter	1.3 lbs.	1.5 lbs.	0.88 lb.	2 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with medium to high organic matter, and clay (including dark prairie soils of the Corn Belt)	1.6 lbs.	1.8 lbs.	1.07 lbs.	2.4 lbs.

\*For control of most weeds.

\*\*For control of expected heavy infestations of crabgrass and fall panicum.

<sup>1</sup> When using Princep Caliber 90 or Princep 4L, use equivalent rates. One lb. of Princep 80W equals 0.9 lb. of Princep Caliber 90 or 1.6 pts. of Princep 4L.

**Princep 80W, Princep 4L, or Princep Caliber 90 plus Roundup:** Use as tank mixture for preemergence and postemergence control of certain broadleaf and grass weeds where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Refer to Roundup label for all directions, weeds controlled, precautions, and limitations.

**Princep 80W, Princep 4L, or Princep Caliber 90 plus Gramoxone:** Use as tank mixture with Princep or Gramoxone Inteon to kill existing vegetation and for residual weed control where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Add this product and Princep to water in spray tank agitating until thoroughly mixed. Then add Gramoxone Inteon and a nonionic surfactant such as X-77<sup>®</sup>. Continue agitation during application. Broadcast 1.1-2.2 lbs. of this product plus 1.25-2.5 lbs. of Princep 80W (or 2-4 pts. of Princep 4L or 1.1-2.2 lbs. of Princep Caliber 90) plus a suitable amount of Gramoxone Inteon in 20-60 gals. of water per sprayed acre. Refer to the Gramoxone Inteon label for the appropriate rates to utilize in this tank mixture. Apply before, during, or after planting, but before corn emerges. Add 0.5 pt. of a nonionic surfactant such as X-77 per 100 gals. of spray mixture. Use the higher rate of Gramoxone Inteon specified on the label if existing vegetation is 4-6 inches tall. This mixture will not control weeds taller than 6 inches.

Refer to further limitations and precautions on labels for this product, Princep, and Gramoxone Inteon.

*Precautions: For all applications to corn:*

- Do not apply more than 2.5 lbs. active ingredient (or 2.77 lbs. of MANA Atrazine 90DF) per acre per calendar year and do not apply more than 2.0 lbs. active ingredient (or 2.2 lbs. of MANA Atrazine 90DF) for any single application.
- When tank mixing or sequentially applying atrazine or products containing atrazine to corn or sorghum, do not exceed an application rate of 2.0 lbs. active ingredient (or 2.2 lbs. of this product) per acre for any single application, and the total lbs. of active ingredient per acre must not exceed 2.5 lbs. active ingredient (or 2.77 lbs. of this product) per acre per year.
- For best control of velvetleaf and cocklebur, use the maximum allowable single application rate of 2 lbs. active ingredient (2.2 lbs. of MANA Atrazine 90DF) per acre either alone or in tank mix combinations.
- Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-seeded rotational crops regardless of rate used.
- For field corn forage uses, allow 60 days between last application and harvest.
- For sweet corn uses, allow 45 days between last application and harvest.
- Postemergence applications to corn must be made before crop reaches 12 inches in height.

**Note for all applications to corn:** Do not graze or feed forage from treated areas for 60 days following application to field corn. Do not graze or feed forage from treated areas for 45 days following application to sweet corn.

**SORGHUM AND SORGHUM-SUDAN HYBRIDS (GRAIN AND FORAGE TYPES)**

**Preplant Surface-Applied (Broadleaf and grass control):** Use on medium- and fine-textured soil with minimum-tillage or no-tillage systems only in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, WI, and WY. Apply the specified rate of MANA Atrazine 90DF shown in Table 3 up to 45 days prior to planting. If an unsatisfactory length of weed control results from adverse environmental conditions following early treatment, a follow-up application of an appropriately labeled herbicide may be used. If the follow-up treatment includes atrazine, do not exceed the

labeled rate for corn indicated in Table 1. Under dry conditions, irrigation after application is recommended to move MANA Atrazine 90DF into the soil.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (for example, Gramoxone Inteon or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

**Note:** To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

**Preplant Incorporated (Broadleaf and grass control):** Broadcast in spring after plowing at rate shown in Table 3. Apply before, during, or after final seedbed preparation. If soil is tilled or worked after application, avoid deep incorporation. For best results, apply within 2 weeks prior to planting.

**Preemergence or At-Planting (Broadleaf and grass control):** Apply during or shortly after planting but prior to weed or crop emergence at rate shown in Table 3.

