Glyphosate and Dicamba Drift Problems in Potatoes
What to Expect

NDSU EXTENSION SERVICE

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Introduction of the Problem

Background: The introduction of crops resistant to glyphosate and dicamba is concerning for potato growers. These herbicides can reduce yield and quality and cause problems in tubers sold for seed. The purpose of this study is to determine the effects of glyphosate plus dicamba on plant injury, marketable yield, and the effects on seed tubers planted the following year. Glyphosate in seed potato can cause a delay in emergence, multiple stems, and malformed leaves. Dicamba can cause a delay in emergence and malformed foliage. Protect potatoes by talking to neighbors, dedicating a sprayer for potatoes, planting borders, and scouting field regularly.

Purpose of the Project: To determine the effect of glyphosate and dicamba on crop injury and marketable yield of Russet Burbank potato.

What Was Done

Experimental Procedures:

• Locations:	Oakes, ND	Inkster, ND
• Plantings:	May 22	June 10
• Treatments:	July 7	July 30
• Evaluation	-	Aug 10
	July 27	Aug 19
• Cultivar:	Russet Burbank	Russet Burbank
• Plot size:	12 x 30 ft.	12 x 30 ft.

- Production practices were conducted according to NDSU recommendations.

Measurements
- Plant injury at 10 and 20 days after treatment
- Harvested and graded yield of the two center rows

Data Analysis
- Proc Mixed model with a Tukey pairwise comparison at P<0.1 with SAS v. 9.3.

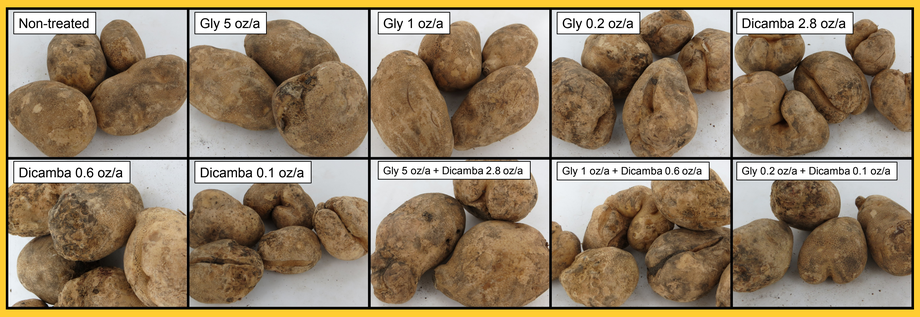
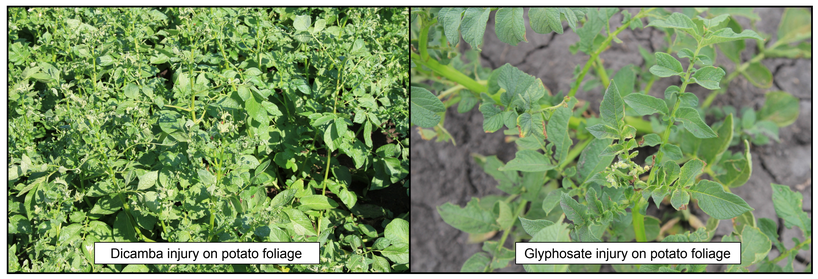


Figure 1. Effect of glyphosate (Gly) and dicamba on Russet Burbank tubers grown at Inkster, ND in 2015.

What Was Found

Crop Injury

- Dicamba alone caused injury at each rate applied, while the higher rates of glyphosate caused visual injury on the foliage (Figure 2).
- Combinations of glyphosate and dicamba caused significant injury in all combinations.
- Dicamba causes a twisting and bending of stems. Glyphosate will cause newer leaves to become yellow and can stunt growth.



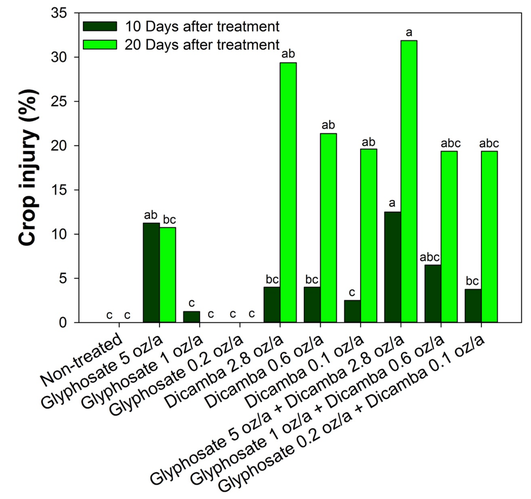


Figure 2. Estimated crop injury (0 to 100%) of Russet Burbank at 10 and 20 days after treatment of glyphosate, dicamba, and glyphosate plus dicamba during mid bulking at Oakes and Inkster, ND in 2015. Across treatments, means followed by the same lower case letter and within a timing are not significantly different according to Tukey pairwise comparison (P = 0.1).

Yield

- Total and marketable yield did not change between treatments (Figure 3).
- A numerical decrease of marketable yield was noticed when dicamba was applied. This was likely a results of an increased number of malformed tubers.
- Residues of glyphosate or dicamba would make the tuber unmarketable.
- Tubers from each treatment will be planted back in 2016 to evaluate the effects of theses herbicides on emergence and marketable yield.

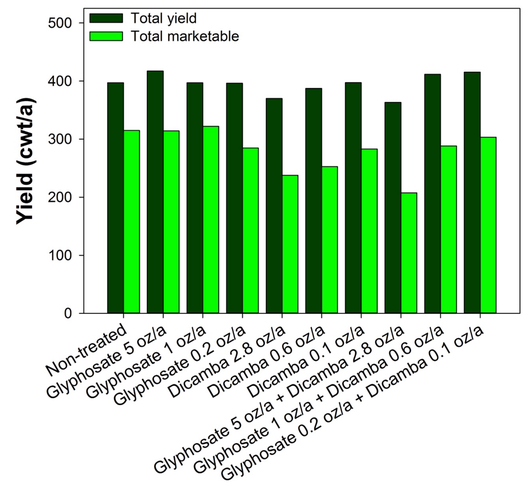


Figure 3. Total and marketable yield of Russet Burbank treated with glyphosate, dicamba, and glyphosate plus dicamba during mid bulking at Oakes and Inkster, ND in 2015.

Take Home Message

- Glyphosate and dicamba can cause many problems in commercial potato production by reducing the quality of potatoes and leaving residues in tubers.

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