

Influence of Corn and Soybean Herbicide Treatments on Cover Crop Stands

Kevin Bradley

bradleyke@missouri.edu (mailto:bradleyke@missouri.edu)

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One thing to consider this fall with regards to planting cover crops is how these crop species will respond to herbicide carryover. Relatively little research has been published on this topic, and the factors that affect carryover, such as moisture and soil temperature, will likely vary from year-to-year. With that in mind, we have summarized our one year of data on the effects of herbicide carryover on cover crops. This is preliminary data collected in 2013 from Columbia, MO, and the experiments are currently being repeated.

Tables 1 and 2 show stand reduction of cover crops planted in the fall following either corn or soybean, which had one of 14 different herbicide treatments. Green boxes indicate stand loss of <15% relative to the same cover crop grown on non-treated soils. Yellow boxes specify stand loss of 15 to 30% and red boxes denote stand loss of >30%. In the two experiments conducted last year, annual or Italian ryegrass (*Lolium multiflorum*) that was planted following either corn or soybean that was treated post-emergence (POST) with pyroxasulfone (Zidua) had >50% stand reduction relative to annual ryegrass grown on non-treated soils (Tables 1 and 2). Tillage radish stand reduction was greater than 30% when following corn that had a POST application of flumetsulam (Python) or following soybean that had a POST application of either imazethapyr (Pursuit), S-metolachlor + fomesafen (Prefix) or fomesafen (Flexstar) (Figure 1). Similar effects of fomesafen on tillage radish have also been observed by Dr. Mark Bernard's group at Western Illinois University in which they applied different concentrations of fomesafen (from 12.5% of the labeled rate up to the labeled rate to mimic possible carryover rates) 5 days prior to planting the tillage radish. The group observed greater than 40% damage to the tillage radish at the 1X rate of fomesafen. Bernard's group also studied wheat and cereal rye across many of the same herbicides that we tested, including: mesotrione (Callisto), pyroxasulfone (Zidua), flumioxazin (Valor), cloransulam methyl (Firstrate), fomesafen (Flexstar), sulfentrazone (Spartan), isoxaflutole (Balance Flexx), and atrazine (Aatrex). They found less than 20% visual damage at the 1X rate across all herbicides for both crops.

