

## **WCI Micronutrient Compatibility with Glyphosate in Soybeans at Rochester, MN in 2013.**

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The objective of this trial was to evaluate glyphosate performance when tank mixed with foliar micronutrients in soybeans. The research site was a Lawler loam series with a pH of 6.3, O.M of 2.7%, and soil test P and K levels of 85 ppm and 178 ppm, respectively. The field was fall mold board plowed, disked and field cultivated once prior to planting. The soybean variety, Pioneer 92Y22, was planted on May 16, 2013 at a depth of 1.5 inches in 30 inch rows at a rate of 165,700 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. The entire plot area was treated with glyphosate following the second weed rating at an application rate of 32 fl oz/a. The center two rows of each plot were machine harvested on October 26, 2013. Application dates, environmental conditions, and crop stages are listed in Table 1. Performance ratings for giant ragweed, common lambsquarters, common waterhemp, and velvetleaf control are listed in Tables 2, 3 and 4, respectively. (University of Minnesota Extension Regional Office – Rochester)

**Table 1. Application timing, plant stage, environmental conditions.**

<b>Date</b>	<b>7/1</b>	<b>7/11</b>	<b>7/25</b>
<b>Treatment</b>	POST I	POST II	POST III
<b>Temperature</b>			
Air	78	75	75
Soil	82.0	75.6	69.4
<b>Relative Humidity (%)</b>	41	53	68
<b>Wind (mph)</b>	7	0	13
<b>Soil Moisture</b>	Adequate	Adequate	Adequate
<b>Soybean</b>			
Stage	V2-V3		R2
Height (inches)	8.0	15.0	29.0
<b>Giant Ragweed</b>			
Density (ft <sup>2</sup> )	0.8	0.8	
Height (inches)	15.5		26.3
<b>Common Lambsquarters</b>			
Density (ft <sup>2</sup> )	3.8	1.5	
Height (inches)	4.0		11.3
<b>Common Waterhemp</b>			
Density (ft <sup>2</sup> )	1.0	4.4	
Height (inches)	1.0		19.8
<b>Velvetleaf</b>			
Density (ft <sup>2</sup> )	5.8		
Height (inches)	2.5	0.6	14.5
<b>Rainfall after each application</b>			
Week 1	0.03	1.07	0.47
Week 2	0.89	0.25	0.54
Week 3	0.75	0.47	0.75

**Table 2. Performance of glyphosate and micronutrient systems for giant ragweed in soybeans on July 11, 24, and September 25 and grain yield at 13% at Rochester, MN in 2013.**

Treatment	Description	Rate	Giant Ragweed Control			Yield
			7/11	7/24	9/25	
		(rate/A)	(% Control)			(bu/A)
<b>POST I</b>						
Buccaneer Plus		24 fl oz/a	50	47	73	37.6
Buccaneer Plus + N-Tense		24 fl oz/a + 0.5% v/v	49	48	65	40.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 8 fl oz/a	54	50	73	42.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 16 fl oz/a	54	59	78	37.9
Buccaneer Plus + N-Tense + WC-121	WC121 – Micronutrient Blend	24 fl oz/a + 0.5% v/v + 32 fl oz/a	48	40	76	40.4
Buccaneer Plus + N-Tense + WC-123	WC123 – Macro and micronutrient blend plus adjuvant	24 fl oz/a + 0.5% v/v + 32 fl oz/a	53	50	75	38.0
Buccaneer Plus + WC-123 + WC-133		24 fl oz/a + 32 fl oz/a + 0.5% v/v	51	50	74	39.3
Buccaneer Plus + N-Tense + WC-123 + WC-101		24 fl oz/a + 0.5% v/v + 32 fl oz/a + 12 fl oz/a	58	53	77	42.6
Buccaneer Plus + WC-133		24 fl oz/a + 0.5% v/v	51	56	69	41.2
Buccaneer Plus + WC-157		24 fl oz/a + 0.5% v/v	53	55	76	42.2
Buccaneer Plus + WC-111		24 fl oz/a + 0.5% v/v	54	56	74	40.3
Weed Free			100	100	100	47.0
<b>LSD (P=0.10)</b>			<b>6</b>	<b>8</b>	<b>14</b>	<b>NS</b>

**Table 3. Performance of glyphosate and micronutrient systems for common lambsquarters on July 11, 24 and September 25 and grain yield at 13% at Rochester, MN in 2013.**