**Postemergence (Broadleaf and grass control):** Apply at rate shown in Table 3 before weeds exceed 1½ inches in height and before sorghum exceeds 12 inches in height.

**TABLE 3: Broadleaf and Grass Weed Control in Sorghum <sup>1,2</sup>**

**FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE**

- **On Highly Erodible Soils (as defined by the Natural Resource Conservation Service)**  
If conservation tillage is practiced (leaving at least 30% of the soil covered with plant residues at planting), apply a maximum of 2.2 lbs./A of this product (2.0 lbs. active ingredient) as a single broadcast spray.  
If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.77 lbs./A (1.6 lbs. active ingredient) may be applied.
- **On Soils Not Highly Erodible**  
Apply 2.2 lbs./A of this product (2.0 lbs. active ingredient) as a single broadcast spray

**FOR POSTEMERGENCE APPLICATION**

If no atrazine was applied prior to sorghum emergence, apply a maximum of 2.2 lbs./A of this product (2.0 lbs. active ingredient) broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 2.5 lbs. active ingredient (2.77 lbs. of this product) per acre per calendar year.

<sup>1</sup>Do not apply preplant surface or preplant incorporated in AL, AR, FL, GA, LA, MS, NC, NM, OK, SC, TN, or TX. Do not apply preemergence in NM, OK, or TX, except in northeast OK and the TX Gulf Coast and Blacklands area.

<sup>2</sup>Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed. Certain states may have established rate limitations within specific geographic areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

In case of planting failure, sorghum or corn may be replanted. Do not make a second broadcast application, or injury may occur. If originally applied in a band and sorghum or corn is replanted in untreated row middles, this product may be applied in a band to the second planting provided the maximum application rate of 2.5 lbs. a.i./A atrazine (or 2.77 lbs. of MANA Atrazine 90DF) per calendar year is not exceeded.

**Preemergence broadleaf weed control in furrow-irrigated bedded sorghum (AZ and CA only):** For preemergence control of many broadleaf weeds, broadcast 0.9-1.3 lbs./A of this product after bed preparation, during or after planting, but before sorghum and weeds emerge and before the first furrow irrigation. Follow with several regular irrigations, making sure to thoroughly wet all soil.

*Precautions for preemergence application to furrow-irrigated bedded sorghum in AZ and CA: To avoid possible sorghum injury, do not use on sand or loamy sand soil or on sorghum planted in furrows. Applications to sorghum growing on alkali soils or where cuts, fills, or erosion have exposed calcareous or alkali subsoils may cause crop injury. In case of crop failure, do not replant sorghum for 8 months following application. Corn may be planted immediately.*

**Postemergence broadleaf weed control with emulsifiable oil or oil concentrate in water:** Broadcast 1.3 lbs./A of this product for control of many broadleaf weeds. Apply before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. In CO, western KS, NM, OK, TX, and desert regions of AZ and CA, apply when sorghum is 6-12 inches in height but before it reaches boot stage. In all other areas, apply after sorghum reaches the 3-leaf stage but before it exceeds 12 inches in height. Add 1 gal. of emulsifiable oil per acre for ground application, or add 1 qt. of oil concentrate for ground application. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

For the list of weeds controlled, see **MANA Atrazine 90DF Applied Alone--Corn or Grain Sorghum--Postemergence with Emulsifiable Oil or Oil Concentrate in Water.**

*Precautions for applications with emulsifiable oil or oil concentrate in water: See **Precautions for applications in emulsifiable oil or oil concentrate in water** in **CORN** section.*

**Postemergence broadleaf weed control with surfactant (CO, western KS, NM, OK, TX, and desert regions of AZ and CA only):** Broadcast 1.3 lbs./A of this product plus 0.75-1.5 pts. of surfactant after sorghum reaches 6 inches in height but before weeds exceed 1½ inches in height. Apply only on sandy loam and finer-textured soil.

