

Evaluation and Comparison of Pummel Herbicide to Local Standards in SE Minnesota in 2014.

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The objective of this trial was to evaluate the performance of Pummel, Pummel plus Glory, Torment and Mana 25337 herbicide programs for weed control soybeans in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.6, O.M of 2.3%, and soil test P and K levels of 41 ppm and 126 ppm, respectively. The field was fall moldboard plowed, and disked and field cultivated once prior to planting. The soybean variety, Asgrow AG2232, was planted on May 28, 2014, at a depth of 1.5 inches in 30 inch rows at a rate of 149,000 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. PRE herbicides were applied at 4 mph, 15 gpa, and 40 psi using a TTI 110015 nozzle. POST herbicides were applied at 5 mph, 15 gpa and 40 psi using TTI 11002 nozzles. Evaluations of the plots were taken on June 18 and 24, July 1, 9, 14, 21, August 4 and October 7. Application dates, environmental conditions, and weed stages are listed in Table 1. The center two rows of each plot were machine harvested on October 10, 2014. Herbicide performance for control of giant ragweed, common lambsquarters, common waterhemp, giant foxtail, and plant injury ratings can be found in Tables 2 through 6, respectively. (University of Minnesota Extension Regional Office, Rochester)

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

Date	5/28	7/3	7/17
Treatment	PRE	POST I	POST II
Temperature			
Air	76	64	68
Soil	74.7	66.7	66.2
Relative Humidity (%)	27	67	65
Wind (mph)	15	6	6
Soil Moisture	Normal	Normal	Normal
Soybean			
Stage		V4-V5	R2
Height (inches)		9.0	18
Giant Ragweed			
Weed density (ft ²)		1.0	
Height (inches)		3.25	7.75
Common Lambsquarters			
Weed density (ft ²)		0.8	
Height (inches)		0	0
Common Waterhemp			
Weed density (ft ²)		4.8	
Height (inches)		1.5	0
Grass			
Weed density (ft ²)		10.5	
Height (inches)		2.75	6.0
Rainfall after each application			
Week 1	1.06	0.07	0.43
Week 2	0.04	1.35	0.26
Week 3	4.61	0.47	0.33

Table 2. Evaluation and comparison of pummel herbicide treatments for giant ragweed control in soybeans on June 18, 24, July 1, 9, 14, 21, August 4 and October 7 in Olmsted County, MN in 2014.

Treatment	Rate	Giant Ragweed Control								Yield
		6/18	6/24	7/1	7/9	7/14	7/21	8/4	10/7	
	(rate/A)	(%)								(bu/A)
Untreated		0	0	0	0	0	0	0	0	17.6
PRE / POST I										
Pummel / Roundup PowerMax	2 pt/a / 32 fl oz/a	89	81	77	93	94	99	99	99	42.5
Pummel + Glory / Roundup PowerMax	2 pt/a + 5.3 oz wt/a / 32 fl oz/a	88	83	78	93	95	98	98	99	44.0
Mana 25337 / Roundup PowerMax	4.25 oz wt/a / 32 fl oz/a	89	86	85	95	96	98	99	99	44.1
PRE / POST II										
Torment / Roundup PowerMax	1 pt/a / 32 fl oz/a	98	96	95	90	89	97	98	98	42.8
Authority First / Roundup PowerMax	6.4 oz wt/a / 32 fl oz/a	91	90	90	87	86	97	98	98	42.9
Prefix / Roundup PowerMax	2 pt/a / 32 fl oz/a	98	96	96	91	90	97	99	99	43.1
LSD (P=0.10)		5	4	4	3	4	1	1	1	4.3

Table 3. Evaluation and comparison of pummel herbicide treatments for common lambsquarters control in soybeans on June 18, 24, July 1, 9, 14, 21, August 4 and October 7 in Olmsted County, MN in 2014.

