

**Weed control with Panther Pro in Liberty Link soybeans at Rosemount, MN - 2017.** Gunsolus, Jeffrey L, Douglas Miller, Brad Kinkaid, Hugo Oliveira, and Ryan Mentz. The objective of this experiment was to evaluate weed control and soybean injury with preemergence applications of Panther Pro in a Liberty Link soybean system. The experiment was conducted at Rosemount, MN on a Waukegon silt loam soil with pH 6.3 and 4.6% organic matter. Soil test P and K were 38 and 222 lbs/A, respectively. Following oats, the experimental area was chisel plowed in fall 2016. On April 21, 2017, the area was field cultivated. The area was fertilized with 60 lbs/A P and 60 lbs/A K on April 25. The area was field cultivated a second and third time on May 30 and June 1, respectively. Northstar NS 1742LL soybeans were seeded in 30 inch rows at a rate of 150,000 seeds/A on June 1. The experimental design was a randomized complete block with four replications. Plot size was 10 by 30 feet. Preemergence treatments were applied following planting on June 1 (application data below). Weed control and soybean injury were visually rated. Data are presented in the table below.

<b>Treatment Date</b>	<b>June 1</b>	<b>June 23</b>	<b>June 29</b>	<b>July 11</b>
Treatments Applied	Preemergence	Early post	Mid Post sequential to preemergence	Late Post sequential to early post
Air Temperature (°F)	76	69	68	80
Relative humidity (%)	22	54	73	54
Dewpoint (°F)	35	52	59	62
Soil Moisture	moist at 2"	moist at 0.1"	moist	moist at 1"
Soil Temperature (°F)	67	71	69	77
Sky	5% clouds	90% clouds	100% clouds	80% clouds
Wind (mph)	WSW 7	WNW 7-12	WNW 8-12	SE 3-7
Soybean Stage	--	2 trifoliolate	3 trifoliolate	R1
Soybean Height (inch)	--	6-8	8-10	15-18"
Rainfall before Application				
Week 2 (inch)	1.55	1.70	0.49	1.06
Week 1 (inch)	0.17	0.55	1.18	0.26
Rainfall after Application				
Week 1 (inch)	0.12	1.23	0.18	0.00
Week 2 (inch)	1.70	0.07	0.26	3.55
<b><u>Weed height (inches) - range / average</u></b>				
Common Lambsquarters (Colq)	--	0.5-3 / 0.75	--	0.25-5 / 1
Common Ragweed (Corw)	--	0.5-4 / 1.0	--	0.5-2 / 0.75
Eastern Black Nightshade (Ebns)	--	0.25-0.75 / 0.5	--	--
Pigweed species	--	0.25-5 / 0.75	--	0.5-4 / 1
Grass species	--	0.25-8 / 0.5	--	0.25-5 / 1
<b><u>Weed leaf number - range / average</u></b>				
Common Lambsquarters (Colq)	--	cot-8 / 2	--	2-22 / 6
Common Ragweed (Corw)	--	cot-4 / 2	--	2-8 / 4
Eastern Black Nightshade (Ebns)	--	cot-1 / 1	--	--
Pigweed species	--	1-14 / 2	--	4-20 / 4
Grass species	--	1-6 / 1	--	1-6 / 3
<b><u>Weed densities (#/ft<sup>2</sup>)</u></b>				
Common Lambsquarters (Colq)	--	8.9	--	5.3
Common Ragweed (Corw)	--	18.2	--	0.4
Eastern Black Nightshade (Ebns)	--	0.3	--	--
Pigweed species	--	11.5	--	0.3
Grass species	--	48.8	--	10.2

## **Results**

Common lambsquarters, common ragweed, and pigweed species (Powell amaranth and redroot pigweed) were the primary broadleaf species present. Eastern black nightshade densities were low and variable. Grass species consisted primarily of giant foxtail and yellow foxtail (approximately 3:1 ratio). Woolly cupgrass was also present at low densities and distribution was variable. The Cheetah + AMS postemergence / postemergence sequential was included to document late season weed emergence. Soybean yields were not measured. Early October observations showed 100% weed control for all treatments as a result of soybean canopy competition (data not shown).

