

## **GRAIN OR FORAGE SORGHUM - PREPLANT SURFACE, PREPLANT INCORPORATED OR PREEMERGENCE - MEDIUM AND FINE (MORE THAN 1.0% ORGANIC MATTER)**

### General Information

#### PRODUCT INFORMATION

Medal II ATZ is a selective herbicide labeled for preplant, preemergence, or postemergence control of many annual grasses and broadleaf weeds in corn. Medal II ATZ can also be used before crop emergence for control of most annual grasses and broadleaf weeds in grain or forage sorghum, provided the sorghum seed has been properly treated with Concep. Medal II ATZ may be tank mixed with other herbicides for weed control in conventional, minimum-till, and no-till corn, grain sorghum, or forage sorghum.

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions, limitations and directions for use on all product labels involved in tank mixing.

Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

When tank mixing or sequentially applying atrazine or products containing atrazine to corn or sorghum, do not exceed an application rate of 2.0 pounds active ingredient of atrazine per acre for any single application and the total pounds of atrazine applied (lb ai per acre) must not exceed 2.5 pounds active ingredient per acre per year.

Following many years of continuous use of atrazine (one of the ingredients in Medal II ATZ), and products chemically related to atrazine, biotypes of some of the weeds listed on this label which are controlled by the atrazine component have been reported to develop resistance to this and chemically related herbicides. Where this is known or suspected, and weeds controlled by this product are expected to be present along with resistant biotypes, the use of Medal II ATZ in combination or in sequence with registered herbicides which do not contain triazines may enhance product performance. Consult with your State Agricultural Extension Service for specific advice.

Medal II ATZ alone or in tank mixture with AAtrex, Dual Magnum, Dual II Magnum, or Princep may be applied early preplant, preplant surface, preplant incorporated, or

preemergence on corn, in water or fluid fertilizer. Apply postemergence treatments of Medal II ATZ to corn, alone or in combination, using water only as the carrier. Medal II ATZ may be applied in tank mix combination with Gramoxone brands, or solo glyphosate brands, with or without the above herbicides preplant surface or preemergence to corn. Medal II ATZ alone may also be applied on sorghum early preplant, preplant incorporated, preplant surface, or preemergence in water or in fluid fertilizer.

Medal II ATZ may be applied in water by aircraft. Make applications in fluid fertilizer by ground equipment only.

#### USE PRECAUTIONS FOR ALL MEDAL II ATZ APPLICATIONS

- Where reference is made to weeds partially controlled, partial control can either mean erratic control from good to poor or consistent control at a level below that generally considered acceptable for commercial weed control.
- Dry weather following preemergence application of Medal II ATZ or a tank mixture may reduce effectiveness.

Cultivate if weeds develop in conventional tillage corn or sorghum.

- Avoid spray overlap, as crop injury may result.

#### RESTRICTIONS FOR ALL MEDAL II ATZ APPLICATIONS

- Do not apply this product through any type of irrigation system.
- Do not apply under windy conditions or under conditions which favor runoff or wind erosion of soil containing this product to nontarget areas.
- Do not use a sprayer or applicator contaminated with other materials, or crop damage or sprayer clogging of the application device may occur. Thoroughly clean sprayer or other application device before using. Dispose of cleaning solution in a responsible manner.
- To prevent off-site movement due to runoff or wind erosion:
  - Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, ensure that the soil surface is settled by rainfall or irrigation first.
  - Do not apply to impervious substrates, such as paved or highly compacted surfaces.
  - Do not use tailwater from the first flood or furrow irrigation of treated fields to treat nontarget crops, unless at least 1/2 inch of rainfall has occurred between application and the first irrigation.

## RESISTANT WEED MANAGEMENT

Medal II ATZ herbicide contains the active ingredients atrazine which inhibits the photosynthetic pathway of photosystem II (PSII, Site of Action Group 5) and S-metolachlor which inhibits the formation of very long chain fatty acids (VLCFA, Site of Action Group 15). Some naturally-occurring weed populations have been identified as resistant to Group 5 and 15 herbicides. Selection of resistant biotypes, through repeated use of these herbicides or lower than labeled use rates in the same field, may result in weed control failures. A resistant biotype may be present where poor performance cannot be attributed to adverse environmental conditions or improper application methods. If resistance is suspected, contact your local Syngenta representative and/or agricultural advisor for assistance.

