

PM 2 0 0 1-19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Alice C. Walker
Manager, Label Development
Riverside/Terra Corporation
P.O. Box 171376
Memphis, TN 38187

MAY 29 1990

Dear Ms. Walker:

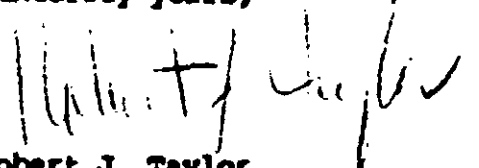
Subject: Atrazine 4L; EPA Reg. No. 9779-255
Atrazine 80W; EPA Reg. No. 9779-254
Atrazine 90DF; EPA Reg. No. 9779-253
Re: Atrazine Voluntary Exposure Reductions Measures
Your Amendment Submissions Dated May 21, 1990

The labeling referred to above, submitted in connection with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended is acceptable with the following comments:

1. On Page 10 (all 3 labels), delete references to "Boot Stage" or "3 Leaf Stage", or add the statement, "but no higher than 12 inches".
2. On Page 2 (all 3 labels), under "Statement of Practical Treatment, If On Skin.", Add the word "skin" to read: "Remove contaminated clothing and wash skin with soap and water. Also add the statement: "Get medical attention if irritation persists".
3. Delete the pineapple use from the 80W label as discussed in Beverley Neal's phone conversation with Steve Morrill.

Please submit five (5) copies each of your final printed labeling incorporating this amendment and above mentioned comments before you release these products for shipment. All technical and end-use products released for shipment must have amended labels after September 1, 1990.

Sincerely yours,



Robert J. Taylor
Product Manager (25)
Fungicide-Herbicide Branch
Registration Division (H7505C)

CONCURRENCES

SYMBOL	H7505C							
SURNAME	Morrill							
DATE	5/29/90							

RESTRICTED USE PESTICIDE
(GROUND 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 WATER
CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS
AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR
ATRAZINE TO REACH GROUND WATER.

R●

ATRAZINE 4L

For weed control in corn, sorghum, and other crops

ACCEPTED
with COMMENTS
in EPA Letter Dated:

29

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
9779-255

ACTIVE INGREDIENTS.....	43.0%
Atrazine (2-chloro-4-ethylamino- 6-isopropylamino-s-triazine).....	40.8%
Related Compounds.....	2.2%
INERT INGREDIENTS.....	57.0%
TOTAL	100.0%

Atrazine 4L contains 4 lbs. active ingredients per gallon.

STOP-READ LABEL BEFORE USING.

KEEP OUT OF REACH OF CHILDREN
CAUTION
STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Contact your local poison control center, hospital, or physician.
If the patient is unconscious, maintain breathing and heartbeat (cardiopulmonary
resuscitation). If the patient is conscious and alert, induce vomiting (syrup
of ipecac or stimulate the back of the throat with a finger). Never give
anything by mouth to an unconscious person.

IF INHALED: Remove victim to fresh air and apply respiration if indicated.

IF ON SKIN: Remove contaminated clothing and wash with soap and water.

IF IN EYES: Flush with plenty of water. Get medical attention if irritation
persists.

See side panel for additional PRECAUTIONARY STATEMENTS.

EPA Reg. No. 9779-255

EPA Est. No. 9779-AR-13

Manufactured For
RIVERSIDE/TERRA CORP.
Terra Centre, 600 Fourth Street, Sioux City, Iowa 51101
Riverside Serves Agriculture. Agriculture Serves Everyone.

NET CONTENTS
2-1/2 GALS.

2

PRECAUTIONARY STATEMENTS
CAUTION
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if swallowed, inhaled, or absorbed through skin. Do not breathe dust or spray mist. Avoid contact with eyes, skin or clothing. Remove contaminated clothing and wash before reuse. Wash thoroughly with soap and water after handling.

Users are required to wear long sleeve shirts and long pants or equivalent, chemical resistant gloves, and boots (waterproofed). In addition, persons involved in mixing/loading operations are required to use chemical resistant rubber or neoprene gloves and a face shield or goggles.

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.