*Precautions: For all applications to sorghum:*

- *Heavy rain immediately following application tends to cause excessive concentrations of herbicide in seed furrow resulting in possible crop injury. Do not apply to furrow-planted sorghum until furrows are leveled (plowed in). Level deep planter marks or seed furrows before application.*
- *Application to sorghum growing under stress caused by minor element deficiency or to sorghum growing on highly calcareous soil may result in crop injury.*
- *Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-seeded rotational crops regardless of rate used.*
- *Injury may occur if both this herbicide, preplant surface, preplant incorporated, or preemergence, and an at-planting systemic insecticide applied in-furrow are used.*
- *When tank mixing or sequentially applying atrazine or products containing atrazine to corn or sorghum, do not exceed an application rate of 2.0 lbs. active ingredient (or 2.2 lbs. of this product) per acre for any single application, and the total lbs. of active ingredient per acre must not exceed 2.5 lbs. active ingredient (or 2.77 lbs. of this product) per acre per year.*
- *Do not apply more than 2.5 lbs. active ingredient (2.77 lbs. of this product) per acre per calendar year and do not apply more than 2.0 lbs. active ingredient (2.2 lbs. MANA Atrazine 90DF) per acre for any single application.*
- *For all soil applications prior to crop emergence (except for preemergence use on bedded sorghum in AZ and CA), do not apply to coarse-textured soils, i.e., sand, loamy sand, sandy loam, or to medium- and fine-textured soils having less than 1% organic matter, or injury may occur.*
- *For postemergence applications, do not apply to sand or loamy sand.*
- *For preemergent sorghum forage uses, allow 60 days between the last application and harvest.*
- *For postemergent sorghum forage uses, allow 45 days between the last application and harvest.*
- *Postemergence applications to sorghum must be made before crop reaches 12 inches in height.*
- *Do not graze or feed forage from treated areas for 60 days following preemergence applications, or 45 days following postemergence applications.*
- *Do not apply atrazine and propazine products to the same sorghum acre.*

#### **TANK MIXTURES FOR GRAIN SORGHUM**

**Dual 8E:** Use as tank mixture with Dual 8E for control of those weeds listed on the Dual 8E label as well as on this label. Use this tank mixture only on sorghum seed treated with Concep®. Refer to the Dual 8E label for all directions, precautions, and limitations.

#### **WINTER WEED CONTROL IN TEXAS**

For postemergence control of winter weeds only such as henbit, seedling dock, and annual thistle on fall-bedded land in the Gulf Coast and Blacklands of Texas. Apply 0.9-1.1 lbs./A of this product postemergence to the weeds in November or December to land that will be planted to corn, grain sorghum, or forage sorghum the following spring. For best results, add a suitable surfactant such as X-77 at the rate of 0.5% of the spray volume, an emulsifiable oil at the rate of 1.0% of the spray volume, or an oil concentrate at the rate of 1 qt./A.

Normal weed control programs may be used in the following corn, grain sorghum, or forage sorghum crop.

**Note:** Do not plant any crops except corn, grain sorghum, or forage sorghum the spring following this treatment, or illegal residues may result.

#### **MANA ATRAZINE 90DF ALONE-CHEMICAL FALLOW**

##### **Chemical Fallow Use Restrictions:**

On soils in ND and SD with a pH greater than 7.5, do not exceed 1.5 lbs. a.i./A (1.66 lbs. of MANA Atrazine 90DF) for any application. For soils with a pH less than 7.5 in ND and SD, apply 1-2 lbs. a.i./A (1.11-2.2 lbs. MANA Atrazine 90DF). Use the higher rate on fine-textured soils and where heavy weed infestations are expected. Use the lower rate on coarse-textured soils and where light weed infestations are expected. In the event grasses are present in the following spring, use a grass herbicide registered for use on corn. For all other locations, do not apply more than 2.25 lbs. active ingredient (2.5 lbs. of this product) per acre for any application, and do not apply more than one application per cycle. Do not apply more than one application per cycle.

**Wheat-Sorghum-Fallow (AR, CO, GA, IL, KS, LA, MS, MO, NE, NM, NC, OK, SD & TX):** To control annual broadleaf and grass weeds following wheat harvest and in the following sorghum crop when grown under minimum tillage, broadcast 2.5 lbs./A of this product to wheat stubble immediately following wheat harvest. If weeds are present at application, remove them with a sweep plow or other suitable implement after application or use an approved contact herbicide before or after the application of MANA Atrazine 90DF. Plant sorghum into wheat stubble the following spring with minimum soil disturbance. Use a surface planter or a planter leaving a shallow furrow. If weeds are present at planting, remove them with a sweep plow or other suitable implement before planting.

For the list of weeds controlled, see **MANA Atrazine 90DF Applied Alone--Corn or Grain Sorghum--Preplant Surface-Applied, Preplant Incorporated, or Preemergence.**

*Precautions:*

- Use only on silt loam or fine-textured soil, or crop injury may result.
- Wheat-sorghum-fallow cropping sequence must be followed.
- Do not apply following sorghum harvest.
- Do not apply more than one application per cycle.