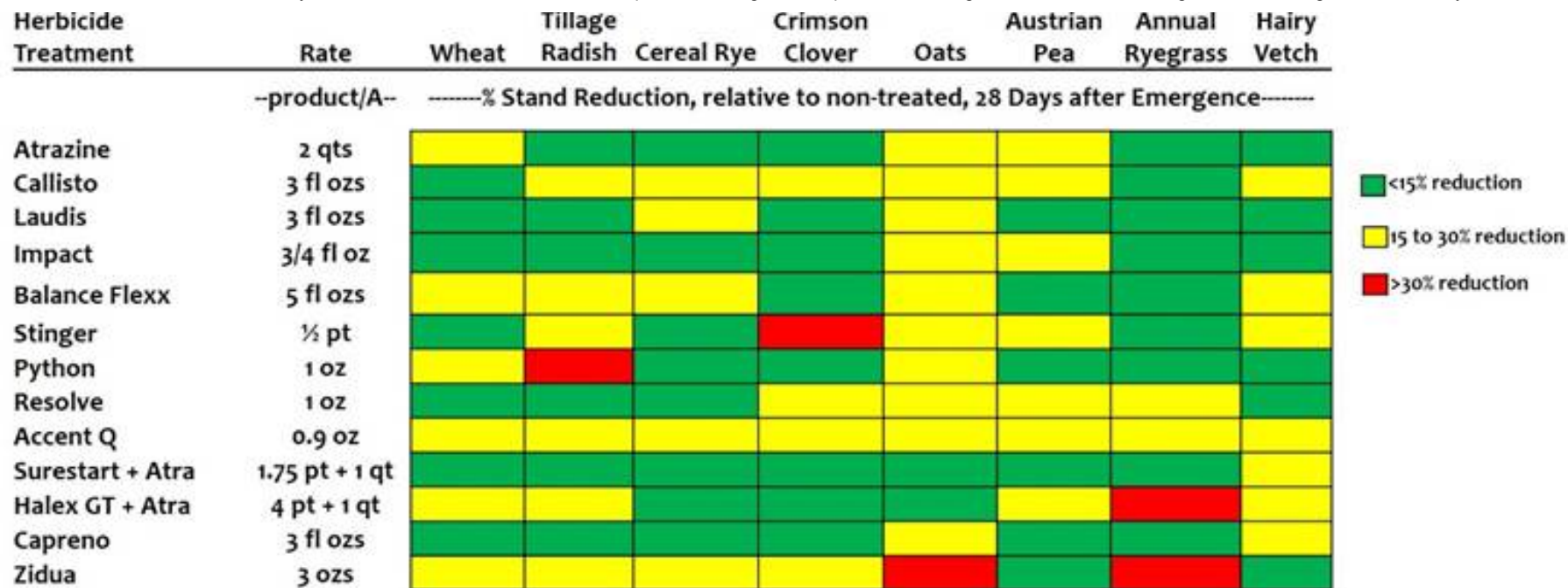
Table I

Influence of Soybean Herbicide Treatments on Fall Cover Crop Stand

Herbicide Treatment	Rate	Cover Crop Species						
		Tillage Wheat	Cereal Radish	Cereal Rye	Crimson Clover	Oats	Austrian Pea	Annual Ryegrass
--product/A--		-----% Stand Reduction relative to non-treated, 28 Days after Emergence-----						
Spartan	8 fl ozs	15 to 30% reduction	<15% reduction	<15% reduction	<15% reduction	<15% reduction	<15% reduction	<15% reduction
Valor	2.5 ozs	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	15 to 30% reduction	<15% reduction
Sencor	0.5 lb	>30% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction	15 to 30% reduction	15 to 30% reduction
Authority First	6.4 ozs	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction
Classic	1.5 ozs	15 to 30% reduction	15 to 30% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction
Flexstar	20 fl ozs	<15% reduction	>30% reduction	<15% reduction	15 to 30% reduction	<15% reduction	15 to 30% reduction	<15% reduction
Cobra	12.5 fl ozs	<15% reduction	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction
Pursuit	4 fl ozs	15 to 30% reduction	>30% reduction	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	15 to 30% reduction
Firstrate	0.6 oz	<15% reduction	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction
Synchrony XP	0.375 oz	<15% reduction	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	<15% reduction
Dual II Magnum	1.33 pts	15 to 30% reduction	<15% reduction	15 to 30% reduction	15 to 30% reduction	<15% reduction	<15% reduction	15 to 30% reduction
Warrant	1.5 qts	15 to 30% reduction	<15% reduction	<15% reduction	<15% reduction	<15% reduction	15 to 30% reduction	15 to 30% reduction
Zidua	3 ozs	<15% reduction	<15% reduction	15 to 30% reduction	<15% reduction	15 to 30% reduction	>30% reduction	<15% reduction
Prefix	2 pts	<15% reduction	>30% reduction	15 to 30% reduction	15 to 30% reduction	<15% reduction	15 to 30% reduction	15 to 30% reduction

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Influence of Corn Herbicide Treatments on Fall Cover Crop Stand



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Table II

Carryover of POST treatments to Tillage Radish



Figure 1

While this data provides some insight into cover crop selection based on previous herbicide usage, it is only preliminary.

For more information regarding cover crops and weed science, including herbicide carryover, see our [Weed Science data slideshow \(http://weedsience.missouri.edu/extension/pdf/Bradley%20-%20cover%20crops%202014.pdf\)](http://weedsience.missouri.edu/extension/pdf/Bradley%20-%20cover%20crops%202014.pdf).

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