

# Comparison of Different Glyphosate Brands in Roundup Ready® Soybeans

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## Introduction

Roundup Ready® soybeans are used on more than 60% of Iowa's soybean acreage. Insertion of gene coding for an insensitive target site allows the application of glyphosate (Roundup®) to these soybeans. The rapid adoption of this technology is due largely to the high level of effectiveness of glyphosate and the simplicity of the management system. In recent years numerous manufacturers have introduced herbicides containing glyphosate that compete directly with the Roundup® brands sold by Monsanto. A common question is whether the 'generic' brands of glyphosate perform similarly to products offered by Monsanto, specifically Roundup UltraMax®. The objective of this experiment was to compare three brands of glyphosate for weed management in Roundup Ready® soybeans.

## Materials and Methods

Soybeans were drilled into standing corn stalks on May 17. A burndown treatment of 1 qt. Roundup Ultra® was applied shortly after planting to control emerged vegetation.

Equivalent rates (0.37 and 0.56 lb a.e./A) of the three products were applied on June 11. Soybeans were at the first trifoliolate stage and weeds (giant foxtail, common lambsquarter, sunflower) ranged from 1 to 6 inches in height. Herbicide treatments were applied in 20 gallons of water using a CO<sub>2</sub> pressurized backpack sprayer. The sprayer was equipped with Spraying Systems Turbo TeeJet® nozzles. All treatments included 8.5 lbs ammonium sulfate per 100 gallons of water.

## Results and Discussion

The three products studied were Roundup UltraMax®, Glyphomax Plus®, and Touchdown IQ®. Both Roundup UltraMax® and Glyphomax Plus® contain the isopropylamine salt of the active ingredient glyphosate. Touchdown IQ® contains a diammonium salt of glyphosate. The salt used in the formulation generally has little effect on herbicide performance, although it can influence handling characteristics of the product. An earlier form of Touchdown® (Touchdown 5®) contained a salt that caused leaf burning on Roundup Ready® crops, but the current formulation does not have this product. Touchdown IQ® and Glyphomax® contain 3 lbs of glyphosate per gallon, whereas Roundup UltraMax® contains 3.75 lbs glyphosate.

All treatments at Castana provided excellent control of giant foxtail, common lambsquarter and annual sunflower (Table 1). No differences were seen among the three brands of glyphosate. The high level of performance can be attributed to application to small weeds, rapid canopy development of soybeans in 7" rows, and a lack of rainfall following treatment to stimulate additional weed germination.

Similar experiments were conducted at numerous locations across Iowa during the 2001 growing season. Weed control with equivalent rates of different brands of glyphosate was similar in 91% of the comparisons. In the few situations where differences were detected, Roundup UltraMax outperformed competing brands 75% of the time. Significant differences in performance generally occurred with low herbicide rates applied to large weeds (> 10 inches in height).

The results of this research support the view that there are relatively small differences in performance among the many brands of glyphosate available to farmers. The major differences among these products are the amounts and types of additives included in the formulated product. The likelihood of these differences affecting performance can be minimized by following the label instructions for use of surfactants.

Timing of application, rate selection, and environmental conditions are much more likely to influence glyphosate performance than the particular brand used. Thus, selection of a glyphosate product should be based on price, service, and personal relationship with the manufacturer rather than advertising claims for superior performance.

**Table 1. Performance of three glyphosate products in Roundup Ready® soybeans at Castana, IA, 2001.**

Product	Rate	% control		
		Giant foxtail	Com. lambsquarter	Sunflower
Glyphomax Plus®	1.0 pt	99	95	96
Glyphomax Plus®	1.5 pt	99	96	98
Roundup UltraMax®	13 oz	98	96	98
Roundup UltraMax®	20 oz	99	96	98
Touchdown IQ®	1.0 pt	99	98	99
Touchdown IQ®	1.5 pt	98	96	98
LSD <sub>0.05</sub>	-	Not significant	Not significant	Not significant