NOTE TO PHYSICIANS: 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.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic invertebrates. Do not apply directly to water or wetlands. Runoff and drift from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

Atrazine leaches readily and accepted label rates have been found to result in contamination of water supplies by way of groundwater. Therefore users are advised to avoid use of atrazine in well drained soils, particularly in areas having high groundwater tables. Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material. This product may not be mixed/loaded, or used within 50 feet of all wells including abandoned wells, drainage wells, and sink holes.

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 through any type of irrigation system.

RE-ENTRY STATEMENT: 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 with this product, consult your State Department of Agriculture for further information.

NOTICE TO CROP OWNERS

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. In case of accidental exposure follow the information given under STATEMENT OF PRACTICAL TREATMENT and have exposed person(s) see a physician. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is a reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: CAUTION. Area treated with Atrazine on (date). Do not enter without appropriate protective clothing until sprays have dried. In case of accidental exposure, refer to the STATEMENT OF PRACTICAL TREATMENT on the label.

STORAGE AND DISPOSAL

DO NOT CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL.

STORAGE

Store in a dry location away from children, animals, foods, feeds, seeds, or other agricultural chemicals. Handle in accordance with information given under PRECAUTIONARY STATEMENTS. In the event of spillage or leakage, soak up material with absorbent clay, sand, sawdust, or other absorbent material. Scrape up and dispose of in accordance with information given under DISPOSAL. Repackage and relabel useable product in a sound container. In case of fire or other emergency, report at once by toll-free telephone to 800-424-9300.

DISPOSAL

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: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

GENERAL INFORMATION

This herbicide controls many annual broadleaf and grass weeds in corn, sorghum, sugarcane, and certain other crops specified on this label. It is also effective in noncrop areas and industrial sites for control of most annual and many perennial broadleaf and grass weeds. 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, WE RECOMMEND THE USE OF THIS PRODUCT IN COMBINATION WITH OTHER REGISTERED HERBICIDES WHICH ARE NOT TRIAZINES. CONSULT WITH 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.

4.

This product is nonflammable.

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

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

Note: Seller does not recommend applications in combination with other herbicides or oils, except as specifically described on the label.

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 gallons of spray mixture per acre for all preplant, preemergence, and postemergence applications (with or without oil or surfactant) with ground equipment.

Use a pump with a 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 gallons per minute per 100 gallons 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:

band width in inches	x	broadcast rate	=	amount needed
row width in inches		per acre		per acre of field

Aerial Application: Use aerial application only where broadcast applications are specified. Apply in a minimum of 1 quart of water for each quart of ATRAZINE 4L applied per acre. For postemergence treatments on corn and sorghum, apply recommended rate in a minimum of 2 gallons of water per acre. Avoid applications under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin and should wash thoroughly before eating and at the end of each day's operation.

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 or preplant ground application on corn and sorghum. Before using, check the compatibility of this product with liquid fertilizer and/or nitrogen solution as shown below. Do not apply in nitrogen solution or complete liquid fertilizer after corn or sorghum emerges, except as noted under Lay-by Treatment for corn, or crop injury may occur.

3.

To determine the compatibility of ATRAZINE 4L alone or in tank mixtures, with fluid fertilizer, pour the products into a small container of fluid fertilizer in the proportions shown below. For different spray volume or herbicide rate, make appropriate changes in the ingredients.

For each pint of ATRAZINE 4L or other liquid or flowable product to be applied per acre, add 0.5 teaspoon or 2.5 milliliters of the product to one pint of fluid fertilizer (assuming a volume of 25 gallons per acre).

For each pound of a dry product to be applied per acre, add 1 level teaspoon or 5 milliliters of the product to one pint of fluid fertilizer (assuming a volume of 25 gallons per acre).

After thorough mixing, let stand for 5 minutes. If the herbicide/fertilizer combination remains mixed, or can be remixed readily, the mixture is compatible and can be sprayed. If it is not compatible, make a water slurry with the herbicide before adding the fertilizer and use the mixture only if this test shows it is compatible.

Application in Water Plus Emulsifiable Oil or Oil Concentrate: Adding an emulsifiable oil or oil concentrate, such as Prime Oil or Prime Oil II, to postemergence water-base sprays on 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 a crop oil containing 1-2% suitable emulsifier, or a suitable crop oil concentrate containing not more than 20% emulsifier or surfactant blend. Emulsifiable oil and oil concentrates 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 $\frac{1}{2}$ 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 container 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 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.

