

## Broadleaf weed control with pyridate in lentils

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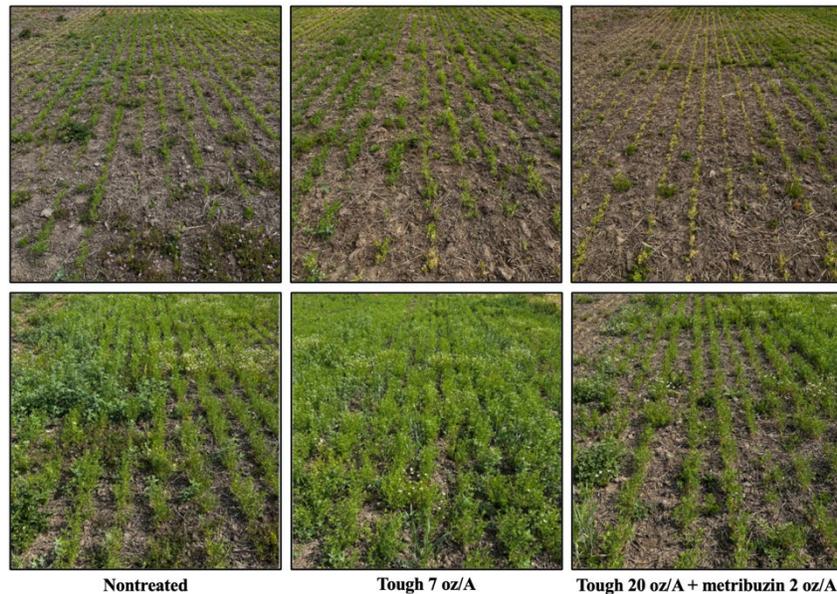
Pulse crops, such as lentil, offer farmers the opportunity for grass weed control in normally wheat-dominated fields, but broadleaf weeds are a particular challenge during this crop rotation. There are limited options for broadleaf weed management that offer residual control throughout the growing season. Tough® 5EC (pyridate) is a selective, contact herbicide that is effective on pigweeds and nightshades. It is registered in corn, mint, and pulse crops, and has no plant back restrictions. When tank-mixed with a partner herbicide, Tough 5EC may offer some residual weed control as lentils establish.

**Table 1.** Treatment application weather details.

Application Details	
Date	5-30-2025
Air temperature (°F)	57
Soil temperature (°F)	50
Wind velocity (mph, direction)	3, SSW
Relative humidity (%)	58
Weed size (inches)	3-4

In spring 2025, two field trials were established to evaluate broadleaf weed control with pyridate in lentil. The first trial focused on pre-plant applications of two different rates of Tough 5EC tank mixed with a PPO-inhibiting herbicide; the second trial focused on postemergence applications of Tough 5EC alone and tank mixed with metribuzin. The trials were located in the same field at the Palouse Conservation Field Station near Pullman, WA. For both trials, plots were 10 by 30 ft and arranged in a randomized complete block design

with four replications. All herbicide treatments were applied with a CO<sub>2</sub> powered backpack sprayer (Table 1). The spray boom had four Teejet® 11002VS nozzles with 20-inch spacing and spray output was calibrated to deliver 15 gallons per acre at 3 mph. Lentils were planted for the postemergence trial on April 25, 2025; lentils did not get planted in time for the pre-plant trial, so we used a fallow plot for this trial.



**Figure 1.** Injury following postemergence applications of Tough 5EC on June 6 (top row) and June 12 (bottom row).

Treatments were visually assessed for weed control at 7, 14, and 28 days after treatment for both trials and injury to lentil was assessed in the postemergence trial at the same interval as weed control. Yield was not assessed in either trial. Data were subject to ANOVA using the Agricultural Research Manager software (Ver. 2024).

Seven days after treatment, some bleaching (4-10%) was observed in all treatments in the postemergence trial (Table 2). Treatments that included metribuzin or high rates of Tough 5EC were particularly more injurious than Tough 5EC at 7 oz/A or the nontreated check (Figure 1). The lentils appeared to have mostly recovered by the June 12 rating (14 DAT), with the highest injury observed at 5% for Tough 5EC 20 oz/A plus metribuzin and the treatment with Select 2EC® (clethodim).

Mayweed chamomile control was not significantly different between treatments in the postemergence trial. The treatment with Tough 5EC, metribuzin, and NIS provided the highest control at 90% and Tough 5EC at 7 oz/A had the lowest control (40%) (Table 3). In the pre-plant trial, Mayweed chamomile control was variable between treatments and dates (Table 4). On the June 12 rating, Mayweed control was generally greater than 80% in all treatments except for low rate of Tough 5EC plus Aim EC (50%) and the low rate of Tough 5EC plus Vida (70%). Mayweed control on the June 23 rating was not significantly different between treatments, though the low rate of Tough 5EC plus Reviton® had 90% Mayweed control.

