



ATRAZINE 90DF HERBICIDE

pms
352-444 10F10

ACCEPTED
MAR 14 1989
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 352-394

ACTIVE INGREDIENTS

Atrazine: (2-chloro-4-ethylamino-6-isopropylamino-s-triazine).....	85.5%
Related compounds.....	4.5%

INERT INGREDIENTS.....

TOTAL.....	100.0%
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EPA Reg. No. 352-484

EPA Est. No. 352-II-1

KEEP OUT OF REACH OF CHILDREN

CAUTION

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by sticking finger down back of throat. Do not induce vomiting or give anything by mouth to an unconscious person.

IN CASE OF CONTACT, immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.

For medical emergencies involving this product, call 1-800-441-3537.

PRECAUTIONARY STATEMENTS HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION Causes eye and skin irritation. Do not get in eyes, on skin, or on clothing. In case of contact with eyes, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Harmful if swallowed. Wash thoroughly with soap and water after handling and before eating or smoking. Avoid inhalation of dust and contamination of food and feed.

ENVIRONMENTAL HAZARDS

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

Atrazine is toxic to aquatic invertebrates. Do not apply directly to water or wetlands. Do not apply where runoff is likely to occur. 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.

In case of significant spill, call CHEMTREC 1-800-424-9300.

DIRECTIONS FOR USE

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

REENTRY STATEMENTS

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

Do not enter treated areas without protective clothing until sprays have dried. Because certain states may require more restrictive reentry intervals for various crops treated in this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. (Indicate specific oral warnings which inform workers of areas or fields that may not be entered without specific protective clothing, period of time, and must be vacated and appropriate actions to take in case of accidental exposure.) When oral warnings are given warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information:

"CAUTION! Area treated with Atrazine Herbicide on (date of application). Do not enter without appropriate protective clothing until sprays have dried. (Insert here actions to take in case of accidental exposure. See STATEMENT OF PRACTICAL TREATMENT for details.)"

GENERAL INFORMATION

Atrazine 90DF will control many annual broadleaf and grass weeds in corn, sorghum, sugarcane, pineapple, and certain other crops. It is also effective for control of many annual and many perennial broadleaf and grass weeds in non-crop areas and industrial sites. Atrazine 90DF may be applied before or after weeds emerge.

In each case where a range of rates is given, the lower rate should be used on light soils and soils low in organic matter; the higher rate should be used on heavy soils and soils high in organic matter.

Since Atrazine 90DF acts mainly through root absorption, its effectiveness depends on rainfall or irrigation to move it into the root zone. Should weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control.

Wash sprayer thoroughly after use.

Atrazine 90DF is noncorrosive to equipment and metal surfaces, nonflammable, and has low electrical conductivity.

Care should be taken to avoid using Atrazine 90DF where adjacent desirable trees, shrubs, or plants might be injured.

APPLICATION PROCEDURES

Atrazine 90DF is a water dispersible granule. It should be mixed with water or liquid fertilizer and applied as a spray as follows: (1) Fill spray tank 1/2 to 2/3 full of clean water or liquid fertilizer. Be sure the tank is clean and not contaminated with materials used previously. (2) Start and maintain agitation. (3) Pour Atrazine 90DF directly from the bag into the tank. (4) Fill the tank with water. Continue agitation while mixing and during application.

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CHEMIGATION

Application in Center Pivot Sprinkler Irrigation Water

Apply this product only through a center pivot sprinkler irrigation system. Do not apply this product through any other type of irrigation system. Do not use this product in an irrigation system connected to a public water system.

Do not apply when wind speed favors drift beyond the area intended for treatment.

- ✓ Crop injury, lack of effectiveness or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- ✓ If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- ✓ A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Irrigation System Requirements:

- ✓ 1. The system must contain a functional check valve, vacuum relief valve, and a low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- ✓ 2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

- ✓ 3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- ✓ 4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- ✓ 5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- ✓ 6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7. The system must be designed to inject the herbicide mix with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing.

Use Specifications

1. Atrazine 90DF alone or in tank-mix combinations with other herbicides on this label which are registered for center pivot sprinkler application, may be applied in center pivot sprinkler irrigation water. Apply any time after planting but prior to crop emergence. Pre-mix the herbicide(s) in water to form a slurry and inject at a carefully calibrated rate into the irrigation water during the entire period of the run. Mix as directed for spray application. Provide good agitation for the herbicide mixture throughout the application. Select the correct application rate of Atrazine 90DF or the Atrazine tank-mix combinations from the rate tables listed on this label.

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Example:
A center pivot sprinkler that is 1320 feet long (1/4 mile) will irrigate 125.7 acres. A sandy loam soil containing 2% organic matter will require 2.2 pounds of Atrazine 90DF per acre. (See Table 1)

125.7 A x 2.2 lbs. = 276.5 lbs. Atrazine 90DF

In the case of a mixing tank size of 600 gallons and where the sprinkler takes 20 hours to apply 1/2 inch of water to the complete circle;

Injection rate = 600/20 = 30 gal./hr. or 0.5 gal./minute

Calibrate the injection pump to deliver herbicide mix into the irrigation system at the rate of 30 gallons per hour or 0.5 gallons per minute. Add 276.5 pounds of Atrazine 90DF to the tank.

