

Management Guide for Annual Morningglories

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.

Annual Morningglories Biology

- Morningglories are vining, branched summer annuals that can grow more than six feet in length.
- Varying morningglory species may be found in cropping systems across the U.S. and may include tall morningglory, ivyleaf and pitted morningglory.
- Morningglories are recognized by their funnel-shaped, radially symmetrical flowers and heart-shaped leaves. Morningglory flowers have considerable variations of size, shape and color – even on the same plant.
- Some morningglories have a large, deep taproot, while others have creeping roots. The stems are twining vines that wind around crop plants.
- Some morningglories produce up to 3,000 seeds per plant. Seed can germinate throughout the growing season, which contributes to the difficulty of management.¹

Weed Environment

- ✓ Although one of the most common agronomic problems in the eastern and southeastern United States, morningglories can also be found throughout northern regions of the country.
- ✓ Morningglory species are competitive in row crops and also cause yield loss by reducing harvest efficiency.¹
- ✓ Glyphosate applications should be made before vining begins in order to get good control.
- ✓ No known cases of resistance to glyphosate herbicides have been confirmed.²

¹ www.nsr1.uiuc.edu/news/nsr1_pubs/weedbrochure.pdf

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. Early-season weed control is critical in corn to maximize yield potential.
- ✓ Apply a preemergence residual herbicide containing atrazine such as Harness[®] Xtra, Degree Xtra[®], or other residual herbicides at the recommended rate.
- ✓ Or apply a preemergence residual herbicide containing atrazine at the recommended rate tank mixed with Roundup WeatherMAX[®] at a minimum of 22 oz/A in-crop before morningglories exceed 3 inches in height.
- ✓ Follow both programs with a postemergence in-crop application of Roundup WeatherMAX at a minimum of 22 oz/A for additional morningglories before they exceed 3 inches in height.
- ✓ Tank mix other herbicides such as 2,4-D, dicamba or Distinct[®] with Roundup WeatherMAX if necessary for enhanced postemergence morningglory control.

Roundup Ready Cotton

- ✓ Start clean with a burndown herbicide or tillage. Tank mix Roundup[®] with dicamba (Clarity[®]) or 2,4-D (consult label for plant back timing) for tough-to-control broadleaf weeds such as morningglories.
- ✓ Apply a 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 before morningglories exceed 3 inches in height.
- ✓ Plan on sequential applications of Roundup WeatherMAX at a minimum of 22 oz/A for effective control. Other residual products, such as pyriithiobac (Staple[®]) or metolachlor (Dual[®]), could be added.

- ✓ Roundup WeatherMAX may be tank mixed with other herbicides including fluometuron (Cotoran), diuron (Direx), prometryn (Caparol[®]) or flumioxazin (Valor[®]) and post-directed to control morningglory.

Roundup Ready Soybeans

- ✓ Scout fields before and after each burndown and in-crop application.
- ✓ Start clean with a burndown herbicide or tillage. Tank mix with 2,4-D to control existing weeds and tough-to-control broadleaf weeds such as emerged morningglories.
- ✓ If you have dense stands of morningglories, use one of many available residual herbicides applied preemergence such as cloransulam (FirstRate[®]) or flumioxazin (Valor).
- ✓ In-crop, apply Roundup WeatherMAX at a minimum of 22 oz/A before morningglories exceed 3 inches.
- ✓ If an additional flush of morningglories occurs, observe maximum annual application rates.
- ✓ Roundup WeatherMAX may be tank mixed with other herbicides, including aciflourfen (Ultra Blazer[®]), fomesafen (Flexstar[®]) or cloransulam (FirstRate) if additional postemergence morningglory control is needed.

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.