

Red Norland injury from simulated glyphosate drift. Harlene Hatterman-Valenti and Collin Auwarter.

This study was conducted at the Northern Plains Potato Grower's Non-Irrigation Research site near Grand Forks, ND to evaluate glyphosate drift at different growth stages on Red Norland Potato. Soybean was the previous crop in 2009. Plots were 4 rows by 20 ft arranged in a randomized complete block design with four replicates. Seed pieces (2 oz) were planted on 36 inch rows and 12 inch spacing on June 16, 2010. Treatments were applied on July 29 (tuber initiation-TI), August 19 (early tuber bulking-EB), and September 8 (late tuber bulking-LB) to the middle 2 rows with a modified ATV sprayer. Roundup Weathermax (5.5 lb/gal ai glyphosate) and AMS @ 4 pounds/100 gallons were used in this trial. Potatoes were machine harvested October 20 and graded a few weeks later. Application, environmental, and crop data are listed below:

Date:		7/29/10	8/19/10	9/8/10
Treatment:		TI	ETB	LTB
Sprayer:	GPA:	5	5	5
	PSI:	40	40	40
	Nozzle:	80005	80005	80005
Air temperature (F):		75	69	62
Relative humidity (%):		58	63	60
Wind (MPH):		6	10	6
Soil moisture:		Adequate	Adequate	Adequate
Cloud cover (%):		10	0	10
Next rain:		7/30/10	8/23/10	9/10/10

Glyphosate applied at the tuber initiation (TI) stage showed to have the greatest effect on yield and tuber counts for this cultivar. Glyphosate applied at 0.25 and 0.125 lb ai/a (TI stage) had a total yield of 24 and 79 cwt/a, respectively. The untreated had the highest yield with 268 cwt/a. Glyphosate applied at 0.25 lb ai/a (TI stage) had no tuber >4 oz, while the 0.125 lb ai/a had only 8 cwt/a. The untreated had the highest "A" size yield with 169 cwt/a >4 oz. Glyphosate applied at 0.25 lb ai/a (TI stage) only had 57 tubers in 20 feet of row or 2.85 tubers/plant while the untreated had 160 tubers in 20 feet or 8 tubers/plant.

Table 1. Effect of glyphosate drift on yield and grade on Red Norland potatoes.

			App	Total	<4 oz	4-6 oz	6-10 oz	>10 oz	>4 oz	Total	<4 oz	4-6 oz	6-10 oz	>10 oz	>4 oz
Name	Rate	Unit	Code	-----cwt/a-----					-----Tuber counts in 20 feet-----					Tuber %	
Unt				268 a	99 ab	113 a	39 a	17 a	169 a	160 a	101 abc	45 a	12 a	3 a	39 a
RU*	.25	lb ai/a	TI	24 b	24 c	0 b	0 b	0 a	0 b	57 b	57 c	0 b	0 b	0 a	0 c
RU*	.125	lb ai/a	TI	79 b	71 b	8 b	0 b	0 a	8 b	112 a	108 ab	4 b	0 b	0 a	3 c
RU*	.0625	lb ai/a	TI	174 a	113 a	48 ab	11 ab	1 a	60 ab	162 a	139 a	20 ab	4 ab	.3 a	13 bc
RU*	.25	lb ai/a	EB	216 a	90 ab	98 a	24 ab	4 a	126 a	139 a	91 bc	40 a	7 ab	.8 a	34 a
RU*	.125	lb ai/a	EB	194 a	100 ab	72 a	18 ab	4 a	95 ab	153 a	117 ab	30 a	6 ab	.8 a	24 ab
RU*	.0625	lb ai/a	EB	230 a	84 ab	92 a	31 a	23 a	146 a	137 a	88 bc	36 a	9 a	4.3 a	35 a
RU*	.25	lb ai/a	LB	211 a	92 ab	90 a	21 ab	9 a	120 a	136 a	90 bc	37 a	6 ab	1.8 a	34 a
RU*	.125	lb ai/a	LB	221 a	91 ab	88 a	30 a	12 a	130 a	138 a	91 bc	36 a	9 a	2.3 a	34 a
RU*	.0625	lb ai/a	LB	245 a	98 ab	104 a	28 a	15 a	146 a	146 a	93 bc	43 a	9 a	2.8 a	36 a
*AMS added	LSD (P=.05)			82	24	49	18	17	76	33	30	19	5	3.2	13