- 2. For tank-mix combinations select the correct dosage rate and follow the same procedures outlined above for each herbicide component.
- 3. Apply in 1/2 to 1 acre-inch of water. Use this method of application only with irrigation systems designed for uniform application of water.
- 4. Application of more than label recommended quantities of irrigation water per acre may result in decreased product performance by removing the chemical from the zone of effectiveness.
- 5. Do not apply when wind speed favors drift beyond the area intended for treatment.

6. Do not apply when system connectors leak, when nozzles do not provide uniform distribution or when lines containing the product must be drained and dismantled.

7. Greater accuracy in calibration and distribution will be achieved by injecting a large volume or more dilute slurry per hour.

Ground Application

Use 10-40 gals. of water per acre to assure even coverage unless otherwise specified. For uniform distribution, use 80 degree flat fan-type nozzles. Screens in nozzles, as well as those in suction and in-line strainers, should be no finer than 50-mesh.

Use a suitable pump with capacity to deliver (1) the necessary volume to the nozzles at 35-40 psi and (2) an additional volume to maintain the mixture in suspension in the spray tank.

For band applications, calculate amount to be applied per acre as follows:

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

Aerial Application

Use only where broadcast applications are specified. Apply a minimum of 1 gallon of water for each 1 lb. to 1.5 lbs. of Atrazine 90DF to be applied per acre.

For postemergence treatments on corn and sorghum apply recommended rate in a minimum of 2 gallons of water/acre.

Do not apply where uniform coverage cannot be obtained or where excessive spray drift may occur. Avoid application directly to humans or animals. Flagmen or loaders should avoid inhalation of dust or spray mist, or contact with skin and should wash thoroughly before eating and at the end of each day's operation.

Application in Liquid Fertilizer:

For preplant and preemergence applications on corn or sorghum, nitrogen solutions or complete liquid fertilizers may replace all or part of the water as a carrier for Atrazine 90DF. Do not apply after corn or sorghum has emerged because liquid fertilizers may cause crop injury.

Check to ensure the compatibility of Atrazine 90DF with liquid fertilizer prior to mixing in the spray tank. A convenient method for testing the compatibility of Atrazine 90DF with liquid fertilizer follows:

A. Add one pint of liquid fertilizer or other carrier to be used to two quart jars. Mark one quart jar "with" and the other jar "without."

B. To the jar marked "with" add 1/4 teaspoon of a suitable compatibility agent. Shake gently for 5 to 10 seconds to mix. (1/4 teaspoon/pint = 2 pints/100 gallons.)

C. To each jar mix the number of teaspoons of herbicide shown on the following chart times the number of lbs. per acre of Atrazine 90DF to be applied corresponding to the gallons per acre of liquid fertilizer to be used. (For example, if 3 lbs. per acre of Atrazine 90DF are to be applied in 20 gallons of liquid fertilizer per acre, then 3 x 1-1/2 teaspoons, or 4-1/2 teaspoons should be mixed with one pint of liquid fertilizer. If more than one herbicide is used, add them separately; wettable powders first, flowables second and emulsible concentrates last. Shake gently for 5 to 10 seconds after each addition.

D. Let stand one-half hour and make observations. If any separation, agglomeration, or precipitation has occurred, again shake the jar 10 to 15 seconds.

1. If mixtures appear to be compatible in both jars, the herbicide(s) can probably be used without a compatibility agent.

2. If the mixture in the jar marked "with" is compatible, but the one in the jar marked "without" is incompatible, a compatibility agent should be used.

3. If both mixtures are incompatible, the liquid fertilizer and herbicide(s) should not be used in the same spray tank.

If a test such as outlined indicates that components of a proposed mix are compatible, materials to be combined in the spray tank should still be added in the sequence according to directions prescribed on the label of the herbicides or pesticides involved.

JAR TEST FOR ATRAZINE 90DF COMPATIBILITY WITH LIQUID FERTILIZER						
Gallons Liquid Fertilizer/Acre	10	15	20	25	30	40
Teaspoons ATRAZINE 90DF/ Pint of Fertilizer	3	2 1/4	1 1/2	1 1/4	1	3/4

Application in Water Plus Emulsible Crop Oil or Crop Oil Concentrate The addition of oil to Atrazine 90DF in water sprays may speed the activity of Atrazine 90DF and provide quicker kill of weeds. However, under certain conditions the use of oil may seriously damage corn. To minimize the possibility of damage to corn, follow the directions, procedures and precautions given below.

Use a crop oil containing at least 1 percent suitable emulsifier or a crop oil concentrate containing not more than 20% emulsifier or surfactant blend designated for use with atrazine. Several oils of this type are on the market. Emulsible crop oil and crop oil concentrate contaminated with water or other materials can cause compatibility problems and/or crop injury.

Mixing Procedures -- All uses: (1) Thoroughly clean sprayer prior to use. Do not use sprayer contaminated with 2,4-D or other materials because crop damage or sprayer clogging may result. (2) Fill spray tank 1/2-2/3 full with clean water. (3) Start agitation. (4) Pour Atrazine 90DF directly from bag into tank. (5) As applicable, add emulsible crop oil, crop oil concentrate or tank mix herbicide. (6) Fill the tank the rest of the way with water. (7) Empty the tank as completely as possible before refilling to prevent a build-up of emulsible oil in the tank. Keep the agitation system in operation to avoid a separation of the oil from the water in the spray mixture still remaining in the tank. (8) If an oil film starts to build up in the tank, drain the tank and clean out with a strong detergent solution or solvent. (9) Clean the sprayer thoroughly immediately after use by flushing the system with water containing a detergent.

