

Compare and contrast weed control differences with reduced rates of Callisto, Impact, and Laudis herbicide tank mixed with Permit in a field corn program at Rochester, MN, in 2007.

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The objective of this trial was to compare and contrast weed control differences with reduced rates of Callisto, Impact, and Laudis herbicides tank mixed with Permit in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 7.0 and soil test P and K levels of 16 ppm and 160 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 13, at a rate of 99-23-60-24 (N-P-K-S). The area was side dressed with an additional 30 lb/A of N on June 7. The field was spring disked and field cultivated prior to planting. The corn hybrid, Pioneer 38H65, was planted on April 27, 2007 at a depth of 1.5 inches in 30 inch rows at 32,000 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 delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on May 31, June 4, June 11 and June 28. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on September 26, 2007.

Date	April 27	May 23
Treatment	PRE	POST
Temperature (F)		
Air	71	77
soil	62	69
Relative Humidity (%)	34	59
Wind (mph)	10	26
Soil moisture	adequate	excessive
Corn		
stage	--	3 collar
height (inch)	--	4.0
Giant Ragweed		
weed density (ft ²)	--	24.8
height (inch)	--	19.5
Common Lambsquarters		
weed density (ft ²)	--	4.0
height (inch)	--	8.0
Common Waterhemp		
weed density (ft ²)	--	3.5
height (inch)	--	2.5
Giant Foxtail		
weed density (ft ²)	--	1.5
height (inch)	--	2.5
Rainfall after each application (inch)		
week 1	0.52	2.04
week 2	0.52	1.28
week 3	0.34	0.08

CONCLUSIONS

The highest giant ragweed control was achieved with the tank mixes of post applied Permit + Laudis following Define applied preemergence. Permit + Laudis (2 oz/A rate) following Define provided statistically better giant ragweed control than the Callisto + Aatrex following Dual II Magnum standard, 95% and 89% respectively. Permit + Laudis (1 oz/A rate) following Define provide similar control to the standard, post applied Callisto + Aatrex following Dual II Magnum, 92% and 89% respectively. The Permit + Callisto (0.5 oz/A rate) following Define provided statistically lower giant ragweed control when compared to Permit + Callisto (1.0 oz/A rate) following Define. Permit + Impact (0.125 oz/A and 0.25 oz/A) following Define provided giant ragweed control similar to the Permit + Callisto (0.5 oz/A rate) following Define. In general the Permit + Laudis tank mixes provided better control of giant ragweed than the Permit + Callisto and Permit + Impact tank mixes, and the Permit + Callisto tank mixes provide better control of giant ragweed than the Permit + Impact tank mixes.

Permit + Impact following Define provided statistically lower common lambsquarters control when compared to Permit tank mixed with either Callisto or Laudis following Define, or the Callisto + Aatrex following Dual II Magnum standard. Permit + Impact (0.125 oz/A rate) following Define provided statistically lower common lambsquarters control than the Permit + Impact (0.25 oz/A rate) following Define treatment. Permit + Callisto, and Permit + Laudis following Define provided similar common lambsquarters control regardless of the Callisto or Laudis rate.

The Callisto + Aatrex following Dual II Magnum standard provided statistically better common waterhemp control than all other treatments except Permit + Laudis (2.0 oz/A rate) following Define. Both Permit + Laudis following Define treatments provided statistically similar control of common waterhemp. The Permit + Laudis (2.0 oz/A rate) following

Define provided statistically higher common waterhemp control than the Permit + Callisto following Define or Permit + Impact following Define treatments regardless of the Callisto or Impact rate. Permit + Callisto (1.0 oz/A rate) following Define and Permit + Laudis (1.0 oz/A rate) following Define provided similar common waterhemp control. Permit + Callisto following Define provided statistically higher common waterhemp control than Permit + Impact following Define regardless of the Callisto or Impact rates.

Permit + Laudis (2.0 oz/A rate) following Define, and the Callisto + Aatrex following Dual II Magnum standard provided the statistically highest giant foxtail control. Permit + Laudis (1.0 oz/A rate) following Define provided statistically similar giant foxtail control to that of Permit + Impact following Define regardless of the Impact rate. Permit + Laudis (1.0 oz/A rate) following Define provided statistically higher giant foxtail control than Permit + Callisto following Define regardless of the Callisto rate. Permit + Impact (at both rates) following Define provided statistically higher giant foxtail control than the Permit + Callisto at the 0.5 oz rate.