All treatments in the postemergence trial had 80% or greater control of common lambsquarters, except for Tough 5EC at 7 oz/A (40%) (Table 3). Common lambsquarters control in the pre-plant trial was slightly more consistent (Table 4), however the high rate of Tough 5EC plus Vida® had the lowest lambsquarters control (85%) at the June 12 rating. Lambsquarters control ratings on June 23 were not significantly different between treatments. Low or high rates of Tough 5EC plus Sharpen®, and low or high rates of Tough 5EC plus Reviton had consistently high lambsquarters control at both rating dates.

Prickly lettuce was present in both trials but was not controlled in either trial.

Control of common lambsquarters with pyridate appears to be effective in lentil. Though higher rates may cause some bleaching, the crop appears to have recovered. Futures studies should include yield measurement, if possible, to determine any yield loss from bleaching.



**Figure 2.** Weed control examples from the pre-plant trial. Tough 5EC at 6 oz/A plus Reviton (left); Tough 5EC at 12 oz/A plus Aim EC (middle); nontreated (right) taken at the June 23 rating date.

**Table 2.** Injury ratings (bleaching) for lentils following postemergence Tough 5EC applications.

	Treatment	Injury (%) <sup>1</sup>					
		Rate		6/6/2025		6/12/2025	
1	Nontreated			0	c	0	b
2	Tough 5EC	7	oz/A	4	bc	1	ab
3	Tough 5EC	14	oz/A	6	ab	1	ab
4	Tough 5EC	20	oz/A	9	a	4	ab
5	Tough 5EC	7	oz/A	5	b	0	b
	Metribuzin 75DF	2	oz/A				
6	Tough 5EC	14	oz/A	9	ab	4	ab
	Metribuzin 75DF	2	oz/A				
7	Tough 5EC	20	oz/A	10	a	5	a
	Metribuzin 75DF	2	oz/A				
8	Tough 5EC	7	oz/A	10	a	5	a
	Metribuzin 75DF	2	oz/A				
	Select 2EC	6	oz/A				
	COC	1	%v/v				
9	Tough 5EC	7	oz/A	8	ab	3	ab
	Metribuzin 75DF	2	oz/A				
	NIS	.25	%v/v				

<sup>1</sup>Means with the same letter are not significantly different ( $p = 0.05$ ).

**Table 3.** Mayweed chamomile and common lambsquarters control following postemergence Tough 5EC applications.

	Treatment	Rate		Mayweed	Common	
				chamomile (%)	lambsquarters (%) <sup>1</sup>	
				6/12/2025	6/12/2025	
1	Nontreated			0	0	
2	Tough 5EC	7	oz/A	40	40	b
3	Tough 5EC	14	oz/A	50	80	a
4	Tough 5EC	20	oz/A	70	90	a
5	Tough 5EC	7	oz/A	60	90	a
	Metribuzin 75DF	2	oz/A			
6	Tough 5EC	14	oz/A	70	90	a
	Metribuzin 75DF	2	oz/A			
7	Tough 5EC	20	oz/A	70	95	a
	Metribuzin 75DF	2	oz/A			
8	Tough 5EC	7	oz/A	80	90	a
	Metribuzin 75DF	2	oz/A			
	Select 2EC	6	oz/A			
	COC	1	%v/v			
9	Tough 5EC	7	oz/A	90	90	a
	Metribuzin 75DF	2	oz/A			
	NIS	.25	%v/v			

<sup>1</sup>Means with the same letter are not significantly different ( $p = 0.05$ ).

**Table 4.** Mayweed chamomile and common lambsquarters control following pre-plant Tough 5EC applications.

Treatment <sup>1</sup>	Mayweed chamomile				Common lambsquarters			
	Rate		Control (%) <sup>2</sup>		Control (%) <sup>2</sup>		Control (%) <sup>2</sup>	
			6/12/2025	6/23/2025	6/12/2025	6/23/2025		
1	Nontreated		0	0	0	0		
2	Glystar 5	22 oz/A	100	a	100	90	ab	90
3	Tough 5EC	6 oz/A	85	a	75	95	ab	90
	Sharpen	1 oz/A						
4	Tough 5EC	6 oz/A	90	a	90	100	a	90
	Reviton	1 oz/A						
5	Tough 5EC	6 oz/A	50	b	35	100	a	90
	Aim EC	1.5 oz/A						
6	Tough 5EC	6 oz/A	70	ab	45	90	ab	85
	Vida	1.32 oz/A						
7	Tough 5EC	12 oz/A	85	a	75	100	a	90
	Sharpen	1 oz/A						
8	Tough 5EC	12 oz/A	85	a	80	95	ab	90
	Reviton	1 oz/A						
9	Tough 5EC	12 oz/A	80	a	45	90	ab	75
	Aim EC	1.5 oz/A						
10	Tough 5EC	12 oz/A	85	a	70	85	b	85
	Vida	1.32 oz/A						

<sup>1</sup>All treatments included MSO at 1% v/v.

<sup>2</sup>Means with the same letter are not significantly different ( $p = 0.05$ ).

#### Off-Label or Experimental-Use 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.