

HORSERADISH

General Information

PRODUCT INFORMATION

Observe all precautions and limitations on the labels of each product used in tank mixtures. Tank mixtures are permitted only in those states where the tank mix partner is registered. Refer to and follow the label for each tank mix product used for precautionary statements, directions for use, geographic and other restrictions.

Medal II EC is a selective herbicide recommended as a preplant surface-applied, preplant incorporated, or preemergence treatment in water or fluid fertilizer for control of most annual grasses and certain broadleaf weeds in beans, peas, and lentils; corn (all types); cotton; grasses grown for seed; peanuts; potatoes; safflowers; sweet, grain, or forage sorghum; soybeans; soybean, immature seed; sugar beets; sunflowers; and tomatoes.

Restrictions: Do not use in nurseries, turf, or landscape plantings.

Do not apply under conditions which favor runoff or wind erosion of soil containing this product to nontarget areas.

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

1. Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
2. Do not apply to impervious substrates, such as paved or highly compacted surfaces.
3. 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.

Where directions specify a Medal II EC tank mixture with AAtrex formulations, other brands of atrazine may be used. Follow the rates, recommendations, and limitations on the AAtrex or respective atrazine product label, if other brands of atrazine are

used.

Restrictions: Certain states may have established rate limitations for atrazine within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of the label to deviate from state use regulations.

If Medal II EC is incorporated, any supplemental tillage before planting must not exceed the depth of incorporation.

Dry weather following preemergence application of Medal II EC or a tank mixture may reduce effectiveness. Cultivate if weeds develop.

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.

Precaution: Injury may occur following the use of Medal II EC under abnormally high soil moisture conditions during early development of the crop.

RESISTANT WEED MANAGEMENT

Medal II EC herbicide contains the active ingredient 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 15 herbicides. Selection of resistant biotypes, through repeated use of these herbicides or lower than recommended 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.

General 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 recommended 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 TEXTURES AND HERBICIDE RATES

Where rates are based on coarse-, medium-, or fine-textured soils, it is understood that soil textural classes are generally categorized as in the label.

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

Restrictions: Medal II EC may be applied preemergence alone, or in combination with tank mix partners specified on the label, following preplant incorporated herbicides when used according to their label recommendations, provided that such use is not prohibited on the respective labels.

Thoroughly clean sprayer or other application device before using. Dispose of cleaning solution in a responsible manner. Do not use a sprayer or applicator contaminated with any other materials, or crop damage or clogging of the application device may result.

MEDAL II EC APPLIED ALONE

Weeds Controlled

Medal II EC is taken up by the shoots and/or roots of emerging weeds. This uptake results in the inhibition of shoot and root tissue growth soon after weed germination. Because of this, Medal II EC will not control emerged weeds and should be applied prior to weed emergence.

If Medal II EC is incorporated, do not exceed a 2- to 3-inch depth. Any tillage after

the Medal II EC incorporation and before planting should not exceed 2-3 inches.

Dry weather following application of Medal II EC may reduce weed control. Cultivate if weeds develop.

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. Control of these weeds can be erratic, due partially to variable weather conditions. The following procedures may improve the control of weeds listed as partially controlled in Table 1:

1. Thoroughly till soil to destroy germinating and emerged weeds.
2. Plant crop into moist soil immediately after tillage. If Medal II EC is to be used preemergence, apply at planting or immediately after planting.
3. If available, sprinkler irrigate within 2 days after application. Apply 1/2-1 inch of water. Use lower water volume (1/2 inch) on coarse-textured soils and higher volume (1 inch) on fine-textured soils. Also, refer to the section on Center Pivot Irrigation Application for this method of applying Medal II EC.
4. If irrigation is not possible and rain does not occur within 2 days after planting and application, weed control may be decreased. Under these conditions, a uniform, shallow cultivation is recommended as soon as weeds emerge.

APPLICATION PROCEDURES

APPLICATION TIMING

Medal II EC alone or in some tank mixtures with other labeled herbicides may be applied for weed control in certain crops at various times. Refer to the given crop section of the label to determine if application timings listed below are recommended.

Preplant Surface-Applied: For minimum-tillage or no-tillage systems only, Medal II EC alone and some Medal II EC tank mixtures may be applied up to 45 days before planting certain crops. Use only split applications for treatments made 30- 45 days before planting, with 2/3 the recommended broadcast rate for the crop and soil texture applied initially and the remaining 1/3 at planting. Treatments less than 30

days before planting may be made either as a split or a single application. Refer to individual crop section on the label to determine if early preplant surface application is recommended. If weeds are present at the time of treatment, apply in a tank mixture combination with a contact herbicide (for example, Gramoxone brands, Touchdown brands, or Roundup brands). Observe directions for use, precautions, and restrictions on the label of the contact herbicide. To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

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

Preemergence: Apply Medal II EC during planting (behind the planter) or after planting, but before weeds or crops emerge.

Postemergence: Medal II EC will not control emerged weeds so it must be applied to a weed-free soil surface or in tank mixture with products that provide postemergence control of weeds present at the time of application. Refer to the individual crop section of the label if a postemergence application is recommended.

SPECIAL APPLICATION PROCEDURES

CA Only (Beans, Peas, and Lentils; Corn; Safflowers): **Preplant Incorporated:** Broadcast Medal II EC alone or with tank mix partners listed on the label to the soil and thoroughly incorporate with a disk or similar implement set to till 4-6 inches deep. For more thorough incorporation, till the soil in 2 different directions (cross-till). Crops may be planted on flat surface or on beds. Use caution when forming the beds that only soil from the Medal II EC treated zone is used (i.e., untreated soil should not be brought to soil surface). If the application is made to preformed beds, incorporate Medal II EC with a tillage implement set to till 2-4 inches deep. Care should be taken during tilling to keep the tilled (Medal II EC-treated) soil on the beds. **Preemergence:** Apply Medal II EC after planting. Water with sprinkler or flood irrigation within 7-10 days.

