

# Cover Crop Response to Soybean Herbicides

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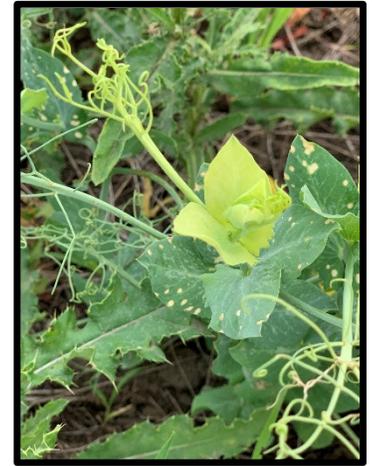
Numerous considerations are needed to plan and utilize cover crops as part of farm management. Besides setting goals for cover crop use, field history of herbicides needs to be considered to avoid loss of cover crop stands due to herbicide residuals in the soil.

Previous research coordinated by the Carrington Research Extension Center resulted in a table that displayed various risk levels with planting cover crops on ground previously treated with wheat herbicides that have soil residues. A similar study followed, to build a database indicating cover crop tolerance to soybean herbicides with potential soil residuals.

In 2016, an initial trial was conducted in Fargo to determine the tolerance of common cover crops to selected corn and soybean herbicides. The soybean data from the trial were considered as a formal study was conducted at Carrington and Fargo during 2018 to 2020. The study included nine soybean herbicides and eight cover crops.

Soil and post-emergence herbicides were applied at labeled rates and timings to soybean. The crop was mowed during August (seed-fill stages) and cover crops direct planted into the soybean stubble generally late August to early September. Visual evaluation of injury (biomass and/or stand reduction) began generally in late September (3-4 months after application of herbicides).

The study resulted in a six site-year database that was summarized in the following table. The table will be published in the NDSU 2021 ND Weed Control Guide.



Field pea injury from soybean herbicides.

Risk of cover crop injury due to soybean herbicides with soil residual, Carrington and Fargo, 2016-20. <sup>1</sup>									
Site-years	Herbicide	Risk of cover crop injury							
		Barley	Winter Rye	Field Pea	Flax	Radish	Turnip	Lentil	Rapeseed/Canola
<b>Soil</b>									
6	Sencor 75 DF	Low	Low	Low	Low	Medium	Medium	Low	Low
6	Spartan 4F	Low	Low	Low	Low	High	Medium	Medium	Medium
6	Valor SX	Low	Low	Low	Low	High	High	Low	High
6	Zidua SC	Low	Low	Low	Low	Medium	Low	Low	Medium
5	Pursuit	Low	Low	Low	High	High	High	Low	Low
<b>POST</b>									
5	Engenia	Low	Low	Low	Low	Low	Low	Low	Low
6	Flexstar	Low	Low	Low	Low	High	Medium	Low	Medium
2	Liberty 280	Low	Low	Low	Low	Low	Low	Low	Low
2	Raptor	Low	Low	Low	Low	Low	Low	Low	Low

<sup>1</sup>Low risk = 0-20% injury; Medium risk = 21-50% injury; and High risk = >50% injury. Greatest injury recorded for each treatment was used to determine risk level.

All herbicides, except Liberty 280, injured cover crops. Barley, winter rye and field pea had the greatest tolerance to herbicides. Radish, turnip and rapeseed/canola generally had the least tolerance to herbicides. The following herbicides potentially have high risk of injury for specific cover crops. Spartan = radish; Valor = radish, turnip and rapeseed/canola; Pursuit = flax, radish and turnip; and Flexstar = radish.

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