Table 1. Performance of herbicide systems for giant ragweed control in field corn on May 31 June 4, June 11, and June 28 at Rochester, MN, in 2007.

Treatment	Rate (rate/A)	Giant Ragweed Control -----%-----				Yield (bu/A)
		5/31	6/4	6/11	6/28	
Define Check		0	0	0	0	5
Pre / Post						
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 0.5 oz + 1% v/v + 2.5 lb	63	65	68	74	22
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	72	71	79	81	28
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.125 fl oz + 1% v/v + 2.5 lb	64	65	66	68	20
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.25 fl oz + 1% v/v + 2.5 lb	66	65	73	71	29
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	68	78	86	92	56
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 2 fl oz + 1% v/v + 2.5 lb	74	78	92	95	72
Dual II Magnum / Callisto + Aatrex + COC + AMS	1 pt / 1 fl oz + 11 fl oz + 1% v/v + 2.5 lb	92	86	87	89	60
LSD (P=0.10)		5	4	5	4	16

Table 2. Performance of herbicide systems for common lambsquarters control in field corn on May 31 June 4, June 11, and June 28 at Rochester, MN, in 2007.

Treatment	Rate (rate/A)	Common Lambsquarters Control -----%-----				Yield (bu/A)
		5/31	6/4	6/11	6/28	
Define Check		0	0	0	0	5
Pre / Post						
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 0.5 oz + 1% v/v + 2.5 lb	94	99	99	99	22
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	93	99	99	99	28
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.125 fl oz + 1% v/v + 2.5 lb	74	75	82	71	20
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.25 fl oz + 1% v/v + 2.5 lb	81	83	86	80	29
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	87	98	98	97	56
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 2 fl oz + 1% v/v + 2.5 lb	90	96	99	97	72
Dual II Magnum / Callisto + Aatrex + COC + AMS	1 pt / 1 fl oz + 11 fl oz + 1% v/v + 2.5 lb	99	99	99	99	60
LSD (P=0.10)		5	4	2	6	16

Table 3. Performance of herbicide systems for common waterhemp control in field corn on May 31 June 4, June 11, and June 28 at Rochester, MN, in 2007.

Treatment	Rate	Common Waterhemp Control				Yield (bu/A)
		5/31	6/4	6/11	6/28	
		-----%-----				
(rate/A)						
Define Check		0	0	0	0	5
Pre / Post						
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 0.5 oz + 1% v/v + 2.5 lb	96	99	97	80	22
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	98	98	99	83	28
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.125 fl oz + 1% v/v + 2.5 lb	84	79	71	70	20
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.25 fl oz + 1% v/v + 2.5 lb	85	80	77	73	29
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	88	96	89	86	56
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 2 fl oz + 1% v/v + 2.5 lb	91	99	98	90	72
Dual II Magnum / Callisto + Aatrex + COC + AMS	1 pt / 1 fl oz + 11 fl oz + 1% v/v + 2.5 lb	99	99	99	93	60
LSD (P=0.10)		3	3	2	5	16

Table 4. Performance of herbicide systems for giant foxtail control in field corn on May 31 June 4, June 11, and June 28 at Rochester, MN, in 2007.

Treatment	Rate	Giant Foxtail Control				Yield (bu/A)
		5/31	6/4	6/11	6/28	
		-----%-----				
(rate/A)						
Define Check		0	0	0	0	5
Pre / Post						
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 0.5 oz + 1% v/v + 2.5 lb	81	92	93	81	22
Define / Permit + Callisto + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	82	93	93	83	28
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.125 fl oz + 1% v/v + 2.5 lb	86	95	96	85	20
Define / Permit + Impact + COC + AMS	10 fl oz / 0.67 oz + 0.25 fl oz + 1% v/v + 2.5 lb	88	95	95	85	29
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 1 fl oz + 1% v/v + 2.5 lb	85	92	93	88	56
Define / Permit + Laudis + COC + AMS	10 fl oz / 0.67 oz + 2 fl oz + 1% v/v + 2.5 lb	91	95	96	91	72
Dual II Magnum / Callisto + Aatrex + COC + AMS	1 pt / 1 fl oz + 11 fl oz + 1% v/v + 2.5 lb	90	93	94	89	60
LSD (P=0.10)		4	5	5	3	16