

Evaluation of weed management systems in soybean at Potsdam, MN in 2005.

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The objective of this trial was to evaluate weed management systems for weed control in soybean in southeastern Minnesota. The research site was a Port Byron Silt Loam containing 3.2% organic matter with a pH test of 6.6 and soil test P and K levels of 67 ppm and 342 ppm, respectively. The previous crop was corn. The field was field cultivated twice prior to planting. The soybean variety, Garst 1827RR/STS, was planted on May 24, 2005 at a depth of 1.5 inches in 30-inch rows at 150,000 seeds/A. A randomized complete block design with four replications was used. Pre-plant incorporated (PPI), preemergence (PRE) and postemergence (POST I, POST II, POST III, and POST IV) 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 June 20, July 8, July 14, and July 29. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	May 24	May 24	June 20	June 27	July 1	July 19
Treatment	PPI	PRE	POST I	POST II	POST III	POST IV
Temperature (F)						
air	69	70	87	77	69	78
soil	59	59	70	72	80	--
Relative humidity (%)	56	43	44	73	54	60
Wind (mph)	6	8	15	18	14	8
Soil moisture	adequate	adequate	adequate	adequate	dry	adequate
Soybean stage	seeded	seeded	V2	V5	V5	R2
height (inch)	0	0	6.1	8.9	10.0	24.0
Wild proso millet weed density (ft ²)	--	--	11.8	11.8	11.8	11.8
height (inch)	--	--	3.5	7.1	10.5	5.0
Common lambsquarters weed density (ft ²)	--	--	2.4	2.4	2.4	2.4
height (inch)	--	--	2.0	1.7	3.0	3.7
Velvetleaf weed density (ft ²)	--	--	0.6	0.6	0.6	0.6
height (inch)	--	--	2.5	3.8	8.8	2.5
Rainfall after application (inch)						
week 1	0.31	0.31	1.29	0.16	0.07	4.82
week 2	0.11	0.11	0.16	0.0	0.0	0.0
week 3	2.15	2.15	0.0	0.2	1.54	0.0

CONCLUSIONS

Soybean injury from 22 to 39% was observed in the PRE/POST II treatments. Soybean yields for Gangster V + Gangster FR / FirstRate + Phoenix + V10137 + NIS + N-PAK AMS and Boundary / Flexstar + Fusion + FirstRate + MSO + 28%N were lower than the top yielding treatments of Prowl H₂O + Outlook / Roundup WeatherMax + N-PAK AMS and Valor SX + Sencor / Roundup Original Max + N-PAK AMS. Soybean yields for the other PRE/POST II treatments trended lower. Injury was also observed in the PPI/POST II treatments of Prowl H₂O / Raptor + FirstRate + NIS + N-PAK AMS and the Prowl H₂O / Extreme + NIS + N-PAK AMS treatments, 32 and 24% on July 1, respectively. However, the injury dropped to 11% for both treatments by the July 8 rating date.

Sequence + N-PAK AMS applied as a solo treatment at POST I resulted in significantly lower wild proso millet, common lambsquarters, and velvetleaf control compared to all other treatments and had a reduced soybean yield compared to the top treatments. Wild proso millet control with Pursuit Plus / FirstRate + NIS + N-PAK AMS applied PPI/POST II was significantly lower than all other treatments except the Sequence + N-PAK AMS treatment. Several PPI and PRE treatments gave reduced velvetleaf control, 50 to 70% on the June 20 rating. However, control reached 97 to 99% on all treatments after POST applications were applied. (University of Minnesota Extension Service, Regional Center, Rochester).

Table. Performance of soybean weed management systems for weed control in soybeans on June 20, July 8, July 14, and July 29 at Potsdam, MN in 2005.