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Preplant Incorporated or Preemergence Weed Control:

annual morningglory
barnyardgrass
(watergrass)
cocklebur
giant foxtail*
green foxtail*
groundcherry
jimsonweed
kochia
lambsquarters
large (hairy) crabgrass

mustards
nightshade
pigweed
purslane
ragweed
velvetleaf
(buttonweed)
wild oats
witch grass
(Panicum capillare)
yellow foxtail*

*Control of foxtail can be erratic.

Postemergence with Emulsifiable Oil or Oil Concentrate in Water--Weeds

Controlled:

annual morningglory
cocklebur
jimsonweed
lambsquarters
mustards

pigweed
ragweed
smartweed
wild buckwheat
velvetleaf

CORN

Preplant (Broadleaf and grass control): Broadcast in spring after plowing at rate in Table 1. 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 prior to planting.

Preemergence (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 1.5 inches in height at rate Table 1. Postemergence application to corn must be made before corn reaches 12 inches in height. The maximum application rate for corn is 6 pints per acre per calendar year. Applications for quackgrass suppression in corn are restricted to a spring application only. No fall applications are permitted.

TABLE 1: Broadleaf and Grass Weed Control on Corn*

Soil Texture	Broadcast Rate/A
COARSE	
Sand, loamy sand, sandy loam	4 pt.
MEDIUM	
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with low organic matter	4.75 pt.
FINE	
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 the dark prairie soils of the Corn Belt)	6 pt.
Peat, muck and high organic clay (apply postemergence only)	6 pt.

*Broadleaf control (eastern CO, western KS, western NE, NM, OK Panhandle, west TX and eastern WY). On sand, sandy loam, mild to strongly alkaline soil, and all recently leveled soil, apply no more than 2.4 pt/A, either preplant or preemergence. On the other soils in these areas, apply rate in Table 1 for broadleaf and grass control.

Postemergence with Emulsifiable Oil or Oil Concentrate in Water: Add 1 gallon of emulsifiable oil per acre for ground application or 0.5 gallons per acre for aerial application, or add 1 quart of oil concentrate per acre for ground or air application.

Broadleaf and Grass Control: Broadcast 4 pt/A plus emulsifiable oil or oil concentrate after weed emergence, but before weeds reach 1.5 inches in height.

Broadleaf Control: Broadcast 2.4 pt/A 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: (1) Do not apply when crop is under stress from prolonged cold, wet weather, poor fertilizer, or other factors, or when crop is wet and succulent from recent rainfall, or crop injury may occur. (2) Inbred lines or any breeding stock may be severely injured by applications with emulsifiable oil or oil concentrate. (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 emulsifiable oil and 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 suppression of yellow nutsedge, and Canada thistle.

Problem Weeds:

Yellow Nutsedge and Canada Thistle: This product will partially control (suppress) 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 an economic problem. If yellow nutsedge or Canada thistle regrow following last application, cultivate once.

Four alternative methods of use for partial control (suppression) of yellow nutsedge and Canada thistle are listed below in order of preference. If other weed species, such as annual grasses, are also expected, use alternative 2 or 4.

1. Broadcast 3 pt/A plus 1 gallon of emulsifiable oil or 1 qt. of oil concentrate. Apply 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 10-20 days later, but before corn is 12 inches tall.
2. Broadcast 3 pt/A preplant incorporated for suppression of yellow nutsedge or broadcast 3 pt/A during or shortly after planting, but prior to crop or weed emergence for suppression of Canada thistle. Follow with an application of 3 pt/A plus 1 gallon of emulsifiable oil or 1 qt. of oil concentrate after corn and weeds emerge, but before yellow nutsedge and Canada thistle reach a height of 6 inches and before corn is 12" high.

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- 7.
3. Broadcast 6 pt/A plus 1 gal. of emulsifiable oil or 1 qt. of oil concentrate after crop emerges, but before the corn is 12" high. Apply after yellow nutsedge and Canada thistle emerge, but before yellow nutsedge is 3 inches tall or Canada thistle is 6 inches tall.
 4. Broadcast 6 pt/A before, during or shortly after planting, but before crop or weed emergence (yellow nutsedge only).

