

Recommended Atrazine Best Management Practices (BMPs)¹ for Surface Water Quality

General Pesticide Management BMPs (for reducing pesticide availability in the field)

PRACTICE	RANK ²	DESCRIPTION
Follow integrated pest management (IPM) principles.	**	Apply pesticides only when and where needed (spot or partial field treatments) based on field scouting and threshold comparisons.
Follow label requirements for application rates, mixing, loading, and proper disposal of rinsate and containers.	**	
Pesticide rotation/alternative pesticides.	***	Reduces the availability of any one pesticide to the environment by rotating its use. Alternates should have a lesser risk potential. ³
Avoid application if rainstorms are pending within 48 hours.	**	Herbicides are more susceptible to runoff within the first several days after application.
Delay application on saturated, or even wet, soil.	***	It is important that the first rainfall after application soaks into the soil. Wet or saturated soils increase the potential for runoff. Soil compaction from equipment could also lead to increased pesticide losses from runoff.
Follow mandatory, as well as precautionary, label statements for protecting water resources.	**	Reduces potential for pesticide losses

General Cropland Management BMPs (for reducing water and sediment runoff)

PRACTICE	RANK ²	DESCRIPTION
Crop Rotation.	**	Two or more significantly different crops in a rotation can be used to break pest cycles and reduce need for pesticides.
Crop Rotation with 50% legumes, small grains, or grasses.	***	Reduces erosion and breaks pest cycles, reducing need for pesticides.
Filter Strips (along wetlands, streams, rivers, and impoundments).	*	Reduces sediment transport to surface waters, increases runoff infiltration, can help with setback requirements on label, and provide beneficial insect habitat.
Grassed Waterways (functional).	*	Slows runoff water and decreases sediment transport.
Terraces (functional) and other earthen structures.	*	Increases in-field infiltration and reduces erosion. Outlets should be directed to waterways or other vegetation, and not directly to surface waters.
Irrigation Water Management (timing and amount).	*	Controlled/managed application of irrigation water that eliminates runoff can minimize pesticide transport to surface water.

Many producers already use practices that prevent atrazine runoff. These include a crop rotation where atrazine is not used one year in a two- or three-year rotation, or grass buffers, which reduce losses of some soil-attached atrazine. Similarly, producers follow label requirements and apply low rates of atrazine. If these steps are not enough, then looking at atrazine management practices customized for specific cropping systems can provide additional ways to reduce losses.

The recommendations provided in the tables below are based on University of Nebraska-Lincoln Extension research that evaluated the effectiveness of common atrazine management practices at reducing long-term runoff losses compared to a pre-emergence broadcast application. Only those practices that provided a significant reduction (30-50% or more) are considered a BMP. In addition to a system of BMPs from the tables above, adopting these practices for irrigated corn and dryland corn and grain sorghum can help to reduce losses of atrazine to surface waters.

BMPs to Reduce Atrazine Losses from Irrigated Corn Cropping Management Systems

PRACTICE	DISK TILL	RIDGE TILL	NO-TILL	COMMENT	DESCRIPTION
Pre-emergence Incorporated	*** ²	_ ²	-	Only if used on non-erodible soils (flat slopes).	Incorporate with tillage or cultivation.
Post-emergence Only	***	***	***	Use alternative herbicide as pre-emergence if needed.	Atrazine post applied only.
Pre-emergence Banded	-	***	-	Atrazine band applied can cut runoff losses 50% or more compared to broadcast application.	Band apply atrazine on crop row. Use timely cultivation to control weeds between rows.
Early Broadcast Pre-emergence	-	-	**	Use alternative to atrazine at planting or post-emergence treatment	Apply broadcast four weeks ahead of planting.

BMPs to Reduce Atrazine Losses from Dryland Corn⁴ Cropping Management Systems

PRACTICE	DISK TILL	RIDGE TILL	NO-TILL	COMMENT	DESCRIPTION
Use a non-atrazine product	***	***	***	Select from various alternatives, but be sure none contain atrazine in combination.	
Post-emergence Only	**	***	***	Use alternative herbicide pre-emergence if needed.	Atrazine used post applied only.
Pre-emergence Banded	*** (sorghum ⁴)	***	-	Atrazine band applied can cut runoff losses 50% or more compared to broadcast application. Evaluated for sorghum with disk tillage.	Band apply atrazine on crop row. Use timely cultivation to control weeds between rows.
Early Broadcast Pre-emergence	*** (sorghum ⁴)	-	**	Evaluated for grain sorghum with early atrazine application in April for a late May or June planted sorghum crop. Use alternative to atrazine at planting or post-emergence treatment	Apply broadcast four weeks ahead of planting.

¹ While this hand-out targets atrazine, most of the BMPs on page 1 will be effective at reducing other pesticides with similar chemical properties.

² Practices are ranked by how well atrazine runoff is reduced: three-star (highly effective); two-star (moderately effective); one-star (slightly effective); no-star (not evaluated).

³ See the “environmental risks” pages in the Weed Management Guide for the relative risk potential of alternative pesticides (web link provided below). ⁴ Early broadcast and banded pre-emergence also evaluated with disk tillage for grain sorghum. Other practices and tillage systems were not researched in grain sorghum.

The information in this document was compiled by NDA in consultation with UNL Extension and USDA NRCS. More information on reducing environmental risk and additional BMPs for pesticides can be found in the current edition of the University of Nebraska’s Weed Management Guide (EC-130; bit.ly/UNLextEC130) and USDA NRCS Pest Management specification (see specification 595 in Chapter IV in the electronic Field Office Technical Guide; <https://www.nrcs.usda.gov/resources/guides-and-instructions/field-office-technical-guides/>).