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Comparisons of Acuron, Surestart II, and Valor for Residual Weed Control in Grain Sorghum

Abstract

Herbicides were compared to standard treatments for preplant efficacy and crop response in grain sorghum. All herbicides controlled buffalobur and velvetleaf similarly late in the season. SureStart II and Acuron provided the best Palmer amaranth, puncturevine, and green foxtail control. Valor at 1 or 2 oz/a provided less than 70% puncturevine and green foxtail control late in the season. Only minimal visual injury was observed, and all herbicides increased sorghum yield 47–122% relative to the untreated controls.

Keywords

crop response

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R.S. Currie and P.W. Geier

Summary

Herbicides were compared to standard treatments for preplant efficacy and crop response in grain sorghum. All herbicides controlled buffalobur and velvetleaf similarly late in the season. SureStart II and Acuron provided the best Palmer amaranth, puncturevine, and green foxtail control. Valor at 1 or 2 oz/a provided less than 70% puncturevine and green foxtail control late in the season. Only minimal visual injury was observed, and all herbicides increased sorghum yield 47–122% relative to the untreated controls.

Introduction

The herbicide premixes Acuron (*S*-metolachlor/atrazine/mesotrione/bicyclopyrone) and SureStart II (acetochlor/flumetsulam/clopyralid) are commonly used in corn, but not registered for use in grain sorghum. Valor (flumioxazin) is also used in corn, but can only be applied 30 days preplant to sorghum and only if sufficient moisture is received prior to planting. Injury concerns with these herbicides have kept them from being labeled in sorghum less than 30 days prior to planting; however, data are limited on their use. The objective of this study was to compare these herbicides to standard treatments for preplant efficacy and crop response in grain sorghum.

Experimental Procedures

An experiment was conducted at the Kansas State University Southwest Research-Extension Center near Garden City, KS, to compare various herbicides for residual weed control in sorghum. All herbicides were applied 14 days prior to sorghum planting using a tractor-mounted, compressed CO₂ sprayer delivering 19.4 GPA at 30 psi and 4.1 mph. Application and environmental information is shown in Table 1. Plots were 10 × 35 feet and arranged in a randomized complete block with four replications. Soil was a Ulysses silt loam with pH 7.9, containing 3.4% organic matter. Visual weed control was evaluated on June 27 and August 14, 2018. These dates were 26 and 74 days after sorghum planting (DAP), respectively. Sorghum yields were determined on October 29, 2018, by mechanically harvesting the middle two rows of each plot and adjusting grain weights to 14% moisture.

Results and Discussion

Valor at 1 and 2 oz/a were the only treatments to control buffalobur less than 90% at 26 DAP (data not shown). However, no differences between herbicides occurred for buffalobur control at 74 DAP (83–100%). All herbicides controlled velvetleaf by 95% or more at 26 and 74 DAP (data not shown). SureStart II and Acuron generally provided the best control of Palmer amaranth, puncturevine, and green foxtail throughout the season (Table 2). Bicep Lite II Magnum (*S*-metolachlor/atrazine), Lumax EZ (*S*-metolachlor/atrazine/mesotrione), and Degree Xtra (acetochlor/atrazine) also controlled Palmer amaranth and green foxtail well, regardless of rating date. Valor at 1 or 2 oz/a provided 70% or less puncturevine and green foxtail control at 74 DAP. Visual sorghum injury was minimal and transient in this study (data not shown). Although all herbicide-treated sorghum yielded more grain than the nontreated controls, yields were best when Acuron at 2.0 or 2.5 qt/a or Lumax EZ at 2.7 qt/a were used. These treatments yielded more grain than sorghum receiving Valor at 1 or 2 oz/a.

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

Table 1. Application information

Application date	May 13, 2018
Air temperature (°F)	66
Relative humidity (%)	74
Soil temperature (°F)	67
Wind speed (mph)	4 to 7
Wind direction	South-southeast
Soil moisture	Fair

Table 2. Efficacy of herbicides applied 14 days preplant in sorghum

Treatment	Rate	Palmer amaranth		Puncturevine		Green foxtail		Sorghum yield
		26 DAP ^a	74 DAP	26 DAP	74 DAP	26 DAP	74 DAP	
	per acre	----- % Visual -----						bu/a
Acuron	2.0 qt	98	93	95	85	93	80	89.3
Acuron	2.5 qt	100	95	99	90	94	90	90.6
Lumax EZ	2.7 qt	99	95	87	78	90	88	90.2
SureStart II	1.5 qt	99	95	100	91	98	90	86.1
Valor	1.0 oz	90	78	73	65	68	38	60.0
Valor	2.0 oz	89	88	75	70	70	53	74.8
Bicep Lite II Magnum	1.5 qt	100	90	80	68	89	85	80.7
Degree Xtra	2.25 qt	100	95	80	75	89	83	82.9
Untreated	---	---	---	---	---	---	---	40.7
LSD (0.05)		8	11	6	8	9	9	13.8

^aDAP = days after sorghum planting.



Figure 1. Untreated control.



Figure 2. Acuron 2.0 qt/a, picture taken 49 days after herbicide application.



Figure 3. SureStart II 1.5 qt/a, picture taken 49 days after herbicide application.



Figure 4. Valor 1.0 oz/a, picture taken 49 days after herbicide application.



Figure 5. Valor 2.0 oz/a, picture taken 49 days after herbicide application.