

Evaluation of Storm for Crop Safety and Efficacy in Winter Pea

I.C. Burke

In the spring of 2021, two winter or fall seeded pea herbicide trials were conducted to evaluate Storm for crop safety and broadleaf weed efficacy. Broadleaf weed management in winter pea is mostly achieved through the use of preemergence herbicides. Storm, the prepacked mixture of bentazon plus acifluorfen, would substantially improve in crop and rotational weed management in an emerging and important crop, winter pea. Storm is currently a category A priority registration for pea for IR4.



Figure 1. Pea response to Storm. Injury, where observed, was transient and did not affect yield.

Two studies were established, one near Ralston, WA and a second near Almira, WA. Treatments were applied when the pea had 3 to 5 tendrils. Treatments were applied with a CO₂ powered backpack sprayer and a 5 ft boom with 4 Teejet 11002VS nozzles with an effective spray pattern of 6 ft and calibrated to deliver 15 gallons per acre (GPA). The study was conducted in a randomized complete block design with 4 replications. Plots were 8 ft by 28 ft long. Treatments were assessed for injury, weed control, and yield. Data was subject to ANOVA using the Agricultural Research Manager software (Ver. 8.5).

Results

The overall growing conditions were characterized by moderate to severe drought. No rainfall occurred during the time between application and harvest. Despite the moisture conditions, crop response was similar to previous

Table 1. Treatment application information for the trial in Almira, WA, in 2021.

Date	May 4, 2021
Application volume (GPA)	15
Timing	Postemergence
Crop Stage	3 to 5 Tendril
Air temperature (°F)	57
Soil temperature (°F)	52
Wind velocity (mph, direction)	6, NW
Cloud Cover	5

Table 1. Treatment application information for the trial in Ralston, WA, in 2021.

Date	April 28, 2021
Application volume (GPA)	15
Timing	Postemergence
Crop Stage	3 to 5 Tendril
Air temperature (°F)	57
Soil temperature (°F)	54.4
Wind velocity (mph, direction)	5.4, SW
Cloud Cover	5

experiments. Winter pea response to Storm was characterized by reddish spots on the leaves that increased with rate and surfactant aggressiveness. The injury was transient, and the winter pea quickly outgrew the injury. Storm inhibits both PROTOX and Photosystem II, which causes rapid leaf burn and necrosis in sensitive plants. Winter pea appears to be tolerant to Storm, particularly at typical use rates with of 24 oz/A or less when applied with nonionic surfactant. Timing and temperature of application may have an effect on treatment outcome. In other research, spring pea was more sensitive to Storm,

which is attributed to higher temperatures at application. However, applications for weed management in winter pea occur much earlier than typical spring pea herbicide applications.

The experiment in Almira was weed free, likely due to the lack of rainfall. Flixweed was the dominant weed species in Ralston, and is a troublesome weed in crop-fallow production south of Ritzville. Flixweed control appeared to be related to the size of the weed, and further research is needed to determine the maximum size of flixweed control with Storm. The cohort of flixweed in the Ralston experiment were relatively uniform, and responded to surfactant, with crop oil concentrate combined with Storm resulting in increased flixweed control. Treatments with COC and Storm at 16 oz/A resulted in acceptable weed control and crop safety. In previous research, the use of COC improved control of mayweed chamomile.

Storm appears to be a safe and effective product for use for weed control in winter pea in Washington.

Table 1. Winter pea injury and yield in response to increasing rates of Storm with different surfactants in a trial located near Almira, WA, in 2021.

Treatment ¹	Rate		Injury 5/12/2021	Injury 6/10/2021	Yield
			%	%	lb/A
Nontreated			0 f	0 a	1910 ab
Nontreated – Weed Free			0 f	0 a	1870 ab
Storm	16	fl oz/A	8 ef	0 a	2380 a
NIS	0.25	% v/v			
Storm	24	fl oz/A	13 de	0 a	2190 ab
NIS	0.25	% v/v			
Storm	48	fl oz/A	21 cd	0 a	2110 ab
NIS	0.25	% v/v			
Storm	16	fl oz/A	20 cd	0 a	2180 ab
COC	1	% v/v			
Storm	24	fl oz/A	25 bc	0 a	2040 ab
COC	1	% v/v			
Storm	48	fl oz/A	33 b	0 a	1850 ab
COC	1	% v/v			
Rhomene	0.5	pt/A	45 a	34 b	1680 b
NIS	0.25	% v/v			
Rhomene	0.5	pt/A	9 ef	0 a	1990 ab
Metribuzin	0.25	lb/a			
NIS	0.25	% v/v			

¹ NIS, Nonionic surfactant; COC, Crop oil concentrate surfactant.

Table 2. Winter pea injury, Mayweed chamomile and tumble mustard control in response to increasing rates of Storm with different surfactants in a trial located near Ralston, WA, in 2021.

Treatment ¹	Rate		Injury	Flixweed Control	Yield ²
			%	%	Lb/A
Nontreated			0 c	0 b	830
Nontreated – Weed Free			0 c	100 a	990
Storm	16	fl oz/A	0 c	64 ab	1070
NIS	0.25	% v/v			
Storm	24	fl oz/A	0 c	79 a	890
NIS	0.25	% v/v			
Storm	48	fl oz/A	0 c	64 ab	1060
NIS	0.25	% v/v			
Storm	16	fl oz/A	9 bc	91 a	980
COC	1	% v/v			
Storm	24	fl oz/A	8 bc	87 a	1180
COC	1	% v/v			
Storm	48	fl oz/A	14 ab	93 a	1220
COC	1	% v/v			
Rhomene	0.5	pt/A	21 a	53 ab	1130
NIS	0.25	% v/v			
Rhomene	0.5	pt/A	6 bc	83 a	940
Metribuzin	0.25	lb/a			
NIS	0.25	% v/v			

¹ NIS, Nonionic surfactant; COC, Crop oil concentrate surfactant.

² No differences between treatments for yield.

Disclaimer

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.