ETHOKEM CAN GIVE GLYPHOSATE RAINFASTNESS

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Abstract. A major problem with glyphosate sprays is that they are not completely rainfast until six hours after spray application.

The aim of glasshouse pot trials at the Queensland Wheat Research Institute has been to improve glyphosate rainfastness by the use of spray additives. Ethokem (polyethanoxy tallow amine 15) has improved the rainfastness of glyphosate even when simulated rain has been applied sooner than six hours after spray application. Improved rainfastness has occurred when high Ethokem concentrations (0.5 or 1.0 percent v/v) and low simulated rainfall intensities have occurred.

Table 1.The effect of Ethokem and Agral 60 (nonyl phenol ethylene oxide condensate) on the rainfastness of glyphosate for control of barnyard grass, *Echinochloa crus-galli,* under high-intensity simulated rain.

Treatment	Average weed control (5 = complete kill)
Control (untreated)	0 (2)[a]
0.27 kg a.i./ha glyphosate + 0.3 percent v/v Agral 60	1.6 (7)
0.27 kg a.i./ha glyphosate + 0.2 percent v/v Ethokem	1.4 (7)

lsd's (P=0.05)	Replicates	2	7
	2	1.6	1.3
	7	-	0.8

[a] (2) = number of replications for the treatment.

Table 1 notes

(i) Weed size at spray application - flowering;
(ii) Rainfall intensity (simulated) - 14 mm in 1/2hr; and
(iii) Time of rain - 3 hr after spray application.
(iv) Weed control assessed 28 DAT.

Table 2. The effect of Activator 90 (alkyl polyoxyethylene ether and free fatty acids + isopropanol) and Ethokem on the rainfastness of glyphosate for control of barnyard grass under low-intensity simulated rain.

Treatment	Average weed control (5 = complete kill)	
	Rain - 3 hr	No rain
Control (untreated)	0.2 (3)	0 (3)[a]
0.225 kg a.i./ha glyphosate + 0.125 percent v/v Activator 90	0.6 (4)	3.6 (4)
0.225 kg a.i./ha glyphosate + 0.5 percent v/v Ethokem	2.2 (4)	4.7 (4)
0.225 kg a.i./ha glyphosate + 1 percent v/v Ethokem	3.3 (4)	4.9 (4)

lsd's (P=0.05)	Replicates	3	4
	3	1.3	-
	4	1.2	1.1

[a] (3) = number of replications for each treatment.

Table 2 notes

(i) Weed size at spray application - Z15 to Z17 23 (tillering);
(ii) Rainfall intensity simulated - 7.5 mm in 1/2 hr; and
(iii) Time of rain - 3 hr after spray application.
(iv) Weed control assessed 28 DAT.

Table 1 shows the poor control achieved when large weeds are sprayed with a low concentration of Ethokem under high intensity rainfall conditions. Table 2 shows the good control achieved if each of these factors in reversed.

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