



## Water Quality Best Management Practices for Metribuzin

The Minnesota Department of Agriculture (MDA) has developed voluntary Best Management Practices (BMPs) to address the presence of metribuzin and its breakdown products in Minnesota’s groundwater from normal agricultural use (see reverse side of page for metribuzin-specific BMPs). If the BMPs are proven ineffective, mandatory restrictions on herbicide use and practices may be required. The BMPs may also refer to mandatory label use requirements. Always follow product label instructions. For information on monitoring results for metribuzin and other pesticides in Minnesota’s water resources, refer to the MDA’s Monitoring and Assessment webpage: [www.mda.state.mn.us/monitoring](http://www.mda.state.mn.us/monitoring).

The metribuzin BMPs are companions to a set of core BMPs for use with all agricultural herbicides. Herbicide-specific BMPs have also been developed for use with acetochlor, atrazine, and metolachlor. If you use any of these herbicides in the production of crops, be sure to consult each herbicide-specific BMP prior to application. State and federal law may require that the use of a pesticide be limited or curtailed due to the potential for adverse impacts on humans or the environment.

**Example trade names for products and package mixtures containing metribuzin .**

METRIBUZIN IS AN ACTIVE INGREDIENT IN		
S-metolachlor		metolachlor
Authority MTZ	Glory	Metricor
Boundary	Matador	Metrixx
Dimetric	Metribuzin	Tricor

List is not all-inclusive and can change with the introduction of new products; always check the label or consult MDA’s product registration database at <http://npirspublic.ceris.purdue.edu/state/>, select Minnesota, and search for Active Ingredient. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement is implied.

### Information about METRIBUZIN

- Metribuzin based products, including many premixes, are commonly used for control of annual weeds in soybeans. Some products are also labeled for use on crops such as: potato, tomato, alfalfa, and other vegetables.
- Preplant/preemergence application provides residual control of many annual broadleaf weeds. It also suppresses/controls some annual grasses. Metribuzin has substantial foliar burndown activity on small annual broadleaf weeds. While this activity by itself is usually not adequate for control of emerged weeds, combining metribuzin with other burndown herbicides can improve the overall effectiveness.
- Metribuzin herbicides have potential to leach through soil into groundwater under certain conditions as a result of agricultural use. Groundwater contamination is more likely in areas with permeable soils (sands, loamy sands, sandy loams), particularly where the water table is shallow. Metribuzin and its breakdown products have been frequently detected in Minnesota groundwater in areas with coarse-textured soils.
- Metribuzin is in the triazinone herbicide family, a site-of-action (SOA) 5 photosynthesis inhibitor. This is the same SOA as the triazine herbicide family which includes atrazine. Weeds resistant to atrazine may have some level of resistance to metribuzin.

Certain soils, regions and watersheds are more vulnerable to losses of metribuzin. Sensitive areas include those with highly permeable geologic material, highly erodible soils or seasonally high water tables (including areas with drain tiles). Note that portions of every Minnesota county may include one or more of these conditions.

Contact your Natural Resources Conservation Service or Soil and Water Conservation District for further information on specific soil and water resource conditions on and near your farm. Then work with crop consultants and educators to select and adopt the Best Management Practices that are appropriate for your field and farm.

From this series of options, producers, agronomists, and educators should select those options that are the most appropriate for a given farming operation, soil types and geography, tillage and cultivation practices, and irrigation and runoff management. The MDA encourages development of Integrated Weed Management Plans for every Minnesota farm. **Always read the product label. Label use requirements and application setbacks are legally enforceable. Label use requirements and application setbacks are legally enforceable.**

## Water Quality Best Management Practices for Metribuzin to be Used in Conjunction with MDA's Core "BMPs for All Agricultural Herbicides"

Metribuzin Specific Practice *	Description	Benefit
1. Adopt the core "BMPs for All Agricultural Herbicides" when applying metribuzin.	Minnesota Department of Agriculture's core "BMPs for All Agricultural Herbicides" are designed as the baseline set of options to mitigate or prevent losses of herbicides to water resources. The core BMPs are available at <a href="http://www.mda.state.mn.us/herbicidebmps">www.mda.state.mn.us/herbicidebmps</a>	Adoption of core BMPs with those specific for metribuzin and adherence to mandatory label use requirements and application setbacks can reduce runoff or leaching.
2. Utilize label application rates of metribuzin products.	<p>Carefully review metribuzin product labels and adjust application rates of metribuzin based on soil texture, soil organic matter, crop being treated, weed species, weed pressure, and soil pH. Recommended application rates which are intended to prevent crop injury, also reduce the leaching risk. The risk of leaching is greater on permeable, coarse textured soils, and alkaline soils.</p> <p>For soybeans, do Not use metribuzin on sand soils with &lt;2% OM. Limit total annual metribuzin use, including premixes and tank-mixes, on other coarse texture soils to:</p> <ul style="list-style-type: none"> <li>• 0.4 lbs active ingredient/acre on sand soils with ≥2% OM</li> <li>• 0.5 lbs active ingredient/acre on loamy sands and sandy loam soils</li> </ul> <p>For potato, limit metribuzin to 0.5 lbs active ingredient/acre preemergence on coarse texture soils. A second 0.5 lbs active ingredient/acre application can be made after the last cultivation, if needed.</p> <p>Following these application limits is especially important where coarse-textured soils make up more than 25% of the field. These soils are common in central Minnesota, but are also present in other areas of the state. Obtain soil texture and pH information from the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (<a href="http://websoilsurvey.sc.egov.usda.gov/">websoilsurvey.sc.egov.usda.gov/</a>) and soil test results.</p>	Proper metribuzin application rates provide effective weed control, reduce crop injury, optimizes economic returns, and reduce herbicide loss to groundwater.
3. Combine and rotate use of metribuzin (and other SOA 5 herbicides) with herbicides with different sites-of-action in conjunction with nonchemical methods.	Implement a multi-year herbicide plan that combines and rotates herbicides with multiple sites of action that target the most troublesome or herbicide-resistance prone weeds. The goal is to obtain acceptable weed control while reducing selection for herbicide resistance. Do not over-rely on a single herbicide tolerant technology. Also utilize other weed control practices such as cover crops, crop rotation, and tillage when planning herbicide programs.	Reduces selection for herbicide resistant weeds or weed species shifts. Less metribuzin is available for potential loss to the water resources.
* For practices related to the use of specific herbicides refer to MDA's herbicide-specific Best Management Practices. All BMPs are available at <a href="http://www.mda.state.mn.us/herbicidebmps">www.mda.state.mn.us/herbicidebmps</a> See "Additional Information and References" for access to detailed guidance on all recommended practices.		

All MDA Herbicide Best Management Practices are available at [www.mda.state.mn.us/herbicidebmps](http://www.mda.state.mn.us/herbicidebmps).

### Consider unintended consequences when selecting BMPs:

The potential for unintended consequences should be considered when evaluating specific BMPs and other actions to protect and manage surface water or groundwater.