Field pea response and weed control with fall application of metribuzin and pyroxasulfone at Hettinger, ND, 2025.

Fall application of the herbicides metribuzin and pyroxasulfone were evaluated for both crop response and weed control in 2025 at Hettinger, ND (see Table 1 for treatments; Table 3 for description of applications). A fall application of glyphosate alone provided poor control of cheatgrass (26%) and addition of metribuzin did not improve cheatgrass control (28 to 32%). Application of glyphosate plus pyroxasulfone (Zidua SC) resulted in 86% control of cheatgrass and the addition of metribuzin only improved cheatgrass control when added at 8 oz/A. Kochia control with pyroxasulfone was 86 and 82% at 23 and 50 days after planting (DAP). Fall application of metribuzin provided similar control of kochia. The combination of pyroxasulfone and metribuzin improved kochia control to 95 and 91% (23 and 50 DAP) when applied at 8 oz/A. Wild buckwheat control with pyroxasulfone was 74 and 50% (23 and 50 DAP). Metribuzin at 4, 6, and 8 oz/A also resulted in poor wild buckwheat control (61 to 69%). Combination of pyroxasulfone and 8 oz/A of metribuzin improved wild buckwheat control to 81%. Wild oat was controlled 86% with pyroxasulfone. Metribuzin did not control wild oat. An application of clethodim (Section 3) was applied to the entire trial after the 23 DAP evaluation to control wild oat and cheatgrass. Prickly lettuce control with pyroxasulfone was poor (45%). Metribuzin improved control to 81 to 85%. Best control was with a combination of pyroxasulfone and 8 oz/A of metribuzin.

Table 1. Evaluation of fall application of metribuzin and pyroxasulfone for weed control in peas.

			Cheatgrass	Kochia		Wild buckwheat		Wild oat	Prickly lettuce
	Treatment[a]	Rate	23 DAP	23 DAP	50 DAP	23 DAP	50 DAP	23 DAP	50 DAP
		oz/A	% control						
1	Untreated Control	-	0d	0d	0d	0d	0f	0d	0e
2	Roundup PowerMax3	22	26c	0d	0d	0d	0f	0d	0e
3	Zidua SC	4	86b	86bc	82c	74ab	50e	86a	45d
	Roundup PowerMax3	22							
4	Metribuzin	4	28c	85c	85bc	63c	61d	23c	81c
	Roundup PowerMax3	22							
5	Metribuzin	6	32c	88bc	84c	62c	63d	31bc	84bc
	Roundup PowerMax3	22							
6	Metribuzin	8	29c	89bc	86bc	66bc	69c	33b	85bc
	Roundup PowerMax3	22							
7	Zidua SC	4	94ab	91ab	85bc	79a	76ab	89a	83bc
	Metribuzin	4							
	Roundup PowerMax3	22							
8	Zidua SC	4	88ab	90abc	89ab	69bc	73bc	82a	88ab
	Metribuzin	6							
	Roundup PowerMax3	22							
9	Zidua SC	4	95a	95a	91a	81a	80a	88a	95a
	Metribuzin	8							
	Roundup PowerMax3	22							
LSD P=.05			7.7	5.7	4.7	9.4	6.1	9.8	6.8
Standard Deviation			6.3	4.7	3.9	7.8	5.0	8.1	5.7
CV			11.83	6.85	5.88	14.22	9.64	16.85	9.09
Treatment F			135.968	275.360	374.080	66.401	150.741	89.289	179.924
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

[a]Roundup PowerMax3, glyphosate 4.8 lbae/gal; Zidua SC, pyroxasulfone 4.17 lbai/gal; metribuzin 75%DF. All treatments included AMS at 8.5 lb/100gal.

[b]Abbreviations: DAP, days after planting; lbae/gal, pounds acid equivalent per gallon; lbai/gal, pounds active ingredient per gallon.

Fall herbicide treatments did not cause visible injury to peas (data not shown). Pea stand count was not affected by herbicide treatment. Pea height was reduced in treatments with poor weed control (especially with poor control of wild oat and cheatgrass). Pea yield was lowest in the untreated control and with a fall application of glyphosate alone. Pea yield was highest when a combination of pyroxasulfone and metribuzin was applied in the fall.

Table 2. Evaluation of fall application of metribuzin and pyroxasulfone for crop response in peas.

	Treatment[a]	Rate	Stand count 37 DAP	Pea height 51 DAP	Pea yield
		oz/A	plants/A	inches	lb/A
1	Untreated Control	-	255000-	10.2e	996d
2	Roundup PowerMax3	22	251000-	10.2de	983d
3	Zidua SC	4	251000-	11.8abc	1925b
	Roundup PowerMax3	22			
4	Metribuzin	4	259000-	11.0cd	1425c
	Roundup PowerMax3	22			
5	Metribuzin	6	275000-	11.4bc	1869b
	Roundup PowerMax3	22			
6	Metribuzin	8	279000-	11.8abc	1842b
	Roundup PowerMax3	22			
7	Zidua SC	4	279000-	12.2ab	2352a
	Metribuzin	4			
	Roundup PowerMax3	22			
8	Zidua SC	4	279000-	12.2a	2380a
	Metribuzin	6			
	Roundup PowerMax3	22			
9	Zidua SC	4	299000-	12.2a	2433a
	Metribuzin	8			
	Roundup PowerMax3	22			
LSD P=.05			12.1	2.0	377.6
Standard Deviation			10.0	1.6	311.6
CV			15.06	5.58	17.37
Treatment F			0.679	6.250	12.940
Treatment Prob(F)			0.7051	0.0002	0.0001

[a]Roundup PowerMax3, glyphosate 4.8 lbae/gal; Zidua SC, pyroxasulfone 4.17 lbai/gal; metribuzin 75%DF. All treatments included AMS at 8.5 lb/100gal.

Table 3. Application environment and equipment for preemergence application of herbicide treatments for weed control in peas.

Application Description		Application equipment	
Date	Nov-4-2024	Equipment Type	Tractor mounted
Start Time	2:39 PM	Operation Pressure	42 PSI
Stop Time	3:02 PM	Nozzle Model	11002DG
Air Temperature Start, Stop	50, 50 F	Nozzle Spacing	20 IN
% Relative Humidity Start, Stop	37, 37	Boom Length	100 IN
Wind Velocity+Dir. Start	6 MPH, WSW	Boom Height	22.0 IN
Wind Velocity+Dir. Max	15 MPH, SW	Ground Speed	4 MPH
Soil Temperature	40 F	Carrier	WATER
% Cloud Cover	10	Application Amount	10 GAL/AC