CORN

One application will control many annual broadleaf and grass-weeds such as barnyardgrass, witchgrass (Panicum capillare), yellow foxtail, green foxtail, wild oats, large (hairy) crabgrass, giant foxtail, velvetleaf, morningglory, lambsquarters, pigweed, ragweed, nightshade, purslane, and mustard.

Atrazine 90DF may be applied either before planting, at planting, or after planting using 1.1-4.4 lbs. per acre as indicated below.

Preplant: Broadcast in the spring after plowing at the rate indicated in Table 1. Apply before, during or after final seedbed preparation. If soil is plowed or worked after application, avoid deep incorporation. Best results have been obtained when applied within two weeks prior to planting.

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

Soil Texture	Broadcast Rate per acre of Atrazine 90DF
COARSE SOILS: Sands, loamy sands and sandy loams	2.2 lbs.
MEDIUM SOILS: Silt and clay loams that are low in organic matter	2.6 lbs.
FINE SOILS: Silt and clay loams with medium to high organic matter and clays (including the dark prairie soils of the Corn Belt)	3.3 lbs.
Peats, mucks, and high organic clays (Apply postemergence only)	3.3 lbs.

*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 lb./A. either preplant or preemergence. Controls many broadleaf weeds including pigweed, lambsquarters, nightshade, purslane, and kochia. On other soils in these areas apply rate in Table 1 for broadleaf and grass control.

Preemergence:

Apply during or shortly after planting prior to weed emergence at the rate indicated in Table 1.

Postemergence:

Apply before weeds exceed 1.5 inches in height, at the rate indicated in Table 1.

Layby Treatment:

Broadcast 1.1-2.2 lbs. per acre in 10-40 gals. of water or nitrogen solution before weeds are 1.5 inches high. Apply when corn is 20-30 inches high. When nitrogen solutions are used, direct the spray to the lower 3-4 inches of cornstalks to avoid corn foliage injury. Agitation in the spray tank during application is essential.

Postemergence with Emulsible Oil or Crop Oil Concentrate in Water: Broadleaf and Grass Control: Broadcast 2.2 lbs. of Atrazine 90DF after emergence but before weeds reach 1.5 inches in height. Add 1 gal. of emulsible oil/acre (4% vol./vol.) for ground application and 0.5 gal/acre for aerial application. Add one quart of crop oil concentrate/acre (1% vol./vol.) for ground application.

Broadleaf Control:

Broadcast 1.3 lb. per acre for control of many broadleaf weeds, including annual morningglory, cocklebur, lambsquarters, mustards, pigweed, ragweed, smartweed, and wild buckwheat. Add 1 gal. of emulsible oil per acre (4% vol./vol.) for ground application and 0.5 gal. per acre for aerial application or add 1 qt. of crop oil concentrate per acre (1% vol./vol.) for ground application. Apply 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 re-grow.

Precautions for Applications with Emulsible Oil or Crop Oil Concentrate in Water (1) Do not use when corn is under stress from prolonged cold, wet weather, poor fertility, or other factors or when corn is wet and succulent from recent rainfall because crop injury may occur. (2) Do not use when treating inbred lines or any breeding stock because injury may occur. (3) Adding other insecticides, herbicides, liquid fertilizers, or other materials is not recommended because they may cause compatibility problems or crop injury. (4) Store and handle emulsible oil and crop oil concentrate carefully. Oil contaminated with even a small amount of water may not emulsify properly when added to the tank. (5) Do not make more than one application per season except as recommended for control of yellow nutsedge and Canada thistle on this label.

PROBLEM WEEDS:

Yellow Nutsedge and Canada Thistle: Atrazine 90DF will control yellow nutsedge (*Cyperus esculentus*) and Canada thistle (*Cirsium arvense*) when applied according to directions. For best results apply each year until yellow nutsedge or Canada thistle is eliminated or reaches a level of infestation where neither weed is a problem. If yellow nutsedge or Canada thistle regrow following last application, cultivate once.

Six alternative methods of use for control of yellow nutsedge and Canada thistle are listed below in order of preference. If other weed species including annual grasses are also expected use alternative 2, 3, 5 or 6. NOTE: Emulsible oil should be used at 4% vol./vol. and crop oil concentrate should be used at 1% vol./vol.)

(1) Broadcast 2.2 lb. plus 1 gal. (4% vol./vol.) of emulsible oil or 1 qt. (1% vol./vol.) of crop oil concentrate/acre after crop and yellow nutsedge or Canada thistle emerge, but before yellow nutsedge reaches a height of 3 inches or Canada thistle reaches a height of 6 inches. Repeat application before lay-by (20-30 inches) 10-20 days after the first application.

(2) Broadcast 2.2 lb/acre preplant. Follow with an application of 2.2 lb. plus 1 gal. of emulsible oil or 1 qt. of crop oil concentrate/acre after corn and weeds emerge, but before yellow nutsedge reaches a height of 3 inches (yellow nutsedge control only).

(3) Broadcast 2.2 lb./acre during or shortly after planting, but before crop or weed emergence. Follow with an application of 2.2 lb. plus 1 gal. of emulsible oil or 1 qt. of crop oil concentrate/acre after corn and weeds emerge, but before yellow nutsedge reaches a height of 3 inches or Canada thistle reaches a height of 6 inches.