Note: Do not use emulsifiable oil or oil concentrate when corn is wet or under stress, especially when using 6 pt/A of this product. See Precautions for Applications with Emulsifiable Oil or Oil Concentrate in Water for additional directions.

QUACKGRASS SUPPRESSION ON LAND GOING INTO CORN PRODUCTION:

Broadcast 6 pt/A in spring before corn reaches a height of 12 inches. Plow 1-3 weeks later. Follow up in the fall using a suitable contact herbicide.

TANK MIXTURES FOR CORN

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

Dual*	Lasso* or Lasso EC
Dual + Gramoxone Super*	Lasso or Lasso EC + Roundup
Dual + Roundup*	Lasso or Lasso EC + Gramoxone Super*
Dual + Princep*	Gramoxone Super*
Dual + Princep + Gramoxone Super*	Princep
Dual + Princep + Roundup *	Princep + Gramoxone Super*
Bexton* or Ramrod*	Princep + Roundup
Bladex*	Sutan +*

*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 labels of the above herbicides refer to Atrazine 80W or Atrazine 90DF, use equivalent rates of ATRAZINE 4L. One lb. of 80W equals 1.6 pt. of ATRAZINE 4L. One lb. of 90DF equals 1.8 pt. of ATRAZINE 4L.

Princep 80W, Princep 4L (4LC), or Princep Caliber* 90

In addition to the weeds listed under ATRAZINE 4L "Applied Alone--Corn and Grain Sorghum"--Preplant 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: 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 prior to planting.

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8

- 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(4LC) 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 ¹	This Product	Princep 80W ¹
Sand, loamy sand, sandy loam	2 pt.	1.25 lb.	1.32 pt.	1.67 lb.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with low organic matter	2.4 pt.	1.5 lb.	1.6 pt.	2 lb.
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)	3 pt.	1.8 lb.	1.92 pt.	2.4 lb.

*For control of above weeds.

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

¹When using Princep Caliber 90 or Princep 4L(4LC), use equivalent rates. One lb. of Princep 80W equals 0.9 lb. of Princep Caliber 90 or 1.6 pt. of Princep 4L(4LC).

Princep 80W, Princep 4L (4LC), or Princep Caliber 90 plus Roundup: Use as a 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 limitation.

Princep 80W, Princep 4L (4LC), or Princep Caliber 90 plus Gramoxone Super*: Use as a tank mixture with Princep and Gramoxone Super* 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 Super* and a nonionic surfactant, such as Activate Plus. Continue agitation during application. Broadcast 2-4 pt. of this product plus 1.25-2.5 lb. Princep 80W (or 2-4 pt. Princep 4L (4LC), or 1.1-2.2 lb. Princep Caliber 90) plus 1-2 pt. Gramoxone Super* in 20-60 gallons of water per acre. Apply before, during or after planting, but before corn emerges. Add 0.5 pt. of a nonionic surfactant, such as Activate Plus, per 100 gallons of spray mixture. Use the 2 pt. rate of Gramoxone Super* 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 Super.

Precautions for all applications to corn: (1) The maximum application rate for corn is 6 pts. per acre per calendar year. Applications for quackgrass suppression in corn are restricted to a spring application only. No fall applications are permitted. (2) 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.

Note for all Applications to Corn: Do not graze or feed forage from treated areas for 21 days following application.

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ROTATIONAL CROPS: (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 4 pt/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.

SORGHUM AND SORGHUM-SUDAN HYBRIDS
(Grain and Forage Types)

Preplant (Broadcast and grass control): Broadcast in spring after plowing at rate 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 two weeks prior to planting.

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

Table 3 Preplant and Preemergence Broadleaf and Grass Weed Control in Sorghum*

SOIL TEXTURE	ORGANIC MATTER	BROADCAST RATE PER ACRE
COARSE Sand, loamy sand, sandy loam	Any level	DO NOT USE (except for preemergence use on bedded sorghum in AZ and CA)
MEDIUM AND FINE Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, silty clay, clay	Less than 1%	
	1-1.5%	3.2-4 pt.
	More than 1.5%	4-4.75 pt.

*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.

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. However, the maximum application rate for sorghum is 6 pts. per acre per calendar year.