Preemergence control of common lambsquarters, nightshade, and pigweed species was 100% at all rating dates. Preemergence control of common ragweed was very good (97% or greater) with Panther Pro and NUP-17039. Preemergence control of common ragweed with Authority Assist decreased slightly through the June 29 rating date. Grass control was good for all preemergence treatments and did not differ significantly.

NUP-17039 and Panther Pro caused slight soybean injury symptoms that decreased with time. No injury was observed on July 11.

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Treatment <sup>1</sup>	Rate <sup>1</sup> (product/A)	Soybean Injury			Weed Control																						
					Colq				Corw				Ebns			pigweed species				Grass species							
		6/16	6/23	6/29	6/16	6/23	6/29	7/11	6/16	6/23	6/29	7/11	6/16	6/23	6/29	6/16	6/23	6/29	7/11	6/16	6/23	6/29	7/11				
		----- (%) -----																									
<b><u>(Preemergence June 1) / (Mid Postemergence Sequential June 29)</u></b>																											
(NUP-17039 <sup>2</sup> + MSO <sup>3</sup> ) / (Cheetah <sup>4</sup> + Warrant <sup>5</sup> + AMS <sup>6</sup> )	(12 oz + 19 oz) / (29 oz + 48 oz + 3 qt)	9	5	3	100	100	100	100	98	98	98	100	100	100	100	100	100	100	100	100	100	100	98	92	94	99	
(Authority Assist <sup>7</sup> + MSO) / (Cheetah + Warrant + AMS)	(8 oz + 19 oz) / (29 oz + 48 oz + 3 qt)	3	2	0	100	100	100	100	97	95	93	99	100	100	100	100	100	100	100	100	100	100	97	95	94	99	
(Panther Pro <sup>8</sup> + MSO) / (Cheetah + Warrant + AMS)	(12 oz + 19 oz) / (29 oz + 48 oz + 3 qt)	8	6	3	100	100	100	100	99	98	97	100	100	100	100	100	100	100	100	100	100	100	97	90	93	99	
(Panther Pro + MSO) / (Cheetah + Warrant + AMS)	(15 oz + 19 oz) / (29 oz + 48 oz + 3 qt)	11	6	4	100	100	100	100	99	98	99	100	100	100	100	100	100	100	100	100	100	100	99	96	97	99	
(Panther Pro + MSO) / (Cheetah + AMS)	(15 oz + 19 oz) / (29 oz + 3 qt)	10	6	4	100	100	100	100	98	98	99	100	100	100	100	100	100	100	100	100	100	100	99	92	94	98	
<b><u>(Early Postemergence June 23) / (Late Postemergence Sequential July 11)</u></b>																											
(Cheetah + AMS) / (Cheetah + AMS)	(29 oz + 3 qt) / (29 oz + 3 qt)	--	--	5	--	--	97	76	--	--	99	88	--	--	100	--	--	99	86	--	--	97	80				
LSD (0.05)		3.9	1.8	1	ns	ns	1	2	ns	1	2	4.0	ns	ns	ns	ns	ns	1	5.3	ns	ns	ns	ns	ns	ns	2.7	

<sup>1</sup> Treatments and rates in parenthesis represent a separate application timing.

<sup>2</sup> NUP-17039 4.2L = experimental from Nufarm Americas.

<sup>3</sup> MSO = methylated seed oil.

<sup>4</sup> Cheetah 2.34L = glufosinate-ammonium.

<sup>5</sup> Warrant 3CS = acetochlor.

<sup>6</sup> AMS = N-Pak ammonium sulfate solution (3.4 lbs/gal).

<sup>7</sup> Authority Assist 4L = 3.3 lbs ai/gal sulfentrazone & 0.67 lbs ai/gal imazethapyr .

<sup>8</sup> Panther Pro 4.2L = 0.67 lbs ai/gal flumioxazin & 0.53 lbs ai/gal imazethapyr & 3.0 lb ai/A metribuzin.