**Note:** Do not graze or feed forage from treated area to livestock. Do not plant any crop other than those on this label within 18 months following treatment.

**Wheat-Corn-Fallow (CO, KS, ND, NE, SD, and WY):** This product controls cheatgrass (downy brome, chess), kochia, mustards, pigweed, Russian thistle, wild lettuce, wild sunflower, and volunteer wheat during period after wheat harvest. Weed control may extend into following corn crop grown under minimum tillage.

Follow directions for use, notes, and precautions in the **Wheat-Sorghum-Fallow** section above, substituting corn for references to sorghum.

**Wheat-Fallow-Wheat (CO, KS, ND, NE, SD, and WY):** For preemergence control of cheatgrass (downy brome, chess), common lambsquarters, field pennycress, kochia, mustard, Russian thistle, wild lettuce, and suppression of volunteer wheat during fallow period of a wheat-fallow-wheat rotation, broadcast 0.5-1.1 lbs./A on all soils except those listed under *Precautions*. For control of pigweed and wild sunflower, use the higher rate. Apply to stubble ground. Treat only once during same fallow period.

#### **TANK MIXTURES FOR CHEMICAL FALLOW WHEAT-SORGHUM-FALLOW OR WHEAT-CORN-FALLOW (KS, NE)**

**Gramoxone Inteon:** If weeds are present at application, a tank mix with Gramoxone Inteon may be used. Broadcast 2.5 lbs. of MANA Atrazine 90DF plus a suitable amount of Gramoxone Inteon in 20-60 gals. of water per acre by ground equipment. Refer to the Gramoxone Inteon label for the appropriate rates to utilize in this tank mixture. Add 0.5-1 pt. of a nonionic surfactant such as X-77 per 100 gals. of spray mixture. Add MANA Atrazine 90DF to spray tank first and thoroughly mix with water. Then add Gramoxone Inteon followed by surfactant. Use the higher rate of Gramoxone Inteon specified on the label if weeds are 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone Inteon label for further directions, precautions, and limitations.

#### **Wheat-Fallow-Wheat (CO, KS, ND, NE, SD, and WY)**

**Gramoxone Inteon:** If weeds are present at application, a tank mix with Gramoxone Inteon may be used. Broadcast 0.5-1.1 lbs. of MANA Atrazine 90DF plus a suitable amount of Gramoxone Inteon in 20-60 gals. of water per acre by ground equipment. Add 0.5-1 pt. of a nonionic surfactant such as X-77 per 100 gals. of spray mixture. Add MANA Atrazine 90DF to spray tank first and thoroughly mix with water. Then add Gramoxone Inteon followed by surfactant. Use the higher rate of Gramoxone Inteon specified on the label if weeds are 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone Inteon label for further directions, precautions, and limitations.

If weeds are present at application and this product is used alone, use either an approved contact herbicide before or after treatment or tillage after treatment.

Use tillage to control weeds which escape during fallow period. Till before planting. For this product applied alone or in tank mixture with Gramoxone Inteon, plant at least 2 inches deep and 12 months or more after application.

*Precautions:*

- Do not use on sand soil.
- Do not treat eroded hillsides, caliche and rocky outcroppings, or exposed calcareous subsoil.
- Do not treat soils of the Rosebud and Canyon Series in western NE and adjoining counties in CO and WY.
- Do not treat soils with calcareous surface layers.



- Avoid spray overlap.
- Do not graze treated areas within 6 months after application.
- On all chemical fallow uses except ND and SD, do not apply more than 2.25 lbs. active ingredient (2.5 lbs. of MANA Atrazine 90DF) per acre. In ND and SD, follow the rate restrictions listed above.
- Do not apply more than once per cycle.

### SEVERE DROUGHT CONDITIONS

Do not graze forage or cut forage for hay. Under severe drought conditions, the Conservation Reserve Program allows grazing and making of hay from CRP acres, as so specified by the local ASCS (Agricultural Stabilization & Conservation Service) office. This label **does not** allow grazing or making of hay from CRP acres that have been treated with atrazine under any circumstance.