Fall Application for Spring Weed Control (Only in IA, MN, ND, SD, WI, and portions of

NE and IL - See specific instructions in the Beans, Peas, and Lentils; Corn; and Soybeans sections of the label for timing of application and other information): Do not apply to frozen ground. Use on medium and fine soils with greater than 2.5% organic matter that will be planted to corn or soybeans the next spring. Ground may be tilled before or after application. Do not exceed a 2 to 3-inch incorporation depth if tilled after treatment. Restrictions: If a spring application is made, the total rate of the fall plus spring applications must not exceed the maximum total rate for the specific crop, or illegal residues may result.

Fall Application for Italian Ryegrass Control (Corn, Cotton, Grain and Forage Sorghum, and Soybean Only - See specific instructions in the Corn, Cotton, Grain and Forage Sorghum, and Soybean sections of the label for timing of application and other information): Medal II EC may be applied in the fall (September 1-December 1) for residual control of glyphosate-resistant Italian ryegrass (*Lolium multiflorum*). A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Medal II EC. Restrictions: 1) Do not apply Medal II EC to frozen ground. 2) All crops on the Medal II EC label may be planted the following spring after application. 3) If a spring application is made, the combined total amount of Medal II EC applied in the fall plus the spring must not exceed the maximum seasonal S-metolachlor rate for the specific crop planted, or illegal residues may result. 4) Refer to the crop sections on the label for specific directions.

Ground Application: Apply Medal II EC alone or in tank mixtures by ground equipment in a minimum of 10 gal of spray mixture per acre, unless otherwise specified.

Use sprayers that provide accurate and uniform application. For Medal II EC tank mixtures with wettable powder or dry flowable formulations, screens and strainers should be no finer than 50-mesh. Rinse sprayer thoroughly with clean water immediately after use.

For information on applying in lower volumes of carrier, see Low Carrier Application section.

For application by air or through center pivot systems, see Aerial Drift Management and Aerial Drift Reduction Advisory Information sections.

For information on impregnating dry fertilizer, see Dry Bulk Granular Fertilizer

section.

For information on application using variable-rate technologies, see Variable-Rate Application section.

SPRAY EQUIPMENT

LOW CARRIER APPLICATION

For Broadcast Ground Application Only

Use sprayers, such as Ag-Chem RoGator, Hagie, John Deere Hi-Cycle , Melroe Sprague, Tyler Patriot, or Willmar Air Ride, that provide accurate and uniform application. Only water may be used as a carrier. Screens in suction and in-line strainers should be 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. Maximum recommended sprayer speed is 15 mph. Rinse sprayer thoroughly with clean water immediately after each use.

Restrictions: Low pressure nozzles are recommended to reduce drift and increase application accuracy. Care should be taken when using automatic rate controlling devices to spray the material within the rated working pressure and flow ranges of the nozzles selected. Nozzle screens should be used when recommended by the manufacturer. All nozzles should be placed on 20-inch centers, except flooding types which should be placed on 40-inch centers. When Flat Fan type nozzles are used, angles of 80° or 110° are recommended. Always read and follow the manufacturer's directions for optimum setup and performance of their nozzles or tips.

AERIAL APPLICATION

Apply Medal II EC in water alone or in tank mixtures with AAtrex, Lorox, or Sencor in a minimum total volume of 2.0 gal/A by aircraft. Medal II EC may also be applied by air in combination with Balan, Prowl, or Treflan. Avoid application 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 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 Medal II EC alone or Medal II EC + AAtrex by aircraft at a minimum upwind distance of 400 ft from sensitive plants, or apply Medal II EC + Lorox or Sencor at a minimum upwind distance of 300 ft from sensitive plants.

CENTER PIVOT IRRIGATION APPLICATION

Medal II EC alone or in tank mixture with other herbicides on the label, which are registered for center pivot application, may be applied in irrigation water preemergence (after planting, but before weeds or crop emerge) at rates recommended on the label. Medal II EC also may be applied postemergence to the crop and preemergence to weeds in crops where postemergence applications are allowed on the label. Follow all restrictions (height, timing, rate, etc.) to avoid illegal residues. Apply this product only through a center pivot irrigation system. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension specialists, equipment manufacturers, or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label-prescribed safety devices for public water systems are in place. 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.

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 to prevent possible crop injury. Nonuniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil may improve weed control. 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.

Precaution: To avoid crop injury, do not use the herbicide/fertilizer mixture on crops where bedding occurs.

Refer in the label regarding tank mix information.

Limitations, Restrictions, and Exceptions

HORSERADISH

Apply a single application of Medal II EC at a broadcast rate of 1.0-1.33 pt/A to the soil surface after planting, but before weed or crop emergence (i.e., preemergence). Use lower rates on soils relatively coarse-textured and higher rates on finetextured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Medal II EC will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical means.

Restrictions: (1) Make only one application of Medal II EC per crop. (2) Do not apply more than 1.33 pt/A of Medal II EC per crop. (3) Harvest horseradish at normal timing.

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground
Surface](#)

[Band application](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground
Surface](#)

[Band application](#)

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground
Surface](#)

[Band application](#)

Rates

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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.

Timings

[Preemergence \(Crop\)](#)

[Preemergence \(Weed\)](#)

[Postplant](#)