(4) Broadcast 4.4 lb. plus 1 gal. of emulsible oil or 1 qt. of crop oil concentrate/acre after crop emerges, but prior to lay-by (20-30 inches) and after yellow nutsedge and Canada thistle emerge, but before yellow nutsedge is 3 inches tall or Canada thistle is 6 inches tall.

(5) Broadcast 4.4 lb/acre preplant (yellow nutsedge control only).

(6) Broadcast 4.4 lb/acre during or shortly after planting, but before crop or weed emergence (yellow nutsedge control only).

NOTE: Do not use alternatives 1, 2, 3 or 4 when corn is wet or under stress. See "Precautions for applications with emulsible oil or crop oil concentrate in water" for additional directions.

Quackgrass Control on Land Going into Corn Production: Split Application: Broadcast 2.2 lbs. per acre in the fall or spring and plow 1-3 weeks later. Broadcast a second application at the rate of 2.2 lbs. per acre in the spring before, during or after planting but before weeds are 1.5 inches high. This split application will control both quackgrass and most annual broadleaf and grass weeds.

Single Application: Broadcast 3.3 lbs. to 4.4 lbs. per acre in the fall or spring. Plow 1-3 weeks after application.

TANK MIXTURES ON CORN:

DUAL 8E (metolachlor): Use as tank mixture for control of certain broadleaf and grass weeds in corn. Refer to DUAL 8E label for all directions, weeds controlled, precautions and limitations.

LASSO or LASSO EC (alachlor): Use as tank mixture with LASSO for control of many annual broadleaf and grass weeds in corn (field, hybrid seed, silage, sweet, popcorn, including barnyardgrass, carpetweed, crabgrass, fall panicum, Florida pusley, foxtails, (giant, green, yellow), goosegrass, jimsonweed, Kochia, lambsquarters, mustard, nightshade, pigweed, purslane, ragweed, signalgrass (Brachiaria), smartweed, and witchgrass. This tank mix will reduce competition from the hard to control annual weeds -- annual morningglory, cocklebur, and velvetleaf (buttonweed).

For preemergence or early postemergence broadcast application, use rates in Table 2. Apply tank mixture any time from immediately after planting until weeds reach 2-leaf stage and corn is no more than 5 inches tall. On sweet corn, apply before crop and weeds emerge. Application after the 2-leaf weed stage will not give satisfactory control. With postemergence application, occasional corn leaf burn should not affect growth or yield. If applied with liquid fertilizers, spray before crop emerges.

For preplant incorporated applications, use 0.25 lb. more of Atrazine 90DF plus 0.5 qt. of LASSO 4EC/acre than indicated in Table 2. Use no more than 1.75 lb. of Atrazine 90DF plus 2.5 qt. of LASSO 4EC/acre. Broadcast within 7 days before planting and incorporate 2 inches deep.

Apply tank mixture in a minimum of 20 gal. of water/acre. Liquid fertilizer may replace all or part of the water. Add Atrazine 90DF to spray tank, thoroughly mix with water, then add LASSO. Follow mixing procedures in the section "Application Procedures" of this label.

Refer to LASSO label for information concerning center pivot irrigation applications and other directions, limitations, and cautions.

Propachlor (except in California): Use as tank mixture for control of many annual broadleaf and grass weeds in corn (field, hybrid seed, silage, and sweet corn only), including annual morningglory, annual ryegrass, barnyardgrass (watergrass), velvetleaf, carpetweed, cocklebur, crabgrass, fall panicum, Florida pusley, giant foxtail, green foxtail, yellow foxtail, goosegrass, groundsel, jimsonweed, lambsquarters, mustard, nightshade, pigweed, purslane, ragweed, smartweed, and sunflower. Broadcast 1.1-1.7 lb. of Atrazine 90DF plus 3.8-6 lb. of propachlor 65WP/acre (or equivalent rates of other propachlor formulations) on soil surface any time from immediately after planting until after broadleaf and grass weeds reach the 2-leaf stage. Use lower rates on coarse-textured soil low in organic matter. Use higher rates on fine-textured soil high in organic matter.

A minimum of 1.5 lb/acre of Atrazine 90DF in the tank mixture will give better control of annual morningglory, velvetleaf, cocklebur, and sunflower.

Apply in a minimum of 20 gal. of water/acre. Liquid fertilizer may replace all or part of the water as a carrier for applications before crop and weeds emerge. Add Atrazine 90DF to spray tank and thoroughly mix with water. Then, cut the propachlor 65WP bag and fill with water to fill line. Grasp neck of bag firmly, shake vigorously, and add contents to spray tank.

Refer to propachlor product label for further directions, limitations, and cautions.

PRINCEP 80W, PRINCEP 4L or PRINCEP CALIBER 90 (Silmazine): Use as tank mixture for control of many annual weeds, including carpetweed, crabgrass, fall panicum, foxtail, lambsquarters, morningglory, pigweed, ragweed, and velvetleaf. Apply before planting, at planting, or after planting, but before crop and weeds emerge, at rates in Table 3. Use 1:1 ratio for control of above weeds. Use 1:2 ratio for expected heavy infestations of crabgrass and fall panicum. Apply in a minimum of 20 gal. of water per acre. Cultivate shallowly if weeds develop.

