

# Management Guide for Eastern Black Nightshade

**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.**

## Eastern Black Nightshade Biology

- Eastern black nightshade (EBN) is native to North America and is in the same botanical family as tomatoes and potatoes.
- EBN is an annual broadleaf plant that is most commonly found in the Corn Belt and eastern United States.
- Seedling leaves are generally purple underneath. The stem is erect or spreading, becoming widely branched and can grow more than 24 inches tall.
- EBN is extremely prolific and can produce hundreds of thousands of seeds in a single growing season.<sup>1</sup>
- The green berries, which turn black at maturity, contain up to 100 seeds each. The seeds are small, dull, pitted and yellow to dark brown.<sup>2</sup>
- The presence of EBN can reduce crop yield and slow harvest. EBN berries are about the same size as soybean seeds and can make harvesting, particularly with an axial flow combine, extremely difficult. Stain from berries in seed soybeans can reduce crop quality.<sup>1</sup>

## Weed Environment

- ✓ EBN is found in cultivated fields, gardens and waste areas and is spread by rodents, birds, livestock, humans and water.
- ✓ EBN germination can continue throughout the growing season, even late in the season. An extended germination period makes it difficult to control.
- ✓ EBN is a problem in soybeans primarily, and has the potential to escape glyphosate applications due to its late emergence and shade tolerance.<sup>2</sup>
- ✓ When soybean leaf drop begins, EBN continues to grow and reproduce. It is unaffected by light frosts.<sup>2</sup>
- ✓ No known cases of resistance to glyphosate herbicides have been confirmed.<sup>3</sup> Resistance to photosystem II inhibitors (triazines) and ALS inhibitors has been reported.

<sup>1</sup> <http://agronomyday.crops.cornell.edu/2002/e-black-nightshade/>

<sup>2</sup> [www.cdfa.ca.gov/phpps/pc/weedinfo](http://www.cdfa.ca.gov/phpps/pc/weedinfo)

<sup>3</sup> Heap, I. The International Survey of Herbicide Resistant Weeds. Online. Internet. November, 2006. Available [www.weedscience.com](http://www.weedscience.com)

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## Treatment Recommendations<sup>1</sup>

*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 EBN exceeds 4 inches in height.
- ✓ Follow with a postemergence in-crop application of Roundup WeatherMAX at a minimum of 22 oz/A for additional EBN flushes before they exceed 4 inches in height.
- ✓ Tank mix other herbicides such as 2,4-D or dicamba (Clarity®, Banvel®, Distinct® or Marksman®) with Roundup WeatherMAX if necessary for postemergence EBN control.

### 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 for control of EBN.
- ✓ If you have dense stands of EBN or are in a continuous Roundup Ready Soybean rotation, use a residual herbicide such as flumioxazin (Valor®) or alachlor (INTRRO®), and where EBN is sensitive to ALS herbicides, you may add imazethapyr (Pursuit®).
- ✓ In-crop, apply Roundup WeatherMAX at a minimum of 22 oz/A before EBN exceeds 6 inches in height.
- ✓ If an additional flush of EBN occurs, observe maximum annual application rates.
- ✓ Roundup WeatherMAX may be tank mixed with imazamox (Raptor®), imazethapyr (Pursuit) or lactofen (Cobra®) additional postemergence EBN 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 System.**
- **Use the right rate at the right time.**
- **Control weeds throughout the season and reduce the weed seed bank.**

**Report incidents 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.

<sup>1</sup>This 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 PESTICIDE 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, Degree Xtra® and INTRRO® 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®, INTRRO®, Roundup®, Roundup Ready® and Roundup WeatherMAX® are registered trademarks of Monsanto Technology LLC. All other trademarks are the property of their respective owners.