Principles of herbicide resistant weed management:

- Employ integrated weed management practices. Use multiple herbicide sites-of-action with overlapping weed spectrums in rotation, sequences, or mixtures.
- Use the full labeled herbicide rate and proper application timing for the hardest to control weed species present in the field.
- Scout fields after herbicide application to ensure control has been achieved. Avoid allowing weeds to reproduce by seed or to proliferate vegetatively.
- Monitor site and clean equipment between sites.
- Start with a clean field and control weeds early by using a burndown treatment or tillage in combination with a preemergence residual herbicide as appropriate.
- Use cultural practices such as cultivation and crop rotation, where appropriate.
- Use good agronomic principles that enhance crop competitiveness.

## SOIL TEXTURE INFORMATION

Within rate ranges in all tables on this label, use the lower rate on soil relatively coarse-textured or low in organic matter; use the higher rate on soil relatively fine-textured or high in organic matter.

Medal II ATZ Rate Limitations – Corn and Sorghum\*

\* Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or greater setbacks) which are different from the label, the more restrictive/protective requirements must be followed.

Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It

is a violation of this label to deviate from state use regulations.

Note: For purposes of calculating total atrazine active ingredient applied, Medal II ATZ contains 3.1 lb ai atrazine + related compounds per gal (0.775 lb ai/qt).

#### ATRAZINE USE RESTRICTIONS:

Medal II ATZ contains both atrazine and S-metolachlor as active ingredients.

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

- On Highly Erodible Land (as defined by the Natural Resource Conservation Service)

If conservation tillage is practiced, leaving at least 30% of the soil covered with plant residues at planting, apply a maximum of 2.58 qt/A of Medal II ATZ (2.0 lb ai/A) as a broadcast spray.

If the soil coverage with plant residue is less than 30% at planting, a maximum of 2.1 qt/A of Medal II ATZ (1.6 lb ai/A) may be applied.

- On Land Not Highly Erodible

Apply a maximum of 2.58 qt/A of Medal II ATZ (2.0 lb ai/A) as a broadcast spray.

#### FOR POSTEMERGENCE APPLICATION OF ATRAZINE TO CORN

If no atrazine was applied prior to corn emergence, apply a maximum of 2.58 qt/A of Medal II ATZ (2.0 lb ai/A) broadcast. If a postemergence treatment is required following an earlier atrazine application, the total atrazine applied may not exceed 2.5 lb active ingredient (3.2 qt of Medal II ATZ) per acre per calendar year.

#### Replant and Rotational Crops

Replant Crops: If treated crop is lost due to poor germination, hail, flood, insects, etc., corn may be replanted immediately or sorghum may be replanted immediately, provided the seed has been properly treated with Concep. If the original application was banded and the second crop is planted in the untreated row middles, a second banded treatment may be applied.

Replant Crop Restriction: Do not make a second broadcast application to replanted crops.

Rotational Crops: Corn, sorghum, soybeans, cotton, or peanuts may be planted the spring following treatment.

Rotational Crop Restrictions: (1) Do not rotate to food or feed crops other than those listed above. (2) In eastern parts of the Dakotas, KS, western MN, and NE, do

not rotate to soybeans for 18 months following application if the rate applied to corn or sorghum was more than 2.0 lb ai of atrazine or equivalent band application rate. (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 a crop of untreated corn or sorghum is to precede other rotational crops. (4) Do not graze or feed forage or fodder from cotton to livestock.

Rotational Crop Precautions: (1) Injury may occur to soybeans planted the year following application on soils having a calcareous surface layer. (2) If Medal II ATZ is applied after June 10, rotating to crops other than corn or sorghum the next year may result in crop injury. (3) Avoid planting sugar beets, tobacco, vegetables (including dry beans), spring-seeded small grains, or small-seeded legumes the year following Medal II ATZ application, or crop injury may occur.

### Cover Crops

A cover crop can be an important tool for the overall farm cropping system. Cover crops are planted for conservation purposes, soil erosion control, soil health improvement, water quality improvement and weed management. A cover crop can be a single crop or a combination of crops, including grasses and/or broadleaf crops.