## SUGARCANE

### Use Directions for All States

For control of many broadleaf and grass weeds, including amaranths, crabgrass, fireweed, Flora's paintbrush, foxtails, junglerice, and wiregrass, broadcast 2.2-4.4 lbs./A of MANA Atrazine 90DF at time of planting or ratooning but before sugarcane emerges. Broadcast or band by ground equipment in a minimum of 20 gals./A unless indicated otherwise. One additional application may be made over the sugarcane as it emerges, and 2 additional applications may be made interline after emergence as directed sprays. Repeat treatments, where needed, may be applied broadcast, band, or interline as suggested with the final application being prior to close-in. Do not exceed the rate of herbicide suggested for any one crop of sugarcane.

**Note:** Where specified higher rates of MANA Atrazine 90DF are used alone, apply in a minimum of 1 gal. of water for each 1 lb. of MANA Atrazine 90DF applied per acre.

#### Precautions for All States and Uses:

- Injury to sugarcane may occur when under moisture stress, when soil is of low adsorptive capacity, or when land is first cropped to sugarcane.
- Do not apply after close-in.
- Do not apply more than 10 lbs. active ingredient (11 lbs. of this product) per acre per crop.
- Do not apply more than 4 lbs. active ingredient (4.4 lbs. of this product) per acre for any application.

For specific weed problems, the following may be used. Other rate and application timings may be used for other weed spectrums and cultural practices, provided they are within the above **Use Directions for All States** and are consistent with the **Precautions for All States and Uses**.

### Florida

For control of emerged pellitory weed: Apply 0.4-0.6 lbs./A of this product in at least 40 gals. of water as a directed spray by ground equipment prior to close-in. Add 4 qts. of surfactant for each 100 gals. of spray. Thoroughly cover weed foliage.

For control of alexandergrass, large crabgrass, pellitory (artillery) weed, and spiny amaranth, use one of the following methods at planting or ratooning:

1. Apply 4.4 lbs./A of this product preemergence. Follow with 1 or 2 applications, as needed, postemergence to sugarcane and weeds, at 2.2 lbs./A of this product. Treat before weeds exceed 1½ inches in height.
2. Apply 1-3 times, as needed, at 2.2 lbs./A of this product postemergence to sugarcane and weeds. Treat before weeds exceed 1½ inches in height.

### Louisiana

For control of annual weeds during the summer fallow period, apply 2.2 lbs./A of this product to weed-free beds immediately after bed formation. Follow normal weed control program after planting.

#### Additional Precautions in LA: To avoid crop injury:

- Do not apply more than 11 lbs./A of this product to any one crop of sugarcane.
- If making 2.2 lbs./A application of this product during summer fallow period, do not exceed 8.8 lbs./A of this product during the remainder of the growing season.

### Texas

Use MANA Atrazine 90DF for control of barnyardgrass, pigweed, purslane, and sunflower in plant or ratoon sugarcane.

Apply 4.4 lbs./A of MANA Atrazine 90DF preemergence. Follow with 1 or 2 applications as needed at 3.3 lbs./A of this product postemergence to sugarcane and weeds.

For best results when weeds are emerged, add a nonionic surfactant at a concentration of 2 qts./100 gals. to the spray and apply before weeds exceed 1½ inches in height.

**TURFGRASSES FOR SOD PRODUCTION (FLORIDA ONLY)**

**St. Augustinegrass, Centipedegrass, and Zoysiagrass**

Broadcast 2.2-4.4 lbs./A of this product according to soil texture to control those weeds listed under **MANA Atrazine 90DF Applied Alone--Corn or Grain Sorghum--Preplant Surface-Applied, Preplant Incorporated, or Preemergence.**

Muck or peat	4.4 lbs. of this product	<b>Old beds:</b> Within 2 days after lifting sod. <b>New beds:</b> 3-4 days after sprigging or plugging.
Sandy soil	2.2 lbs. of this product	<b>Old beds:</b> Within 2 days after lifting sod. <b>New beds:</b> 7-10 days after sprigging or plugging.

If weeds regrow, apply an additional 2.2 lbs./A of this product on muck or peat or 1.1 lbs./A of this product on sandy soil.

*Precautions:*

- Do not apply within 30 days prior to cutting or lifting.
- Do not apply in combination with surfactants or other spray additives.
- Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases.
- On newly sprigged turfgrass, temporary slowing of growth may follow application.
- For muck or peat soils, do not apply more than 4 lbs. active ingredient (4.4 lbs. of this product) per acre for any application, and for sandy soils, do not apply more than 2 lbs. active ingredient (2.2 lbs. of this product) per acre for any application.
- For muck or peat soils, do not apply more than 6 lbs. active ingredient (6.6 lbs. of this product) per acre per year, and for sandy soils, do not apply more than 3 lbs. active ingredient (3.3 lbs. of this product) per acre per year.