Preemergence broadleaf weed control in furrow irrigated bedded sorghum (AZ and CA only): For preemergence control of many broadleaf weeds, broadcast 1.6-2.4 pt. per 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, making sure to thoroughly wet all soil.

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10

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 and grass control): Apply at rate in Table 4 before weeds exceed 1.5 inches in height. Postemergence application to sorghum must be made before sorghum reaches 12 inches in height. The maximum application rate for sorghum is 6 pts. per acre per calendar year.

TABLE 4: Postemergence Broadleaf and Grass Weed Control in Sorghum

Soil Texture	Minimum Sorghum Height at Treatment	Broadcast Rate Per 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	4-4.75 pt.
Olton and Pullman clay soil	6 inches	4-4.75 pt.
Silty clay loam and finer textured soil	Completely emerged	6 pt.

Postemergence Broadleaf Weed Control with Emulsifiable Oil or Oil Concentrate in Water: Broadcast 2.4 pt/A 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, 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 3-leaf stage. Add 1 gal. of emulsifiable oil per acre for ground application and 0.5 gal. per acre for aerial application, or add 1 qt. per acre of oil concentrate for ground or air application. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

For a list of weeds controlled, see ATRAZINE 4L 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 with 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 2.4 pt/A plus 0.75-1.5 pt. of surfactant 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.

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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) 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. (4) Injury may occur if both this herbicide, preplant or preemergence, and an at-planting systemic insecticide applied in-furrow are used. (5) The maximum application rate for sorghum is 6 pts. per acre per calendar year. Applications for quackgrass suppression in sorghum are restricted to a spring application only. No fall applications are permitted.

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

Rotational Crops: See Rotational Crops in Corn section (Page 1).

TANK MIXTURES FOR GRAIN SORGHUM

Igran* 80W: Use as tank mixture for control of certain broadleaf and grass weeds in grain sorghum. Refer to Igran 80W label for all directions, weeds controlled, precautions, and limitations.

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

ATRAZINE 4L Alone--Chemical Fallow

Wheat-Sorghum-Fallow: To control annual broadleaf and grass weeds following wheat harvest and in the following sorghum crop when grown under minimum tillage, broadcast 6 pt/A 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 ATRAZINE 4L. 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 a list of weeds controlled, see ATRAZINE 4L Applied Alone--Corn or Grain Sorghum--Preplant Incorporated or Preemergence

Precautions: (1) Use only on silt loam or finer textured soil.
(2) Wheat-sorghum-fallow cropping sequence must be followed.
(3) Do not apply following sorghum harvest.

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

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12

Wheat-Corn-Fallow (KS, NE): 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, 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 wheat-fallow-wheat rotations, broadcast 1-2 pt/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):

Igran 80W: Use a tank mixture for control of certain broadleaf and grass weeds in wheat-sorghum-fallow or wheat-corn-fallow rotations. Refer to Igran 80W label directions, weeds controlled, precautions, and limitations.

Gramoxone Super*: If weeds are present at application, a tank mix with Gramoxone Super* may be used. Broadcast 6 pt. of ATRAZINE 4L plus 1-2 pt. of Gramoxone Super* in 20-60 gal. of water per acre by ground equipment. Add 0.5-1 pt. of a nonionic surfactant, such as Activate, per 100 gal. of spray mixture. Add ATRAZINE 4L to spray tank first and thoroughly mix with water. Then add Gramoxone Super* followed by surfactant. Use the 2 pt. rate of Gramoxone Super* 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 Super* label for further directions, precautions, and limitations.

Wheat-Fallow-Wheat (CO, KS, MT, ND, SD, and WY),

Igran 80W: Use as tank mixture for control of certain broadleaf and grass weeds in wheat-fallow-wheat rotations. Refer to Igran 80W label for directions, weeds controlled, precautions, and limitations.

Gramoxone Super*: If weeds are present at application, a tank mix with Gramoxone Super* may be used. Broadcast 1-2 pt. of ATRAZINE 4L plus 1-2 pt. of Gramoxone Super* in 20-60 gal. of water per acre by ground equipment. Add 0.5-1 pt. of a nonionic surfactant, such as Activate, per 100 gal. of spray mixture. Add ATRAZINE 4L to spray tank first and thoroughly mix with water. Then add Gramoxone Super* followed by surfactant. Use the 2 pt. rate of Gramoxone Super* 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 Super* 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 Super*,

plant at least 2 inches deep and 12 months or more after application.