After harvest of a Medal II ATZ treated crop, planting of a cover crop is allowed provided the cover crop is not grazed or fed to livestock nor harvested for food. Terminate the cover crop through natural causes such as frost or intentional termination by herbicide application, crimping, rolling, tillage or cutting.

All possible cover crops or cover crop combinations have not been tested for tolerance to Medal II ATZ herbicide.

Before planting the cover crop, determine the level of tolerance for the intended cover crops by conducting a field bioassay. Refer to the Field Bioassay for Cover Crops section for instructions.

### Field Bioassay for Cover Crops

A field bioassay is a method of determining if herbicide residues are present in the soil at concentrations high enough to adversely affect crop growth. Conduct the field bioassay by planting several strips of the desired cover crop across the field which has been previously treated with Medal II ATZ. Plant the cover crop strips perpendicular to the direction of the Medal II ATZ application. The strips

should be located so that all the different field conditions are encountered, including differences in field terrain, soil texture, organic matter, pH, and drainage. If the cover crop does not show adverse effects such as crop injury and/or stand reduction, the field can be planted to this cover crop. If injury and/or stand reduction are visible, wait two to four weeks for further herbicide degradation to occur and repeat the bioassay. Alternatively, select a different cover crop and repeat the bioassay. Only plant cover crops that show acceptable tolerance in the field bioassay.

## SPRAY EQUIPMENT

**Ground Application:** Use sprayers that provide accurate and uniform application. Ensure that screens in nozzles and in suction and in-line strainers are no finer than 50-mesh. Use a pump with capacity to: (1) maintain 35-40 psi at the nozzles, and (2) provide sufficient agitation in tank to keep mixture in suspension. Unless otherwise specified, use a minimum of 10 gal of spray mixture per acre. Rinse sprayer thoroughly with clean water immediately after use.

**Low Carrier Application (Broadcast Ground Application Only):** Use sprayers with properly spaced nozzles that provide accurate and uniform application. Only water may be used as a carrier. Ensure that screens in suction and in-line strainers are 50-mesh. Manufacturers may require that tip screens as fine as 100-mesh be used with some nozzles. Use a pump with capacity to: (1) maintain up to 35-40 psi at the nozzles, and (2) provide sufficient agitation in tank to keep mixture in suspension. Use a minimum of 5.0 gal of spray mixture per acre. Maintain uniform travel speed while spraying. Rinse sprayer thoroughly with clean water immediately after each use.

Use appropriate nozzles to reduce drift and increase application accuracy. Use nozzle screens when directed by the manufacturer. Place all nozzles on 20-inch centers, except flooding types. Place flooding type nozzles on 40-inch centers. When Flat Fan-type nozzles are used, place at angles of 80° or 110°. Always read and follow the manufacturer's directions for optimum setup and performance of their nozzles or tips.

**Aerial Application (For Medal II ATZ Alone):** Use aerial application only where broadcast applications are specified. Use the appropriate amount of this product in sufficient water to equal a minimum of 2.0 gal/A of total spray. Avoid applications under conditions where uniform coverage cannot be obtained or where excessive

spray drift may occur. In order to assure that spray will be controllable within the target area when used according to the label directions, make applications at a maximum height of 10 ft above the top of the largest plants, using lowdrift 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 Medal II ATZ by aircraft at a minimum upwind distance of 400 ft from sensitive plants. Avoid application to humans or animals. Ensure that flagmen and loaders avoid inhalation of spray mist and prolonged contact with skin.

### Dry Bulk Granular Fertilizers

Many dry bulk granular fertilizers may be impregnated or coated with Medal II ATZ and used to control weeds in corn or Concep-treated sorghum.

When applying Medal II ATZ with dry bulk granular fertilizers, follow all directions for use, restrictions and precautions on the Medal II ATZ label regarding target crops, rates per acre, soil texture, application methods, and rotational crops.