**TURFGRASS FOR FAIRWAYS, SOD PRODUCTION\*, AND RESIDENTIAL SITES (INCLUDING HOMES, DAYCARE FACILITIES, SCHOOLS, PLAYGROUNDS, PARKS, RECREATIONAL AREAS, AND SPORTS FIELDS)**

\*In states other than Florida. For use on turfgrass for sod in Florida, see TURFGRASSES FOR SOD PRODUCTION (FLORIDA ONLY) in the section above.

**Bermudagrass, Centipedegrass, St. Augustinegrass, and Zoysiagrass**

Apply MANA Atrazine 90DF after October 1 before emergence of winter annual weeds for control of annual bluegrass, burclover, carpet burweed, chickweed, corn speedwell, henbit, hop clover, and spurweed. MANA Atrazine 90DF will control annual bluegrass even if it is emerged at time of treatment. For control of summer annual weeds listed in the preemergence section of the **MANA Atrazine 90DF Applied Alone--Corn or Grain Sorghum** section of this label, also apply MANA Atrazine 90DF in late winter before the weeds emerge. Apply in a minimum of 15 gals. of water per acre or 1 gal./1000 sq. ft.

Where annual bluegrass is the major weed, use 1.1 lbs./A of MANA Atrazine 90DF (0.4 fl. oz./1000 sq. ft). Do not exceed 1.1 lb./A of this product per treatment on newly sprigged turfgrass or on hybrid bermudagrass such as Tiflawn, Tifway, and Ormond.

For continued summer annual weed control, apply another 1.1 lbs./A of MANA Atrazine 90DF at least 30 days after the previous application but not after April 15. However, do not make more than 2 applications of this product per year.

*Precautions: On newly sprigged turfgrass and hybrid bermudagrass, temporary slowing of growth and yellowing may occur following application.*

- Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases.
- Do not use on golf greens.
- Do not use north of NC (except may be used in VA Coastal Plains) or west of the high rainfall areas of eastern OK and eastern TX.
- Do not use on muck or alkaline soils.
- Do not apply over the rooting area of trees or ornamentals not listed on this label.
- Do not overseed with desirable turfgrass within 4 months before or 6 months after treatment.
- Do not apply this product to newly seeded bermudagrass until it has overwintered and has a well-developed rhizome system.
- Do not exceed 2.2 lbs. of this product per acre within 12 months of seeding bermudagrass.

- *Do not apply more than 1 lb. active ingredient (1.1 lbs. of this product) per acre per application for any application. Do not apply more than 2 lbs. active ingredient (2.2 lbs. of this product) per acre per year.*
- *Applications by backpack sprayer may only be used for spot treatments.*

### MACADAMIA NUTS

For preemergence control of many broadleaf and grass weeds, including crabgrass, foxtail, wiregrass, Flora's paintbrush, spanishneedles, and fireweed, broadcast 2.2-4.4 lbs./A of this product before harvest and before weeds emerge. Repeat as necessary. Do not spray when nuts are on ground during harvest period.

#### Precautions:

- *Do not apply more than 4 lbs. active ingredient (4.4 lbs. of this product) per acre for any application.*
- *Do not apply more than 8 lbs. active ingredient (8.8 lbs. of this product) per acre per year.*

### GUAVA

Use only on established plantings which are at least 18 months old. Apply as a directed spray at 2.2-4.4 lbs./A of MANA Atrazine 90DF in 20-50 gals. of spray mix preemergence or early postemergence to weeds. When applying postemergence, the use of a surfactant and greater spray volume (80-100 gals of spray mix per acre) may enhance weed control. This product controls many annual broadleaf and grass weeds, including fireweed, purslane, scarlet pimpernel, spanishneedles, and sowthistle.

#### Precautions:

- *Do not allow spray to contact foliage or fruit.*
- *Do not apply more frequently than at 4-month intervals.*
- *Do not apply more than 4 lbs. active ingredient (4.4 lbs. of this product) per acre for any application.*
- *Do not apply more than 8 lbs. active ingredient (8.8 lbs. of this product) per acre per year.*

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store in a dry place.

**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 (flexible-bag-all weights):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available.

**Nonrefillable Container (rigid-fifty lbs. 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. 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.

**Nonrefillable Container (rigid-greater than fifty lbs.):** 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. 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.

**Refillable Container:** Refillable container. Refill this container with atrazine 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.

### **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.

MANA Atrazine 90DF (66222-229) – IRRD