

Fall-planted cover crop tolerance to soybean herbicides, Carrington, 2018. Greg Endres and Mike Ostlie. The trial was conducted at the NDSU Carrington Research Extension Center with support from the North Dakota Soybean Council to evaluate the tolerance of six fall-planted, cool-season cover crops on ground previously treated with seven soybean herbicides that have soil residual. Experimental design was a randomized complete block with split-plot arrangement (whole plot = cover crop and subplot = herbicide) and three replicates. The field trial was established on a conventionally-tilled Heimdal-Emrick loam soil with 3.3% organic matter and 5.6 pH (0-6-inch depth). Asgrow 'AG05X8' dicamba-tolerant soybean was planted on May 16 in 22-inch rows. A hand-held boom sprayer was used delivering 17 gpa at 35 psi through TeeJet flat fan 8001 nozzles to the center 6.7 ft of 10- by 100-ft strips. Five PRE herbicides were applied on May 28 with 72 F, 61% RH, and 4 MPH wind on dry soil to emerging (VE) stage soybean. Following PRE herbicide application, 1.5 inches of rain occurred on June 1. Two POST herbicides were applied on June 7 with 76 F, 36% RH, and 9 mph wind on dry soil to first trifoliolate (V1) stage soybean. Following POST herbicide application, 0.9 inch of rain occurred during June 10-12. Soybean at the seed formation (R5) stage were terminated by mowing on August 8. Rainfall from May 28 to November 2 totaled 10.5 inches, but rainfall during July 5 through September 19 totaled 0.8 inches. Due to the extended dry period, cover crop planting was delayed until September 24, when sufficient soil moisture was present for seed germination and seedling emergence. Cover crop species included barley, winter rye, field pea, flax, radish, and turnip. Cool and wet soil conditions after planting delayed cover crop development. Barley and winter rye at one-leaf stage, and field pea at 1-inch height were visually evaluated on November 2 for biomass and stand reduction. Cold weather and snow accumulation did not allow additional evaluation.

Plant injury was not observed with winter rye and field pea (Table). Barley injury ranged from 2-3 percent with the PRE herbicides Valor, Zidua, and Pursuit.

Table.					
Herbicide			Cover crop injury <sup>1</sup>		
			2-Nov		
Treatment	Rate	Application timing <sup>2</sup>	Barley	Winter rye	Field pea
	fl oz product/A		%		
Sencor 75 DF	0.33 lb	PRE	0	0	0
Spartan 4F	10		0	0	0
Valor SX	3 oz		3	0	0
Zidua SC	4		3	0	0
Pursuit	3		2	0	0
Engenia + CA Ridion	12.8 + 2% v/v	POST	0	0	0
Flexstar + MSO	12 + 24		0	0	0
C.V. (%)			399.5		
LSD (0.10)			NS		
<sup>1</sup> Biomass and/or stand reduction.					
<sup>2</sup> PRE=May 28; POST=June 7.					