### Restrictions:

- Impregnation of bulk fertilizer is restricted to commercial facilities. On-farm fertilizer impregnation is prohibited.
- No more than 500 tons of dry bulk fertilizer can be impregnated per day.
- No single facility may impregnate fertilizer with this product for more than 30 days per calendar year.
- The commercial facility impregnating the dry bulk fertilizer must inform, in writing, the user (applicator) of the dry bulk fertilizer that:
  - ° Applicators must wear long-sleeved shirt, long pants, shoes, and socks
  - ° The restricted entry interval is 24 hours

All individual state regulations relating to dry bulk granular fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling the herbicide/fertilizer mixture. Prepare the herbicide/fertilizer mixture by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray Medal II ATZ onto the fertilizer must be placed to provide uniform spray coverage. Take care to aim the spray onto the fertilizer only, avoiding the walls of the blender.

If the herbicide/fertilizer mixture is too wet, add a highly absorptive material, such as Agsorb FG or Celatom MP-79, or similar granular clay or diatomaceous earth materials, to obtain a dry, free-flowing mixture. Add absorptive materials only after

the herbicide has been thoroughly blended into the fertilizer mixture. Best application results will be obtained by using a granule of 6/30 particle size or of a size similar to that of the fertilizer material being used. Generally, less than 2% by weight of absorptive material will be needed. Avoid using more than 5% absorptive material by weight.

#### Pneumatic (Compressed Air) Application

High humidity, high urea concentrations, low fertilizer use rates, and dusty fertilizer may cause fertilizer mixtures to build up or plug the distributor head, air tubes, or nozzle deflector plates. To minimize buildup, premix Medal II ATZ with Exxon Aromatic 200 at a rate of 2.0-2.5 pt/gal of Medal II ATZ. Aromatic 200 is a noncombustible/nonflammable petroleum product. Aromatic 200 may be used in either a fertilizer blender or through direct injection systems. Do not use drying agents when using Aromatic 200.

Precautions: (1) Use mixtures of Medal II ATZ and Aromatic 200 on dry fertilizer only. Poor results or crop injury may result if these mixtures are used in water or liquid fertilizer solutions for spraying applications. (2) When impregnating Medal II ATZ in a blender before application, a drier mixture can be attained by substituting a drying agent for Aromatic 200. The use of Agsorb FG or another drying agent of 6/30 particle size is preferred. (3) Drying agents are not endorsed for use with On-The-Go impregnation equipment.

Precautions: To avoid potential for explosion, (1) Do not impregnate Medal II ATZ on ammonium nitrate, potassium nitrate, or sodium nitrate, either alone or in blends with other fertilizers. (2) Do not combine Medal II ATZ with a single superphosphate (0-20-0) or treble superphosphate (0-46-0). (3) Do not use Medal II ATZ on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

#### Application

Apply 200-700 lb of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Uniform application of the herbicide/fertilizer mixture is essential in order to prevent possible crop injury or injury to subsequent rotational crops. Nonuniform application may also result in unsatisfactory weed control. To obtain satisfactory weed control in areas where conventional tillage is practiced, shallowly incorporate the mixture into the soil. On fine- or medium-textured soils in areas



where soil incorporation is not planned, i.e., reduced tillage situations or in some conventional till situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse-textured soils, make applications approximately 14 days prior to planting.

Precautions: (1) To help avoid rotational crop injury, make applications as early as possible, since Medal II ATZ impregnated onto dry bulk granular fertilizers can be expected to last longer in the soil than when Medal II ATZ is applied as a spray in water or fluid fertilizer. (2) Avoid use of the herbicide/fertilizer mixture on crops where planting beds are to be formed, or crop injury may occur.

#### Limitations, Restrictions, and Exceptions

#### SORGUM USE DIRECTIONS - EARLY PREPLANT, PREPLANT SURFACE, PREPLANT INCORPORATED, OR PREEMERGENCE APPLICATIONS

Preplant Surface, Preplant Incorporated, or Preemergence to Sorghum (Seed Treated with Concep): Apply Medal II ATZ preplant surface, preplant incorporated, or preemergence, using the appropriate rates from Table 4.

Preplant Surface: Apply uniformly to the soil surface within 14 days before planting.

Preplant Incorporated: Apply to the soil and incorporate into the top 2 inches of the soil within 14 days before planting, using a finishing disk, finishing harrow, rolling cultivator, or similar implement capable of providing uniform 2-inch incorporation. Use the preplant incorporated method if furrow irrigation is used or when a period of dry weather after application is expected. If crop is to be planted on beds, apply and incorporate after bed formation.