Treatment	Rate	Common Lambsquarters Control								Yield
		6/18	6/24	7/1	7/9	7/14	7/21	8/4	10/7	
	(rate/A)	(%)								(bu/A)
Untreated		0	0	0	0	0	0	0	0	17.6
PRE / POST I										
Pummel / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.5
Pummel + Glory / Roundup PowerMax	2 pt/a + 5.3 oz wt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	44.0
Mana 25337 / Roundup PowerMax	4.25 oz wt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	44.1
PRE / POST II										
Torment / Roundup PowerMax	1 pt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.8
Authority First / Roundup PowerMax	6.4 oz wt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.9
Prefix / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	99	99	98	95	99	99	99	43.1
LSD (P=0.10)		0	0	0	0	1.3	0	0	0.4	4.3

Table 4. Evaluation and comparison of pummel herbicide treatments for common waterhemp control in soybeans on June 18, 24, July 1, 9, 14, 21, August 4 and October 7 in Olmsted County, MN in 2014.

Treatment	Rate	Common Waterhemp Control								Yield
		6/18	6/24	7/1	7/9	7/14	7/21	8/4	10/7	
	(rate/A)	(%)								(bu/A)
Untreated		0	0	0	0	0	0	0	0	17.6
PRE / POST I										
Pummel / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	98	97	99	98	99	99	97	42.5
Pummel + Glory / Roundup PowerMax	2 pt/a + 5.3 oz wt/a / 32 fl oz/a	99	99	99	99	98	98	99	97	44.0
Mana 25337 / Roundup PowerMax	4.25 oz wt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	44.1
PRE / POST II										
Torment / Roundup PowerMax	1 pt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.8
Authority First / Roundup PowerMax	6.4 oz wt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.9
Prefix / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	99	99	98	98	99	99	99	43.1
LSD (P=0.10)		0	0.4	0.9	0.5	0.7	0.6	0.3	0.9	4.3

Table 5. Evaluation and comparison of pummel herbicide treatments for grass control in soybeans on June 18, 24, July 1, 9, 14, 21, August 4 and October 7 in Olmsted County, MN in 2014.

Treatment	Rate	Common Waterhemp Control								Yield
		6/18	6/24	7/1	7/9	7/14	7/21	8/4	10/7	
	(rate/A)	(%)								(bu/A)
Untreated		0	0	0	0	0	0	0	0	17.6
PRE / POST I										
Pummel / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	99	99	99	99	99	99	99	42.5
Pummel + Glory / Roundup PowerMax	2 pt/a + 5.3 oz wt/a / 32 fl oz/a	99	98	98	99	98	99	99	98	44.0
Mana 25337 / Roundup PowerMax	4.25 oz wt/a / 32 fl oz/a	98	98	97	99	99	99	99	98	44.1
PRE / POST II										
Torment / Roundup PowerMax	1 pt/a / 32 fl oz/a	99	98	96	88	85	99	99	99	42.8
Authority First / Roundup PowerMax	6.4 oz wt/a / 32 fl oz/a	96	92	92	89	86	99	99	99	42.9
Prefix / Roundup PowerMax	2 pt/a / 32 fl oz/a	99	99	98	99	97	99	99	99	43.1
LSD (P=0.10)		1.8	2.1	2.8	2.8	2.3	0.3	0.4	0.4	4.3

Table 6. Crop response to herbicide systems on June 18, 24, July 9, 14, 21 and August 4 in Olmsted County, MN in 2014.

Treatment	Rate (rate/A)	Injury Control						Yield (bu/A)
		6/18	6/24	7/9	7/14	7/21	8/4	
Untreated		0	0	0	0	0	0	17.6
PRE / POST I								
Pummel / Roundup PowerMax	2 pt/a / 32 fl oz/a	0	0	0	0	0	0	42.5
Pummel + Glory / Roundup PowerMax	2 pt/a + 5.3 oz wt/a / 32 fl oz/a	0	0	0	0	0	0	44.0
Mana 25337 / Roundup PowerMax	4.25 oz wt/a / 32 fl oz/a	0	0	0	0	0	0	44.1
PRE / POST II								
Torment / Roundup PowerMax	1 pt/a / 32 fl oz/a	0	0	0	0	0	0	42.8
Authority First / Roundup PowerMax	6.4 oz wt/a / 32 fl oz/a	0	0	0	0	0	0	42.9
Prefix / Roundup PowerMax	2 pt/a / 32 fl oz/a	0	0	0	0	0	0	43.1
LSD (P=0.10)		0	0	0	0	0	0	4.3