

Preemergence and sequential glyphosate applications for control of PPO-resistant common waterhemp in soybean. Adams, County, 2005. Moody, James L., Aaron G. Hager, and Jeremy T. Lake. The objective of this research was to evaluate PPO herbicide combinations with and without sequential glyphosate applications for control of PPO-resistant common waterhemp in soybean. The study was established on a producer's field in Adams county, Illinois. The soil was a Rozetta clay loam with a pH of 6.1 and 2.5% organic matter. Pioneer 93M90 soybean was planted 1.5 inches deep on May 3 in 15 inch rows. Treatments were arranged in randomized complete blocks with three replications of plots 10 by 30 feet. Herbicides were applied with a CO₂ backpack sprayer delivering 20 gpa and equipped with 80025 air induction nozzles. Application information is listed below:

Date	May 5	June 7	June 16	June 29
Application	pre	epost	post	lpost
Temperature (F)				
Air	71	82	79	88
Soil	56	78	72	82
Soil Moisture	moist	dry	dry	dry
Wind (mph)	3-SW	5-S	4-NW	4-SW
Sky Cover (%)	0	0	0	50
Precip. after application				
Week 1 (inch)	0.23	0.16	0.00	0.00
Week 2 (inch)	0.34	1.47	0.41	1.74
Relative humidity (%)	24	55	42	48
Soybean				
Leaf no.	-	3-trif	5-trif	7-trif
Height (inch)	-	8	10	16
Common waterhemp				
Leaf no.	-	>9	>9	>9
Height (inch)	-	4	8	14

Crop tolerance was excellent with little phytotoxicity from any treatment. Control ratings for the premix S-metolachlor plus fomesafen (A-14972A) on PPO-resistant waterhemp revealed good efficacy as a preemergence treatment and also when followed by a sequential application of glyphosate. The two highest rates of S-metolachlor plus fomesafen were similar in activity to the highest rate of S-metolachlor plus metribuzin and better than flufenacet plus metribuzin at 42 days after treatment (DAT). All sequential treatments with glyphosate provided complete control of PPO-resistant waterhemp 7 DAT as did single and sequential applications of glyphosate 16 DAT. (Dept. of Crop Sciences, University of Illinois, Urbana).

Table. Preemergence and sequential glyphosate applications for control of PPO-resistant common waterhemp in soybean. Adams County, Illinois, 2005. (Moody, Hager, and Lake)

Treatment	Appl Rate (lb/A)	Time	Glxma	Amata	Glxma	Amata	Glxma	Amata	Glxma	Amata
			6-2 % inj	6-2 % con	6-16 % inj	6-16 % con	6-23 % inj	6-23 % con	7-15 % inj	7-15 % con
S-metolachlor&fomesafen ¹	0.544+0.126	pre	0	63	-	-	0	47	-	-
S-metolachlor&fomesafen ¹	0.81+0.19	pre	0	83	-	-	0	73	-	-
S-metolachlor&fomesafen ¹	1.09+0.25	pre	0	83	-	-	0	83	-	-
S-metolachlor&fomesafen ¹	1.36+0.31	pre	1	99	-	-	0	96	-	-
S-metolachlor&fomesafen ¹	1.62+0.38	pre	2	99	-	-	0	99	-	-
S-metolachlor&metribuzin ²	0.99+0.23	pre	1	99	-	-	0	86	-	-
S-metolachlor&metribuzin ²	1.18+0.28	pre	2	99	-	-	0	99	-	-
Flufenacet&metribuzin	0.075+0.30	pre	0	90	-	-	0	73	-	-
S-metolachlor&fomesafen ¹	0.544+0.126	pre	0	70	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&fomesafen ¹	0.81+0.19	pre	0	85	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&fomesafen ¹	1.09+0.25	pre	0	95	-	-	5	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&fomesafen ¹	1.36+0.31	pre	1	99	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&fomesafen ¹	1.62+0.38	pre	3	99	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&metribuzin ²	0.99+0.23	pre	1	98	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
S-metolachlor&metribuzin ²	1.18+0.28	pre	1	98	-	-	0	99	-	-
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	post								
Glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	epost	-	-	0	99	0	99	-	-
Glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	epost	-	-	0	99	0	96	0	99
+glyphosate ³ +N-Pak AMS ⁴	0.785+2.5%	lpost								
LSD (0.05)			1	7	0	0	0	8	0	0

¹ A14972A; ² Boundary; ³ Touchdown Total; ⁴ N-Pak AMS is an ammonium sulfate solution from Agrilience LLC.