Treatment	Description	Rate	Common Lambsquarters			Yield
			7/3	7/13	9/25	
		(rate/A)	(% Control)			(bu/A)
<b>POST I</b>						
Buccaneer Plus		24 fl oz/a	91	92	99	37.6
Buccaneer Plus + N-Tense		24 fl oz/a + 0.5% v/v	99	98	99	40.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 8 fl oz/a	95	95	99	42.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 16 fl oz/a	96	96	99	37.9
Buccaneer Plus + N-Tense + WC-121	WC121 – Micronutrient Blend	24 fl oz/a + 0.5% v/v + 32 fl oz/a	73	72	76	40.4
Buccaneer Plus + N-Tense + WC-123	WC123 – Macro and micronutrient blend plus adjuvant	24 fl oz/a + 0.5% v/v + 32 fl oz/a	97	97	98	38.0
Buccaneer Plus + WC-123 + WC-133		24 fl oz/a + 32 fl oz/a + 0.5% v/v	74	71	95	39.3
Buccaneer Plus + N-Tense + WC-123 + WC-101		24 fl oz/a + 0.5% v/v + 32 fl oz/a + 12 fl oz/a	93	92	98	42.6
Buccaneer Plus + WC-133		24 fl oz/a + 0.5% v/v	96	95	99	41.2
Buccaneer Plus + WC-157		24 fl oz/a + 0.5% v/v	97	96	99	42.2
Buccaneer Plus + WC111		24 fl oz/a + 0.5% v/v	99	98	99	40.3
Weed Free			100	100	100	47.0
<b>LSD (P=0.10)</b>			<b>9</b>	<b>8</b>	<b>7</b>	<b>NS</b>

**Table 4. Performance of glyphosate and micronutrient systems for common waterhemp in soybeans on July 11, 24, and September 25, and grain yield at 13% at Rochester, MN in 2013.**

Treatment	Description	Rate (rate/A)	Common Waterhemp			Yield (bu/A)
			7/11 (% Control)	7/24 (% Control)	9/25 (% Control)	
<b>POST I</b>						
Buccaneer Plus		24 fl oz/a	57	55	74	37.6
Buccaneer Plus + N-Tense		24 fl oz/a + 0.5% v/v	63	69	75	40.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 8 fl oz/a	53	51	61	42.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 16 fl oz/a	51	59	75	37.9
Buccaneer Plus + N-Tense + WC-121	WC121 – Micronutrient Blend	24 fl oz/a + 0.5% v/v + 32 fl oz/a	50	49	55	40.4
Buccaneer Plus + N-Tense + WC-123	WC123 – Macro and micronutrient blend plus adjuvant	24 fl oz/a + 0.5% v/v + 32 fl oz/a	65	60	64	38.0
Buccaneer Plus + WC-123 + WC-133		24 fl oz/a + 32 fl oz/a + 0.5% v/v	55	58	69	39.3
Buccaneer Plus + N-Tense + WC-123 + WC-101		24 fl oz/a + 0.5% v/v + 32 fl oz/a + 12 fl oz/a	54	54	58	42.6
Buccaneer Plus + WC-133		24 fl oz/a + 0.5% v/v	71	71	77	41.2
Buccaneer Plus + WC-157		24 fl oz/a + 0.5% v/v	64	64	73	42.2
Buccaneer Plus + WC-111		24 fl oz/a + 0.5% v/v	64	66	83	40.3
Weed Free			100	100	100	47.0
<b>LSD (P=0.10)</b>			<b>11</b>	<b>10</b>	<b>14</b>	<b>NS</b>

**Table 5. Performance of glyphosate and micronutrient systems for velvetleaf in soybeans on July 11, 24, and September 25 and grain yield at 13% at Rochester, MN in 2013.**

Treatment	Description	Rate (rate/A)	Velvetleaf Control			Yield (bu/A)
			7/11 (% Control)	7/24 (% Control)	9/25 (% Control)	
<b>POST I</b>						
Buccaneer Plus		24 fl oz/a	56	54	78	37.6
Buccaneer Plus + N-Tense		24 fl oz/a + 0.5% v/v	60	58	75	40.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 8 fl oz/a	55	54	80	42.3
Buccaneer Plus + N-Tense + WC-101	WC101 – Nutrient Uptake Enhancer	24 fl oz/a + 0.5% v/v + 16 fl oz/a	57	57	81	37.9
Buccaneer Plus + N-Tense + WC-121	WC121 – Micronutrient Blend	24 fl oz/a + 0.5% v/v + 32 fl oz/a	46	43	61	40.4
Buccaneer Plus + N-Tense + WC-123	WC123 – Macro and micronutrient blend plus adjuvant	24 fl oz/a + 0.5% v/v + 32 fl oz/a	48	48	66	38.0
Buccaneer Plus + WC-123 + WC-133		24 fl oz/a + 32 fl oz/a + 0.5% v/v	54	49	63	39.3
Buccaneer Plus + N-Tense + WC-123 + WC-101		24 fl oz/a + 0.5% v/v + 32 fl oz/a + 12 fl oz/a	58	54	60	42.6
Buccaneer Plus + WC-133		24 fl oz/a + 0.5% v/v	55	59	74	41.2
Buccaneer Plus + WC-157		24 fl oz/a + 0.5% v/v	64	65	85	42.2
Buccaneer Plus + WC-111		24 fl oz/a + 0.5% v/v	64	56	75	40.3
Weed Free			100	100	100	47.0
<b>LSD (P=0.10)</b>			<b>7</b>	<b>8</b>	<b>14</b>	<b>NS</b>