Preemergence: Apply to the soil surface at planting (behind the planter) or after planting, but before weeds or crop emerge.

Precaution: In the event of escape of annual weeds following an early preplant, preplant surface, preplant incorporated, or preemergence treatment of Medal II ATZ applied alone or in combination, follow with a postemergence application of an appropriately labeled broadleaf and/or grass weed herbicide. If the postemergence treatment includes the herbicide used in the earlier treatment, do not exceed the labeled rate for sorghum on a given soil texture.

Read and follow all sorghum related precautions and restrictions in the Corn and

Sorghum Use Precautions and Restrictions section above.

Restrictions: (1) Do not use in NM or TX, except in the TX Panhandle, Gulf Coast, and Blacklands areas. (2) Do not apply preplant incorporated in AZ or the Imperial Valley of CA.

A fluid fertilizer may be substituted for some or all of the water carrier for burndown of existing annual weeds listed on this label up to the 2-leaf stage of development. The addition of crop oil concentrate to the spray mixture will enhance the burndown activity. If larger weeds are present at the time of treatment, add a contact herbicide as noted in the Medal II ATZ Tank Mixtures section of this label.

Precautions: (1) Avoid applying Medal II ATZ on highly alkaline soils (pH greater than 8.0) or on eroded areas where calcareous subsoils are exposed, or crop injury may result. (2) Avoid applying Medal II ATZ when sorghum is planted in deep furrows because heavy rains following application can cause excessive concentrations of herbicide in the furrow. (3) Avoid applying to sorghum grown under dry mulch tillage, or crop injury may result. (4) Injury may occur if both Medal II ATZ applied early preplant, preplant surface, preplant incorporated, or preemergence and an at-planting systemic insecticide applied in-furrow are used. (5) Sorghum growing under stress caused by minor element deficiency may be injured by Medal II ATZ.

#### CORN AND SORGHUM USE PRECAUTIONS AND RESTRICTIONS

For purposes of calculating the amount of active ingredient applied, 1 qt Medal II ATZ contains 0.775 lb ai atrazine + related compounds and 0.6 lb S-metolachlor. To determine the combined total lb ai of atrazine or S-metolachlor per acre resulting from all products, use the following 2-step method:

- A. Determine the lb ai of atrazine or S-metolachlor applied as Medal II ATZ (1.0 qt = 0.775 lb ai atrazine + related compounds and 0.6 lb ai S-metolachlor); then,
- B. If Dual Magnum, Dual II Magnum or any other source of S-metolachlor is to be used, add the lb ai S-metolachlor to be applied in these products to the lb ai S-metolachlor in Step A above; or if AAtrex or any other source of atrazine is to be used, add the lb ai atrazine to be applied in these products to the lb ai atrazine + related compounds in Step A above.

#### Restrictions for All Medal II ATZ Sorghum Applications

- The combined amount of Medal II ATZ resulting from all applications to sorghum

must not exceed a total of 2.58 qt/A per calendar year.

- When tank mixing or sequentially applying atrazine or products containing atrazine, such as AAtrex, do not exceed a single application rate of 2.0 pounds active ingredient of atrazine (2.58 qt Medal II ATZ) per acre.
- When tank mixing or sequentially applying atrazine or products containing atrazine, such as AAtrex, the total pounds of atrazine applied (lb ai) must not exceed 2.5 lb per acre per calendar year.
- If other products containing S-metolachlor, such as Dual Magnum or Dual II Magnum, have been applied, the combined total amount of S-metolachlor resulting from all applications must not exceed 1.7 lb per acre per calendar year.
- Do not graze or feed sorghum forage for 60 days following preemergence Medal II ATZ use.
- Preharvest Interval (PHI): Do not harvest grain sorghum from treated areas for 75 days following Medal II ATZ application.

#### Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Surface](#)

[Soil incorporation](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Surface](#)

[Soil incorporation](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Surface](#)

[Soil incorporation](#)

Pre-Harvest Interval

75 days

Rates

## field\_rates 0

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Restricted Entry Interval

24 hours

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

Soils

Medium

Loam

Silt Loam

Silt

Fine

Silty Clay Loam

Sandy Clay Loam

Silty Clay

Sandy Clay

Clay Loam

Clay

Timings

Preemergence (Crop)

Preplant

Preplant Incorporated