Preplant: Apply in spring during or after final seedbed preparation. If soil is tilled or worked after application, avoid deep incorporation. For best results, apply within two weeks before 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 4L or PRINCEP CALIBER 90 label for further directions, limitations, and cautions.

**TABLE 2
TANK MIXTURES WITH LASSO ON CORN**

Soil Texture	Broadcast Rate/Acre			
	Less Than 3% Organic Matter		3% or More Organic Matter	
	Atrazine 90DF	Lasso 4EC	Atrazine 90DF	Lasso 4EC
COARSE* Sand, Loamy sand, Sandy loam	1.1 lb.	1.5 qt.	1.1 lb.	1.5 qt.
MEDIUM Loam, Silt loam, Silt	1.1 - 1.3 lb.	1.75 qt.	1.3 - 1.5 lb.	2 qt.
FINE Silty clay loam, Sandy clay loam, Silty clay, Sandy clay, Clay loam, Clay	1.3 - 1.75 lb.	2.25 qt.	1.3 - 1.75 lb.	2.5 qt.

*When applied via center pivot irrigation on coarse soils, apply 1.1 lb. of this product and 2 qt. of LASSO 4EC/acre.

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**TABLE 3
TANK MIXTURES WITH PRINCEP ON CORN**

Soil Texture	Broadcast Rate/Acre			
	1:1 Ratio*		1:2 Ratio**	
	Atrazine 90DF	Princep 80W*** or Princep 4L	Atrazine 90DF	Princep 80W or Princep 4L
Sand, Loamy sand, Sandy loam	1.1 lb.	1.25 lb. or 2 pt.	.73 lbs.	1.67 lb. or 2.67 pt.
Loam, Silt loam, Silt, Clay loam, Sandy clay loam, Silty clay loam, Sandy clay, or Silty clay with low organic matter	1.3 lb.	1.5 lb. or 2.4 pt.	.88 lbs.	2 lb. or 3.2 pt.
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 lb.	1.8 lb. or 3 pt.	1.07 lbs.	2.4 lb. or 3.84 pt.

*For control of above weeds.
**For control of expected heavy infestations of crabgrass and fall panicum.
***For Princep Caliber 90 rates, multiply the Princep 80W rates by 0.88.

Paraquat Products: For control of existing vegetation and residual control where corn will be planted directly into a cover crop, established sod, or in previous crop residues, apply 2.2-3.3 lb. of Atrazine 90DF and 1-2 pt. Paraquat (2 lbs./gal.) in 20-30 gal. of water per acre. Add 8 fl. oz. of a nonionic surfactant, such as ORTHO X-77, per 100 gal. of spray mixture. Add Atrazine 90DF to spray tank, thoroughly mix with water, then add the paraquat and surfactant.

Refer to the paraquat product label for further directions, limitations, and cautions.

PRINCEP and Paraquat: Use as tank mixture with PRINCEP and a paraquat product for kill of existing vegetation and 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 product to water in spray tank, agitating until thoroughly mixed. Then add paraquat and a nonionic surfactant such as ORTHO X-77. Continue agitation during application. Apply 1.1-2.2 lb. of this product plus 1.25-2.5 lb. of PRINCEP 80W (or equivalent rates of PRINCEP 4L or PRINCEP CALIBER 90) plus 1-2 pt. paraquat (2 lbs./gal.) in 20-60 gal. of water per sprayed acre within 3 weeks before, during, or after planting, but before corn crop emerges. Add 8 fl. oz. of a nonionic surfactant, such as X-77, per 100 gal. diluted spray. Use lower rates of this product and of PRINCEP on coarse soil, and higher rates on fine-textured soil. Use the 2 pt. rate of paraquat (2 lbs./gal.), 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 Atrazine 90DF, PRINCEP product, and the paraquat product.

Precautions for all applications to corn:
(1) Do not apply more than 4.4 lbs. Atrazine 90DF to corn in any one year.
(2) Land treated with Atrazine 90DF should not be planted to any crop except corn or sorghum until the following year or injury may occur.
(3) Injury may occur in any crop other than corn or sorghum planted the year following treatment.
(4) Following harvest of a treated crop, plow

(moldboard or disk-plow) and thoroughly till the soil in the fall or spring to minimize possible injury to rotational spring-seeded crops, regardless of the rate used. (5) To avoid the possibility of injury to following fall or spring seeded crops, the use of BLADEX Herbicide in place of Atrazine 90DF, is recommended. Follow directions on the BLADEX label. (6) The use of Atrazine 90DF on land that is to be rotated the following year to soybeans that will be treated with metribuzin (LEXONE or SENCOR) may increase the chance of injury. (7) If Atrazine 90DF is applied after June 10, do not rotate with crops other than corn or sorghum the next year or injury may occur. (8) In the High Plains and Intermountain areas of the West where rainfall is sparse and erratic or where irrigation is required, use Atrazine 90DF to control weeds in corn or sorghum only when corn or sorghum is to follow corn or a crop of untreated corn or sorghum is to precede other rotational crops. (9) Do not graze treated area or feed treated forage to livestock for 21 days following application.

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

Apply before planting, or after planting as indicated in the directions below. See Corn section for weeds controlled.

Preplant (Broadleaf and grass control): Broadcast in spring after plowing at rate in Table 4. Apply before, during, or after final seedbed preparation. If soil is tilled or worked after application, avoid deep incorporation. For best results, apply within two weeks before planting.

