

Fallow Weed Control with Postemergence Applications of AGH15004, AG14039, Roundup PowerMax, and Atrazine

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Summary

All treatments except AGH15004 at 1.5 pt/a plus Roundup PowerMax (glyphosate) and nonionic surfactant provided more than 95% kochia control at 14 days after treatment (DAT). By 28 DAT, only those treatments containing atrazine provided greater than 95% kochia control. However, kochia control at 42 DAT was greater than 90% with all treatments except Roundup PowerMax plus nonionic surfactant.

Introduction

With the advent of glyphosate-resistant kochia and rare and sporadic reports of dicamba-resistant kochia, it has become increasingly more important to find other chemistry to provide kochia control. Further, if failures in preemergence dicamba treatments occur in the future, postemergence compounds will be needed as a remedy. Therefore, the experimental premixtures AGH15004 and AG14039 being developed by Winfield Solutions were tested with and without additional atrazine as possible solutions for this potential problem.

Procedures

An experiment conducted at the Kansas State University Southwest Research-Extension Center near Garden City, KS, evaluated the postemergence efficacy of AGH15004 and AG14039 on kochia and Russian thistle in fallow. All treatments were applied on May 7, 2015 when kochia was 3 to 4 inches tall and Russian thistle was 1 to 2 inches tall. Treatments were applied using a CO₂-pressurized backpack sprayer delivering 20 gpa at 3.0 mph and 27 psi. Soil was a Ulysses silt loam with 1.4% organic matter, pH of 8.0, and cation exchange capacity of 18.4. Plots were 10 by 35 feet and arranged as a randomized complete block with four replications. Visual weed control was determined May 21, June 4, and June 18, 2015; which were 14, 28, and 42 days after treatment (DAT).

Results and Discussion

All treatments except AGH15004 at 1.5 pt/a plus Roundup PowerMax (glyphosate) and nonionic surfactant provided more than 95% kochia control at 14 DAT. By 28 DAT, only those treatments containing atrazine provided as much as 95% kochia control. However, kochia control at 42 DAT was greater than 90% with all treatments

except Roundup PowerMax plus nonionic surfactant (80%). Only slight differences in Russian thistle control occurred at 14 and 42 DAT, but all treatments provided at least 95% Russian thistle control regardless of rating date. These new premixtures being developed by Winfield Solutions appear to have potential and benefit from the addition of atrazine for residual control.

Table 1. Application information.

Application timing	Postemergence
Application date	May 7, 2015
Air temperature (°F)	75
Relative humidity (%)	50
Soil temperature (°F)	67
Wind speed (mph)	2 to 5
Wind direction	North
Soil moisture	Good

Table 2. Fallow weed control with postemergence applications of AGH15004, AG14039, glyphosate, and atrazine.

Herbicide	Rate	14 days after treatment		28 days after treatment		42 days after treatment	
		Kochia	Russian thistle	Kochia	Russian thistle	Kochia	Russian thistle
----- % control -----							
AGH15004	1.5 pt	93	95	96	100	91	96
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AGH15004	1.5 pt	97	97	98	100	98	100
Atrazine	16 oz						
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AGH15004	2.5 pt	96	96	96	100	94	97
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AGH15004	1.5 pt	96	96	96	100	93	96
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AG14039	1.0 pt						
AGH15004	1.5 pt	98	99	100	100	97	100
Atrazine	16 oz						
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AG14039	1.0 pt						
AGH15004	2.5 pt	97	97	96	100	94	99
Roundup PowerMax	32 oz						
Nonionic surfactant	2.5%						
AG14039	1.0 pt						
Roundup PowerMax	32 oz	96	96	90	100	80	95
Nonionic surfactant	2.5%						
Untreated	-----	0	0	0	0	0	0
LSD (0.05)		2.7	1.9	1.5	NS	5.1	4.1



Figure 1. Untreated control.



Figure 2. AGH15004 1.5 pt + Roundup PowerMax 32 oz + NIS 2.5%, 43 days after treatment.



Figure 3. AGH15004 1.5 pt + atrazine 16 oz + Roundup PowerMax 32 oz + NIS 2.5%, 43 days after treatment.



Figure 4. AGH15004 2.5 pt + Roundup PowerMax 32 oz + NIS 2.5%, 43 days after treatment.



Figure 5. AGH15004 1.5 pt + Roundup PowerMax 32 oz + NIS 2.5% + AG14039 1 pt, 43 days after treatment.



Figure 6. AGH15004 1.5 pt + atrazine 16 oz + Roundup PowerMax 32 oz + NIS 2.5% + AG14039 1 pt, 43 days after treatment.



Figure 7. AGH15004 2.5 pt + Roundup PowerMax 32 oz + NIS 2.5% + AG14039 1 pt, 43 days after treatment.



Figure 8. Roundup PowerMax 32 oz + NIS 2.5%, 43 days after treatment.