Treatment ^a	Rate	Injury		Wild proso millet control				Common lambsquarters control				Velvetleaf control				Soybean yield ^b
		7/1	7/8	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	
	(rate/A)	Injury (%)		Wild proso millet (%)				Common lambsquarters (%)				Velvetleaf (%)				(bu/A)
<u>PPI / POST II</u>																
Prowl H ₂ O / Raptor + FirstRate + NIS + N-PAK AMS	43 oz / 4 oz + 0.3 oz + 0.25% + 3 qt	32	11	87	98	97	96	96	97	98	98	50	99	99	99	55
Pursuit Plus / FirstRate + NIS + N-PAK AMS	2.5 pt / 0.3 oz + 0.25% + 3 qt	5	3	90	86	85	72	99	99	99	98	95	99	99	99	53
Prowl H ₂ O / Extreme + NIS + N-PAK AMS	43 oz / 3 pt + 0.125% + 3 qt	24	11	84	97	96	95	99	99	97	99	60	99	99	99	53
<u>PRE / POST II</u>																
Gangster V + Gangster FR / FirstRate + Phoenix + V10137 +NIS+N-PAK AMS	2.5 oz + 0.5 oz / 0.3 oz + 8 oz + 12 oz + 0.25% + 3 qt	39	28	92	98	96	96	99	99	99	99	99	99	99	99	51
Gangster V + Gangster FR / FirstRate + Phoenix + V10139 + NIS+N-PAK AMS	2.5 oz + 0.5 oz / 0.3 oz + 8 oz + 8 oz + 0.25% + 3 qt	32	28	88	97	95	93	99	98	98	96	99	99	99	99	52
Python / FirstRate + Select + Cobra + COC + N-PAK AMS	1 oz / 0.3 oz + 6 oz + 6 oz + 1% + 3 qt	37	26	72	95	95	93	98	99	99	99	96	99	99	99	52
Boundary / Flexstar + Fusion + FirstRate + MSO + 28%N	1.5 pt / 16 oz + 8 oz + 0.3 oz + 1% + 2.5%	36	22	94	99	94	94	98	99	98	98	70	99	99	99	52
<u>PRE / POST III</u>																
IntRRo / Roundup WeatherMax + N-PAK AMS	2 qt / 22 oz + 3 qt	1	0	91	96	97	97	98	99	99	99	40	99	99	99	53
Prowl H ₂ O + Outlook / Roundup WeatherMax + N-PAK AMS	1 pt + 12.6 oz + 22 oz + 3 qt	3	1	93	96	98	97	99	99	98	99	63	98	98	99	58
Gangster V + Gangster FR / Roundup Original Max + N-PAK AMS	1.5 oz + 0.3 oz / 22 oz + 4 qt	0	0	85	94	97	96	99	99	99	99	94	99	99	99	56
Boundary / Touchdown Total + N-PAK AMS	1.25 pt / 24 oz + 2 qt	4	0	91	97	98	96	96	99	99	99	60	99	99	99	56
Valor / Roundup Original Max + N-PAK AMS	2 oz / 22 oz + 4 qt	0	0	91	97	98	98	99	99	99	99	87	99	99	99	56

Treatment ^a	Rate	Injury		Wild proso millet control				Common lambsquarters control				Velvetleaf control				Soybean yield ^b
		7/1	7/8	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	
	(rate/A)	Injury (%)		Injury (%)				Injury (%)				Injury (%)				(bu/A)
Valor SX + Python / Roundup Original Max + N-PAK AMS	1.5 oz + 0.5 oz / 22 oz + 3 qt	0	1	78	93	95	94	97	99	99	99	91	99	99	97	53
Valor SX + Sencor / Roundup Original Max + N-PAK AMS	1.5 oz + 3 oz / 22 oz + 3 qt	0	0	81	94	95	96	99	99	99	99	90	99	99	99	58
POST I																
Sequence + N-PAK AMS	2.5 pt + 2 qt	0	1	0	78	75	33	0	79	74	65	0	89	82	73	49
POST II / POST IV																
Roundup WeatherMax + N-PAK AMS / Roundup WeatherMax + N-PAK AMS	22 oz + 3 qt / 22 oz + 3 qt	0	0	0	88	87	98	0	98	96	99	0	99	99	99	53
POST III																
Glyphomax XRT + FirstRate + N-PAK AMS	24 oz + 0.3 oz + 3 qt	0	3	0	79	87	96	0	98	95	96	0	99	98	99	54
Harmony GT + Roundup Original Max +N-PAK AMS	0.33 oz + 22 oz + 2.35 qt	0	1	0	80	87	94	0	97	95	95	0	99	99	99	53
Harmony GT + Classic + Roundup Original Max + N-PAK AMS	0.33 oz + 0.33 oz + 22 oz + 2.35 qt	0	1	0	87	86	94	0	97	97	96	0	98	99	99	55
Clearout 41Plus + N-PAK AMS	32 oz + 3 qt	0	1	0	82	87	95	0	97	95	96	0	99	99	99	54
Glyphomax XRT + N-PAK AMS	24 oz + 3 qt	0	0	0	81	86	95	0	96	97	95	0	99	99	98	55
Roundup WeatherMax + N-PAK AMS	22 oz + 3 qt	0	1	0	80	88	95	0	97	98	97	0	98	99	99	49
Weedy Check		0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Weed Free		0	0	100	100	100	100	100	100	100	100	100	100	100	100	54
LSD (P=0.10)		3	3	7	7	8	8	2	2	3	3	9	2	1	2	7

a. NIS = AGRI-DEX nonionic surfactant, Helena; N-PAK AMS = ammonium sulfate solution, Agrilience LLC; COC = crop oil concentrate, Helena; MSO = DyneAmic methylated seed oil, Helena; 28% UAN = an aqueous solution of urea and ammonium nitrate.

b. Yield adjusted to 13% moisture.