Preemergence (Broadleaf and grass control): Apply during, or shortly after planting before weed or crop emergence, at rate in Table 4.

In case of planting failure, sorghum may be replanted. Do not make a second broadcast application, as injury may occur. If originally applied in a band and sorghum is replanted in untreated row middles, Atrazine 90DF may be applied in a band to the second planting.

✓ **Preemergence broadleaf weed control in furrow irrigated bedded sorghum (AZ and CA only):** For preemergence control of many broadleaf weeds, including groundcherry, lambsquarters, morningglory, mustard, pigweed, and purslane, broadcast 0.9-1.3 lb./acre after bed preparation, during or after planting, but before sorghum and weeds emerge and before the first furrow irrigation. Follow with several regular irrigations to thoroughly wet all soil. Use lower rate on coarse-textured soil and soil low in organic matter; use higher rate on fine-textured soil and soil high in organic matter.

✓ **Precautions for preemergence application to furrow irrigated bedded sorghum grown in AZ and CA:** To avoid possible sorghum injury, do not use on sand or loamy sand soils or on sorghum planted in furrow. Applications to sorghum growing on alkali soils or where cuts, fills, or erosions 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 and grass control):** Apply at rate in Table 5 before weeds exceed 1.5 inches in height. Apply up to "close-in".

Postemergence broadleaf weed control with emulsible crop oil or crop oil concentrate in water: Broadcast 1.3 lb./acre for control of many broadleaf weeds, including annual morningglory, cocklebur, lambsquarters, mustard, pigweed, ragweed, smartweed, and wild buckwheat. 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 6-10 inches in height but before it reaches boot stage; in all other areas, apply after sorghum

reaches the 3-leaf stage. Add 1 gal./acre (4% vol./vol.) of emulsible crop oil/acre for ground application and 0.5 gal./acre for aerial application or add 1 qt./acre (1% vol./vol.) of crop oil concentrate for ground application. Cultivation may be necessary if all weeds are not controlled or if weeds re-grow. ✓

Precautions for applications with emulsible crop oil or crop oil concentrate in water. See "Precautions for applications with emulsible crop oil or crop oil concentrate in water" in Corn section of this label. ✓

Postemergence broadleaf weed control with surfactant (CO, Western KS, NM, OK, TX, and desert regions of AZ and CA only): Broadcast 1.3 lb. plus 0.75-1.5 pt. of surfactant/acre after sorghum reaches 6 inches in height, but before weeds exceed 1.5 inches in height. Apply only on sandy loam and finer textured soil. ✓

Precautions for all applications to sorghum: (1) 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. (2) Application to sorghum growing under stress caused by minor element deficiency or to sorghum growing on highly calcareous soil may result in crop injury. (3) Injury may occur in any crop other than corn or sorghum planted the year following treatment. (4) Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to rotational spring-seeded crops, regardless of rate used. (5) Injury may occur if both this herbicide, preplant or preemergence, and an at-planting systemic insecticide are used. ✓

**TABLE 4
PREPLANT AND PREEMERGENCE BROADLEAF AND GRASS WEED CONTROL IN SORGHUM***

Soil Texture	Organic Matter	Broadcast Rate/Acre
COARSE Sand, Loamy sand, Sandy loam, Sandy clay loam	Any level	DO NOT USE (except for preemergence use on bedded sorghum in AZ and CA)
	Less than 1%	
MEDIUM and FINE Silt loam, Loam, Clay loam, Clay	1-1.5%	1.7-2.2 lb.
	more than 1.5%	2.2-2.6 lb.

*Do not apply preplant 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.

**TABLE 5
POSTEMERGENCE BROADLEAF AND GRASS WEED CONTROL IN SORGHUM**

Soil Texture	Minimum Sorghum Height at Treatment	Broadcast Rate/Acre
Sand or Loamy sand	DO NOT USE	
Sandy loam	See directions for postemergence broadleaf weed control	
Silt loam to Sandy clay loam	Completely Emerged	2.2-2.6 lb.
Oilon and Pullman clay soil	6 inches	2.2-2.6 lb.
Silty clay loam and finer textured soil	Completely Emerged	3.3 lb.

NOTE: Do not graze or feed forage from treated areas for 21 days following application.

Additional Precautions: See "Precautions for all applications to corn" in Corn section of this label.

CHEMICAL FALLOW

Wheat-Sorghum-Fallow

To control annual broadleaf and grass weeds following wheat harvest and continuing into the following sorghum crop when grown under minimum tillage:

Broadcast 3.3 lbs. per acre to the wheat stubble immediately following wheat harvest. Use 10-40 gals. of water per acre to assure thorough coverage. If weeds are present, remove them with a sweep plow or other suitable implement after application. Sorghum should be planted into the wheat stubble the spring following treatment with minimum disturbance of the soil. 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. Do not apply following sorghum harvest.

Precautions:

(1) Use only on a silt loam or heavier soil. (2) Wheat-sorghum-fallow cropping sequence must be followed. (3) Do not graze treated area or feed treated forage to livestock. (4) Do not plant treated area to any crop other than those on this label within 18 months following treatment.

Wheat-Corn-Fallow (KS, NE)

Atrazine 90DF controls cheatgrass (downy brome, chess), kochia, mustards, pigweed, Russian thistle, wild lettuce, wild sunflower, and volunteer wheat during the period after wheat harvest. Weed control may extend into following corn crop grown under minimum tillage.

