

Pyroxasulfone Crop Response and Weed Management in Chickpeas

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Cook Agronomy Farm in Pullman, WA

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Methods

The study was established at the Cook Agronomy Farm near Pullman, WA. Treatments were applied pre-emergence (PRE), detailed in Table 1 and Table 2. The study was conducted in a randomized complete block with 4 replications. Plots were 10' by 30' long. Billy bean chickpeas were planted May 4, 2016.

Common lambsquarters control was visually assessed 47 DAT of application A (Table 2). Plots were harvested using a plot combine on September 16, 2016. All data were subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

Results

Pyroxasulfone applied alone did not provide significant common lambsquarters control when compared to the nontreated control. Valor, Lorox, or Sharpen had to be in the treatment mixture for significant common lambsquarter control. The significantly greatest common lambsquarters control was observed for treatment 7 when Valor and Lorox were applied with the pyroxasulfone (Zidua), compared to the nontreated control. When pyroxasulfone was in the herbicide mixture, significant common lambsquarters control was observed for treatment 5 and 6 when either Valor or Sharpen were also in the mixture (Table 2).

When pyroxasulfone was applied alone (Treatment 2, 3 and 4) yields of 790, 790, and 820 lb A⁻¹, respectively, were not significantly different from the nontreated control yield of 750 lb A⁻¹. Treatment 5 (Zidua + Valor) provided the significantly greatest yield of 1290 lb A⁻¹ compared to the nontreated control. Treatment 8 (Outlook + Sharpen) also had a significant effect on yield compared to the nontreated control with 1230 lb A⁻¹ compared to 750 lb A⁻¹.

Table 1. Treatment application details

Study Application	A	B	C
Date	May 4, 2016	May 5, 2016	June 3, 2016
Application volume (GPA)	15	15	15
Crop Stage	PRE	PRE	POST
Air temperature (°F)	74	65	65
Soil temperature (°F)	60	59	59
Wind velocity (mph, direction)	4, S	5, S	6, SW
Next rain occurred on	May 5, 2016	May 5, 2016	June 8, 2016

Table 2. Percent common lambsquarters control and yield in chickpea following applications of pyroxasulfone in different herbicide combinations. Pullman, WA, 2016. Means followed by the same letter are not statistically significantly different ($\alpha=0.05$).

#	Treatment	Application Code	Rate		June 20, 2016	September 16, 2016
					Common lambsquarters control	Yield
			lb ai/A	lb ai/A	%	lb/A
1	Nontreated	-	-	-	0 a	750 a
2	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	23 a	790 a
	Pyroxasulfone (Zidua)	B	1.20 oz/A	0.064		
3	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	3 a	790 a
	Pyroxasulfone (Zidua)	B	1.68 oz/A	0.089		
4	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	10 a	820 a
	Pyroxasulfone (Zidua)	B	2.03 oz/A	0.108		
5	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	60 ab	1290 c
	Pyroxasulfone (Zidua)	B	2.03 oz/A	0.108		
	Valor	B	2.00 oz/A	0.064		
6	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	61 ab	1040 abc
	Sharpen	A	2.0 fl oz/A	0.045		
	Pyroxasulfone (Zidua)	B	1.68 oz/A	0.089		
	Sharpen	B	2.0 fl oz/A	0.045		
7	Select Max	C	16.5 fl oz/A	0.125	83 b	910 ab
	Glyphosate (RT3)	A	21.3 fl oz/A	0.750		
	Pyroxasulfone (Zidua)	B	1.68 fl oz/A	0.089		
	Valor	B	2.00 oz/A	0.064		
8	Lorox	B	40.00 oz/A	1.250	48 ab	1230 bc
	Select Max	C	16.5 fl oz/A	0.125		
	Glyphosate (RT3)	A	21.3 fl oz/A	0.750		
	Sharpen	A	2.0 fl oz/A	0.045		
9	Outlook	B	21 fl oz/A	0.980	15 a	990 abc
	Sharpen	B	2.0 fl oz/A	0.045		
	Select Max	C	16.5 fl oz/A	0.125		
	Glyphosate (RT3)	A	21.3 fl oz/A	0.750		
10	Spartan	A	4 fl oz/A	0.125	3 a	970 abc
	Pyroxasulfone (Zidua)	B	1.68 oz/A	0.089		
	Select Max	C	16.5 fl oz/A	0.125		
11	Glyphosate (RT3)	A	21.3 fl oz/A	0.750	36 ab	940 abc
	Outlook	B	21 fl oz/A	0.980		
12	Sharpen	A	2 fl oz/A	0.045	53 ab	790 a
	Sharpen	B	2 fl oz/A	0.045		
12	Handweeded Check	-	-	-	53 ab	790 a

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.