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Precautions: (1) Do not use on sand soil. (2) Do not treat eroded hillsides, caliche and rocky outcroppings of 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.

Aerial Application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft. using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply ATRAZINE 4L alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants, or apply ATRAZINE 4L + Igran 80W at a minimum upwind distance of 500 ft. from sensitive plants. When applying ATRAZINE 4L and Igran 80W by aircraft, use a minimum of 5 gal. of water per acre.

TURF GRASSES FOR SOD (FLORIDA ONLY)

St. Augustine, Centipedegrass, and Zoysia Grass

Broadcast 4-8 pt. per acre according to soil texture to control those weeds listed under ATRAZINE 4L Applied Alone--Corn or Grain Sorghum--Preplant Incorporated or Preemergence.

Muck or Peat	8 pt.	Old beds: Within 2 days after lifting sod.
		New beds: 3-4 days after sprigging or plugging.
Sandy Soil	4 pt.	Old beds: Within 2 days after lifting sod.
		New beds: 7-10 days after sprigging or plugging.

If weeds regrow, apply an additional 4 pt. per acre on muck or peat, or 2 pt. per acre on sandy soil.

Precautions: (1) Do not apply within 30 days prior to cutting or lifting. (2) Do not apply in combination with surfactants or other spray additives, or injury may occur. (3) Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases. (4) On newly sprigged turfgrass, temporary slowing of growth may follow application.

TURFGRASS FOR FAIRWAYS, LAWNS, SOD PRODUCTION*, AND SIMILAR AREAS

*In states other than Florida. For use on turfgrass for sod in Florida, see "Turfgrass for Sod (Florida Only)" section above.

Bermudagrass, Centipedegrass, St. Augustinegrass, and Zoysia Grass

Apply Atrazine 4L 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. Atrazine 4L will control annual bluegrass even if it is emerged at time of treatment. For control of summer annual weeds listed in the preemergence portion of the Atrazine 4L Applied Alone-Corn or Grain Sorghum section of this label, also apply Atrazine 4L in late winter before the weeds emerge. Apply in a minimum of 15 gallons of water per acre or 1 gallon per 1,000 square feet.

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14
Where annual bluegrass is the major weed, use 1 qt./A (22 ml or 0.75 fl. oz. per 1,000 sq. ft.). Use 2 qts./A (44 ml or 1.5 fl. oz. per 1,000 sq. ft.) for control of the other weeds named above. Do not exceed 1 qt./A 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 qt./A at least 30 days after the previous application, but not after April 15. However, do not make more than two applications of this product per year.

Precautions: On newly sprigged turfgrass and hybrid Bermudagrass, temporary slowing of growth and yellowing may occur following application. To avoid turf injury, (1) Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases. (2) Do not use on golf greens. (3) Do not use north of NC (except may be used in Virginia Coastal Plains) or west of the high rainfall areas of eastern OK and eastern TX. (4) Do not use on muck or alkaline soils. (5) Do not apply over the rooting area of trees or ornamentals not listed on this label. (6) Do not overseed with desirable turfgrass within 4 months before or 6 months after treatment. (7) Do not apply this product to newly seeded Bermudagrass until it has been overwintered and has a well-developed rhizome system. Do not exceed 2 qts. product/A within 12 months of seeding bermudagrass.

Note: Do not graze or feed turf clippings to animals or illegal residues may result.

MACADAMIA NUTS

For preemergence control of many broadleaf and grass weeds, including crabgrass, foxtail, wiregrass, Flora's paintbrush, spanishneedles, and fireweed, broadcast 4-8 pt. per acre before harvest and before weeds emerge. Repeat as necessary. Do not spray when nuts are on ground during harvest period. Do not apply by air.

SUGARCANE

For control of many broadleaf grass weeds, including amaranths, crabgrass, fireweed, Flora's paintbrush, foxtails, junglerice and wiregrass, broadcast 4-8 pt. per acre of ATRAZINE 4L at time of planting or ratooning, but before sugarcane emerges. Broadcast aerially in a minimum of 5 gal. of spray per acre, or broadcast or band by ground equipment in a minimum of 20 gal. per acre, unless indicated otherwise. One additional application may be made over the sugarcane as it emerges, and two additional aerial 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 high rates of ATRAZINE 4L are used alone, apply in a minimum of 1 qt. of water for each 1 qt. of ATRAZINE 4L applied per acre.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft. using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply ATRAZINE 4L alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

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15.