Apply with ground equipment only.

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, MT, NE, ND, 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, apply 0.5-1.1 lbs. in 10-40 gal. of water per acre for ground application, or in a minimum of 5 gal. of water per acre for aerial application, 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.

If weeds are present at application, a tank mix with a paraquat product may be used. Broadcast 0.5-1.1 lbs. of Atrazine 90DF plus 1-2 pt. of paraquat (2 lbs./gal.) in 20-50 gal. of water per acre by ground equipment. Add 0.5-1 pt. of a nonionic surfactant, such as ORTHO X-77, per 100 gal. of spray mixture. Add Atrazine 90DF to spray tank first and thoroughly mix with water. Then add paraquat, followed by surfactant. Use the 2 pts./A. (2 lbs./gal.) or 2.7 pts./A. (1.5 lbs./gal.) rate of paraquat, 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 paraquat product 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 Atrazine 90DF applied alone or in tank mixture with paraquat, plant at least 2 inches deep and 12 months or more after application.

Precautions: (1) Do not use on sand soil. (2) Do not treat eroded hillides, caliche and rocky outcroppings, or exposed calcareous subsoil. (3) Do not treat soils of the Rosebud and Canyon Series in Western NE and adjoining counties in CO and WY. (4) Do not treat soils with calcareous surface layers. (5) Avoid spray overlap.

NOTE: Do not graze treated areas within 6 months after application.

RANGELAND

Atrazine 90DF controls certain weeds in rangeland, including cheatgrass (downy brome, chess), tumble mustard, sagewort, annual or common broomweed, little barley, and medusahead. Use lower rate on areas where cheatgrass is the major problem weed; use higher rate to control other weeds.

For ground applications, use a minimum of 10 gals. of water per acre.

For aerial applications, use a minimum of 5 gals. of water per acre.

See "Application Procedures" for additional information.

Establishment of Perennial Range Grasses (CA, ID, NV, OR, UT, WA): Apply 0.9-1.1 lb. per acre in fall after rains begin, but before ground freezes. Perennial range grass may be seeded when rain begins the next fall following treatment. Plant in deep furrows such as those made by a deep furrow rangeland drill. Treated areas may be grazed 7 months after seeding. However, to provide sufficient time for establishment of desirable range grasses, treated areas should not be grazed until the fall following seeding.

Renovation of Existing Stands of Perennial Range Grasses Central Great Plains (CO, KS, MT, ND, NE, SD, WY): Apply 0.6-1.1 lbs. per acre in fall before ground freezes.

Southern Great Plains (OK, TX): Apply 1.1 lbs. per acre in spring before April 30.

West (CA, ID, NV, OR, UT, WA): Do not graze area to be treated for six months prior to application. Apply 0.6-0.8 lbs. per acre by ground equipment in fall before the ground freezes.

Bluegrass and intermediate wheatgrass may be injured by this product at recommended rates.

Do not cut or feed range grass hay. Do not graze treated areas within seven months following fall application or three months following spring application. Apply only once per year.

Warm Season Perennial Range Grasses (Midwest) Switchgrass and Big Bluestem: For control of many annual broadleaf and grass weeds including cheatgrass, foxtails, (giant, green, and yellow), lambsquarters, pigweed, ragweed, smartweed, and velvetleaf. For ground application use a minimum of 15 gal. of water per acre.

Use only on loam, silty clay loam, clay loam, and silty clay soils with at least 1 percent organic matter.

New Seeding: Apply 2.2 lb./acre after planting but before weeds emerge. Prepare a good, firm seedbed. Plant 0.5 inch deep with a rangeland drill (preferred method) or a conventional drill. If a conventional drill is used on prepared seedbeds, remove all tension from the disk openers. For best results, cultipack or roll after planting. Clip weeds that escape in July or August. Avoid clipping switchgrass or big bluestem seedlings.

Established Stands: Apply 2.2 lb./acre in April or early May before weed emergence.

Precautions: See "Precautions" in Corn section.

NOTE: Do not cut for hay. Do not graze treated areas within four months following application at seeding or three months following application to established switchgrass or big bluestem. Treat only once per year.

SUGARCANE

For control of many annual broadleaf and grass weeds, such as crabgrass, junglerice, wiregrass, foxtail, amaranths, Flora's paintbrush, fireweed and similar plants: Broadcast 2.2-4.4 lbs. per acre in 20-50 gals. of water for adequate coverage of the soil surface at time of planting or ratooning, but before the cane emerges. One additional application may be made over the cane as it emerges, and two additional applications may be made interline after emergence, as directed sprays.

For control of emerged pellitory weed (artillery weed) (Florida only): Apply 0.4-0.6 lb. per acre in at least 40 gals. of water per acre as a directed spray. Add 2 qts. of surfactant for each 50 gals. of spray and be sure weed foliage is thoroughly covered.

Precautions:

(1) Do not apply after "close-in". (2) Do not apply more than 11 lbs. per acre to any one crop of cane.

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

(1) Apply 4.4 lbs. in 20-50 gal. of water per acre, preemergence, broadcast or banded. Follow with one or two broadcast or banded over-the-top applications as needed, postemergence to sugarcane and weeds, at 2.2 lb. in 20-50 gal. of water per acre. Treat before weeds exceed 1.5 inches in height.

