

Management Guide for Marestail

Monsanto is committed to providing the information and product recommendations necessary to minimize the risk of developing weed resistance. The information below is targeted at increasing awareness of important weeds and helping preserve glyphosate efficacy.

Marestail Biology

- Marestail, also known as horseweed, is found in every state, and is one of the most common weeds in the eastern and central parts of the U.S.
- Over the past 10 years, marestail has become a more economically important weed problem with the widespread adoption of reduced and conservation tillage systems.
- Marestail is a winter annual weed that germinates in the fall, but will also emerge in the spring and complete its life cycle in the late spring and summer.
- Marestail emerges to form a basal rosette, but quickly produces a stem with numerous pubescent leaves that are arranged alternately.
- Plants produce up to 200,000 tiny seeds that are wind-dispersed over great distances. Up to 80 percent of seeds can germinate immediately after dispersal.¹
- Marestail can grow to more than six feet tall.

Weed Environment

- ✓ Marestail is well adapted to no-till crop production, and can quickly spread to many habitats. Marestail is also found along field edges and roadsides and in natural settings like prairies and glades.
- ✓ Marestail is relatively easy to control in the rosette stage and when it is small.
- ✓ Marestail is difficult to control when plants grow beyond the rosette stage of development. As such, marestail has developed resistance to several different herbicide chemistries.
- ✓ Marestail is competitive and can interfere with harvest and reduce crop yield potential.
- ✓ Glyphosate-resistant marestail has been confirmed in Delaware, Kentucky, Tennessee, Indiana, Maryland, New Jersey, Ohio, Arkansas, Mississippi, and North Carolina.²

¹ www.weeds.cropsci.uiuc.edu

² Heap, I. The International Survey of Herbicide Resistant Weeds. Online. Internet. July 06, 2005. Available www.weedscience.com

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Treatment Recommendations¹

Scout fields and control weeds throughout the season. Proper application timing protects yields, ensures correct use rate for weed size and considers the impact of environmental conditions on performance.

Roundup Ready® Corn 2

- ✓ Start clean with a burndown herbicide or tillage. Tank mix Roundup® agricultural herbicides with 2,4-D to control marestail and other tough-to-control broadleaves.
- ✓ Apply a preemergence residual herbicide such as Harness® Xtra, Degree Xtra®, or other residual herbicides at the recommended rate.
- ✓ Or apply a preemergence residual herbicide at the recommended rate tank mixed with Roundup WeatherMAX® at a minimum of 22 oz/A in-crop before marestail exceeds 4 inches in height.
- ✓ Follow both programs with a postemergence in-crop application of Roundup WeatherMAX at a minimum of 22 oz/A for additional marestail flushes before they exceed 4 inches in height.
- ✓ Tank mix other herbicides such as 2,4-D or dicamba (Clarity®, Banvel® or Distinct®) with Roundup WeatherMAX if necessary for enhanced postemergence marestail control.

Roundup Ready Cotton

- ✓ Start clean with a burndown herbicide or tillage. Tank mix Roundup WeatherMAX with dicamba (Clarity) or 2,4-D (consult label for plant back timing).
- ✓ Apply preemergence residual herbicide at the recommended rate such as fluometuron (Cotoran®) or diuron (Direx®).
- ✓ In-crop, apply Roundup WeatherMAX at a minimum of 22 oz/A for additional weed flushes.
- ✓ Roundup WeatherMAX may be tank mixed with other herbicides, including fluometuron (Cotoran), diuron (Direx), prometryn (Caparol®) or flumioxazin (Valor®) and post-directed to control marestail. Observe maximum annual application rates for additional flushes.

Roundup Ready Soybeans

- ✓ Scout fields before and after each burndown and in-crop application.
- ✓ Start clean with a burndown herbicide or tillage. Tank mix Roundup agricultural herbicides with 2,4-D to control glyphosate-resistant marestail.
- ✓ If you have dense stands of marestail, use a residual herbicide such as metribuzin (Sencor®), and where marestail is sensitive to ALS herbicides, add cloransulam (FirstRate®).
- ✓ In-crop, apply Roundup WeatherMAX at a minimum 22 oz/A before marestail exceeds 6 inches in height.
- ✓ Cloransulam (FirstRate) should be tank mixed (in ALS sensitive areas) with Roundup WeatherMAX if applying postemergence to a known glyphosate-resistant marestail population.

Minimize the Risk of Weed Resistance

- Start clean and control weeds early.
- Use Roundup Ready Technology as your foundation.
- Add other herbicides and cultural practices where appropriate as part of the Roundup Ready Cropping System.
- Use the right rate at the right time.
- Control weeds throughout the season and reduce the weed seed bank.

Report incidences of repeated non-performance of any Monsanto branded herbicide to your local Monsanto retailer or call 1-800-ROUNDUP.

This is not a product label. Always read and follow label directions for all products used in tank mixtures. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance. Monsanto has not tested all recommended tank mix product formulations for compatibility or performance.

¹This fact sheet is issued to clearly describe use recommendations permitted under FIFRA Section 2(ee) as not being inconsistent with product labeling, or is issued to highlight an approved use from the product labeling. It is a violation of federal law to use any registered pesticide product in a manner inconsistent with its labeling. Read and follow all precautions and use instructions contained within the labeling. The applicable labeling for all products must be in the possession of the user at the time of application. Some recommended pesticide products are not registered in all states. Check with the product manufacturer or your dealer for products registered in your state. The distribution, sale or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited.

These recommendations are for all states except Texas.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS: Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® agricultural herbicides. Roundup agricultural herbicides will kill crops that are not tolerant to glyphosate. Harness® brands and Degree Xtra® are restricted use pesticides and are not registered in all states. The distribution, sale or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited. Check with your local Monsanto dealer or Monsanto representative for the product registration in your state. Harness®, Degree Xtra®, Roundup®, Roundup Ready® and Roundup WeatherMAX® are trademarks of Monsanto Technology LLC. All other trademarks are the property of their respective owners.