Florida

For control of emerged pellitory weed: Apply 0.8-1.2 pt. per acre in at least 40 gal. of water as a directed spray by ground equipment prior to close-in. Add 4 qt. of surfactant for each 100 gal. 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 8 pt/A preemergence. Follow with one or two applications, as needed, postemergence to sugarcane and weeds, at 4 pt. per acre. Treat before weeds exceed 1.5 inches in height.
2. Apply 1-3 times, as needed, at 4 pt/A postemergence to sugarcane and weeds. Treat before weeds exceed 1.5 inches in height.

Texas

Use ATRAZINE 4L for control of barnyardgrass, pigweed, purslane and sunflower, in plant or ratoon sugarcane.

Apply 8 pt. per acre of ATRAZINE 4L preemergence. Follow with one or two applications, as needed, at 6 pt. per acre postemergence to sugarcane and weeds.

For best results when weeds are emerged, add a nonionic surfactant at a concentration of 2 qt. per 100 gal. to the spray and apply before weeds exceed 1.5 inches in height.

Precautions: (1) Injury to sugarcane may occur when under moisture stress, when soil is of low absorptive capacity, or when land is first cropped to sugarcane. (2) Do not apply after close-in. (3) Do not apply more than 20 pt. per acre to any one crop of sugarcane, or crop injury may result.

CONIFERS

For control of annual broadleaf and grass weeds prior to transplanting, after transplanting or in established conifers (including Douglas fir, grand fir, noble fir, white fir, Austrian pine, bishop pine, Jeffery pine, knobcone pine, loblolly pine, lodgepole pine, (shore pine), monterey pine, ponderosa pine, Scotch pine, slash pine, blue spruce, and Sitka spruce): Broadcast 4-8 pt. in a minimum of 5 gal. of water per acre by air or 10 gal. by ground before weeds are 1.5 inches tall. Apply to established trees 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 4L before transplanting. In areas where spring and summer rainfall is inadequate to activate atrazine, apply during fall prior to spring transplanting.

For the list of weeds controlled, see ATRAZINE 4L Applied Alone--Corn or Grain Sorghum--Preplant Incorporated or Preemergence.

Quackgrass control: Broadcast 8 pt. in a minimum of 5 gal. of water per acre by air or 10 gal. by ground between fall and early spring while trees are dormant and before quackgrass is more than 1.5 inches tall.

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16.

NONSELECTIVE WEED CONTROL ON NONCROP LAND

ATRAZINE 4L provides long-term weed control on industrial sites, highway medians and shoulders, railroad rights-of-way, lumberyards, petroleum tank farms, and in noncrop areas on farms such as around buildings, equipment and fuel storage areas, along fences, and lanes. Do not use near adjacent desirable plants or in greenhouses or injury may occur.

Apply before or soon after weeds begin growth. Make postemergence applications when weeds are young and actively growing. Use the higher rates on fine clay and muck soils. Use at least 1 gal. of water for each quart of ATRAZINE 4L to assure thorough coverage. Use more if practical.

Note: Do not allow livestock to graze treated areas.

Annual broadleaf and grass weeds (including barnyardgrass, cheatgrass, crabgrass, lambsquarters, foxtail, ragweed, puncturevine, and tansy mullein): Broadcast 5 to 10 quarts of ATRAZINE 4L acre.

Hard-to-kill annual and many perennial broadleaf and grass weeds (including bluegrass, burdock, Canada thistle, dogfennel, orchardgrass, plantain, quackgrass, purpletop, redtop, and smooth brome): Broadcast 2.5 gallons of ATRAZINE 4L per acre.

For small areas, 8 fluid ounces per 1,000 sq. ft. is equivalent to 2.5 gallons per acre.

NOTICE: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to Seller and Buyer assumes the risk of any such use. Seller shall not be responsible for incidental or consequential damages, if any, resulting from a breach of warranty.

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