(2) Apply 1-3 times as needed, at 2.2 lb. in 20-50 gal. of water per acre either broadcast or banded over-the-top, postemergence to sugarcane and weeds. Treat before weeds exceed 1.5 inches in height.

TURF GRASSES FOR SOD PRODUCTION (St. Augustine, Centipede, and Zoysia Grass)

Broadcast 2.2-4.4 lbs. per acre according to soil type as indicated below. Apply in 20-40 gallons of water per acre for thorough coverage.

Apply additional 2.2 lbs. on muck or peat, or 1.1 lbs. on sandy soils, if weed growth recurs.

Muck or Peat	4.4 lbs.	Old Beds: Within 2 days after lifting of sod
		New Beds: 3-4 days after sprigging or plugging.
Sandy Soils	2.2 lbs.	Old Beds: Within 2 days after lifting of sod
		New Beds: 7-10 days after sprigging or plugging.

Precautions:

(1) Do not apply within 30 days of cutting or lifting. (2) Do not apply in combination with surfactants or other spray additives, as these combinations may cause injury. (3) Do not use north of NC.

FRUIT AND NUT CROPS

Macadamia Nuts:

For preemergence control of many broadleaf and grass weeds such as crabgrass, foxtail, wiregrass, Flora's paintbrush, Spanish needles, and fireweed, broadcast 2.2-4.4 lbs. in 50 gals. of water per acre before harvest and just prior to seed emergence. Repeat applications as necessary. Do not spray when nuts are on the ground during the harvest period.

Do not make aerial applications.

Pineapple:

For the control of purslane, Spanish needles, annual grasses, annual bindweed, ageratum, amaranths, rattiepod, Flora's paintbrush, fireweed, spurge, indigo, papalo, and other similar weed species:

Make an initial application of up to 7.1 lbs. per acre as a blanket spray immediately after planting or following plant crop harvest. Make additional blanket or interspace applications of up to 1.7 lbs. per acre at one to two month intervals as needed, prior to differentiation. Apply in 20-40 gals. of water per acre to assure thorough coverage.

Precautions:

(1) Do not apply more than 33.3 lbs. per acre per cycle. (2) Do not apply within 45 days of fruit harvest, or forage harvest if forage is to be fed to livestock. (3) Repeated monthly applications to plant foliage may slow plant growth and delay fruiting.

FORESTS AND CHRISTMAS TREE PLANTATIONS

Douglas Fir, Grand Fir, Noble Fir, White Fir, Lodgepole Pine, Ponderosa Pine and Scotch Pine:

Annual broadleaf and grass weed control: Broadcast 2.2-4.4 lbs. in 20-40 gallons of water per acre to assure thorough coverage. Apply before weed seedlings are more than 1.5 inches high. Apply between fall and early spring while trees are dormant. For new transplants, apply during or soon after transplanting. For applications prior to transplanting, allow sufficient precipitation to activate Atrazine 90DF before transplanting. In areas where spring and summer rainfall is inadequate to activate Atrazine, apply during fall prior to spring transplanting.

Quackgrass control: Broadcast 4.4 lbs. per acre in a minimum of 5 gallons of water by air or 10 gals. of water by ground between fall and early spring while trees are dormant and before quackgrass is more than 1.5 inches tall.

Precautions:

(1) Do not graze treated areas. (2) Do not apply to seedbeds. (3) Do not make more than one application per year.

NONSELECTIVE WEED CONTROL ON NON-CROP LAND

Atrazine 90DF can be used to provide long-term weed control on industrial sites, highway medians and shoulders, railroad rights-of-way, lumberyards, petroleum tank farms, and in non-crop areas on farms, such as around buildings, equipment and fuel storage areas, along fences, and lanes.

Apply Atrazine 90DF at rates recommended below, before or soon after weeds begin growth. Postemergence applications should be made when weeds are young and actively growing. Use the higher rates on heavy clay and muck soils. Use sufficient water to assure thorough coverage. Use at least 1 gal. of water for each pound of Atrazine 90DF, more if practical.

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To control many annual broadleaf and grass weeds (such as barnyardgrass, cheatgrass, lambsquarters, foxtail, ragweed, puncturevine, and turkey mullein): Broadcast 5.3-11.1 lbs. per acre. ✓

To control hard-to-kill annual and many perennial broadleaf and grass weeds (such as bluegrass, burdock, Canada thistle, dogfennel, orchardgrass, plantain, quackgrass, purple top, redtop and smooth brome): Broadcast 11.1-22.2 lbs. per acre. ✓

To control hard-to-kill biennial and perennial weeds (such as bull thistle and sowthistle): Broadcast 22.2-44.4 lbs. per acre. ✓

For longer residual control in regions of high rainfall and a long growing season: Broadcast 22.2-44.4 lbs. per acre. ✓

For small areas, 4 1/3 oz. per 1,000 sq. ft. is equivalent to 10 lbs. per acre.

STORAGE AND DISPOSAL

STORAGE: Do not contaminate water, food, or feed by storage or disposal. Do not use or store around the home environment. Avoid contact with water. In case of spill or leak, avoid breathing dust or vapors. Clean up and dispose of wastes in compliance with local, state and Federal regulations.

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: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

NOTICE OF WARRANTY

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NET WEIGHT 25 POUNDS ✓

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