

Potential carryover of Shieldex (tolpyralate) and other PRE and POST herbicides on establishment of potential interseeded cover crops (2018). *Ed Peachey and Andrew Donaldson, Horticulture Department, OSU*

Interseeding in conventional corn systems will only be possible if strategies are available to control weeds. Glyphosate is commonly used in glyphosate tolerant corn, but this is not an option for most sweet corn produced in the Willamette Valley. The 4-HPPD herbicides such as Shieldex may be useful for weed control in interseeding systems, but cover crop safety must be demonstrated and understood before these herbicides can be used in concert with interseeding.

The field was ripped, disked and rototilled with a vertical tine tiller before planting. Herbicides were applied 14 or 7 days before planting (DBP), or shortly after planting (0 DBP). Cover crops were planted on 20-Jun-18, and irrigated with approximately ½ inch of water the next day. Herbicides were applied with CO₂ backpack sprayer with a 5-nozzle, 8.3 foot long boom. The resulting plots were 10 by 10 ft. Seedling emergence was counted from 3 ft of the middle row of each plot on 10-Jul. Crop growth also was rated on 10-Jul on a scale of 0-10, with a rating of 10 as the best growth and a rating of 0 if the crop was dead or had not emerged.

Results. As in past studies, large differences were noted in cover crop response to the 4-HPPD herbicide of Impact, Laudis, and Shieldex (Table 2, Figure 1). In general, red clover, crimson clover, peas, common vetch and phacelia were the most sensitive to these herbicides. Crimson clover was more tolerant than red clover. Both crimson clover and red clover appeared to be more sensitive to Shieldex than Laudis or Impact. Peas were more tolerant to Shieldex than Impact and Laudis.

Table 1. Herbicide application data for herbicide carryover study on cover crops, 2018.

Date	June 13, 2018	June 20, 2018	June 27, 2018
Herbicide/treatment	Atrazine @ 1 pint/A Outlook @ 12 oz/A Dual Magnum @ 16 oz/A	Laudis @ 3oz/A Impact @ 1oz/A Shieldex @ 1 oz/A	Laudis @ 3oz/A Impact @ 1oz/A Shieldex @ 1 oz/A
Application timing	PRE:14 days before planting	PRE: 7 days before planting	PRE: 0 days before planting
Start/end time	6:30 - 8:00 AM	6:45-7:40 AM	6:00-7:15 AM
Air temp/soil temp (2")/surface	57 F/61F/57F	74F/68F/75F	60F/ 62F/64 F
Rel humidity	75%	61%	81%
Wind direction/velocity	SW 1.1 mph	SE 0.3	West 3.1
Cloud cover	Cloudy	Clear	Clear
Soil moisture	< Field capacity	< Field capacity	< Field capacity
Plant moisture	N/A	N/A	N/A
Sprayer/PSI	Backpack @ 30 psi	Backpack @ 30 psi	Backpack @ 30 psi
Mix size	3 gallons	3 gallons	3 gallons
Gallons H2O/acre	20 gal/A	20 gal/A	20 gal/A
Nozzle type	8002	8003	8003
Nozzle spacing and height	20" @ 3'	20" @ 3'	20" @ 3'
Soil inc. method	N/A	N/A	N/A

Table 2. Cover crop tolerance to common herbicides that might interfere with interseeding efforts. Yellow cells = moderate risk of injury; orange cells = high risk of injury.

Herbicide	Days before planting	Product Rate	Cover crop														
			Rye	Triticale	Spring oat (Cayuse)	Spring wheat (Cloda)	Spring barley (Steptoe)	Red clover	Crimson clover	Ann ryegrass	Tall fescue	Buckwheat	Pea	Phacelia	Radish	Sudan grass	Common vetch
Cover crop stand			<i>No. plants per 3 feet of row</i>														
Atrazine	14	1 pt	65	49	102	95	101	7	7	43	30	14	12	11	33	183	23
Dual Mag	14	16 oz	18	16	46	28	69	1	25	0	21	4	12	2	23	53	14
Outlook	14	12 oz	15	18	45	46	78	1	17	0	18	7	11	2	23	28	15
Impact	0	1 oz	80	56	81	102	93	44	41	71	37	11	7	45	55	206	11
Impact	7	1 oz	67	47	75	93	89	53	60	78	71	13	8	65	51	90	29
Laudis	0	3 oz	47	45	99	99	94	19	55	96	47	13	3	55	48	78	7
Laudis	7	3 oz	91	61	71	117	94	29	50	66	76	20	9	57	49	221	20
Shieldex	0	1 oz	75	49	92	107	102	16	27	114	58	10	10	18	47	241	18
Shieldex	7	1 oz	63	51	92	65	97	44	41	70	72	15	18	29	41	201	16
Not treated	-		88	53	99	105	105	57	42	75	80	18	6	32	39	243	16
FPLSD (0.05)			39	17	22	45	32	44	31	43	53	10	8	33	29	110	14
Crop injury			<i>Growth rating (10=best; 0=dead)</i>														
Atrazine	14	1 pt	10	10	9	9	8	0	2	7	4	6	5	1	7	10	4
Dual Mag	14	16 oz	4	2	3	4	4	0	2	0	0	4	5	1	7	4	5
Outlook	14	12 oz	5	3	5	5	4	0	2	0	0	4	6	0	7	5	7
Impact	0	1 oz	10	10	9	10	10	3	8	9	7	6	3	6	10	10	4
Impact	7	1 oz	10	10	10	9	10	6	9	10	10	8	7	9	9	10	9
Laudis	0	3 oz	8	9	10	10	10	3	8	9	8	9	2	5	8	8	3
Laudis	7	3 oz	10	10	9	10	10	5	9	9	7	7	8	8	9	10	9
Shieldex	0	1 oz	10	10	10	10	10	1	5	8	8	9	8	4	10	10	5
Shieldex	7	1 oz	10	9	10	10	10	6	7	9	10	8	10	7	9	10	9
Not treated	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FPLSD (0.05)			2	1	2	2	2	4	3	2	2	4	4	3	2	3	4

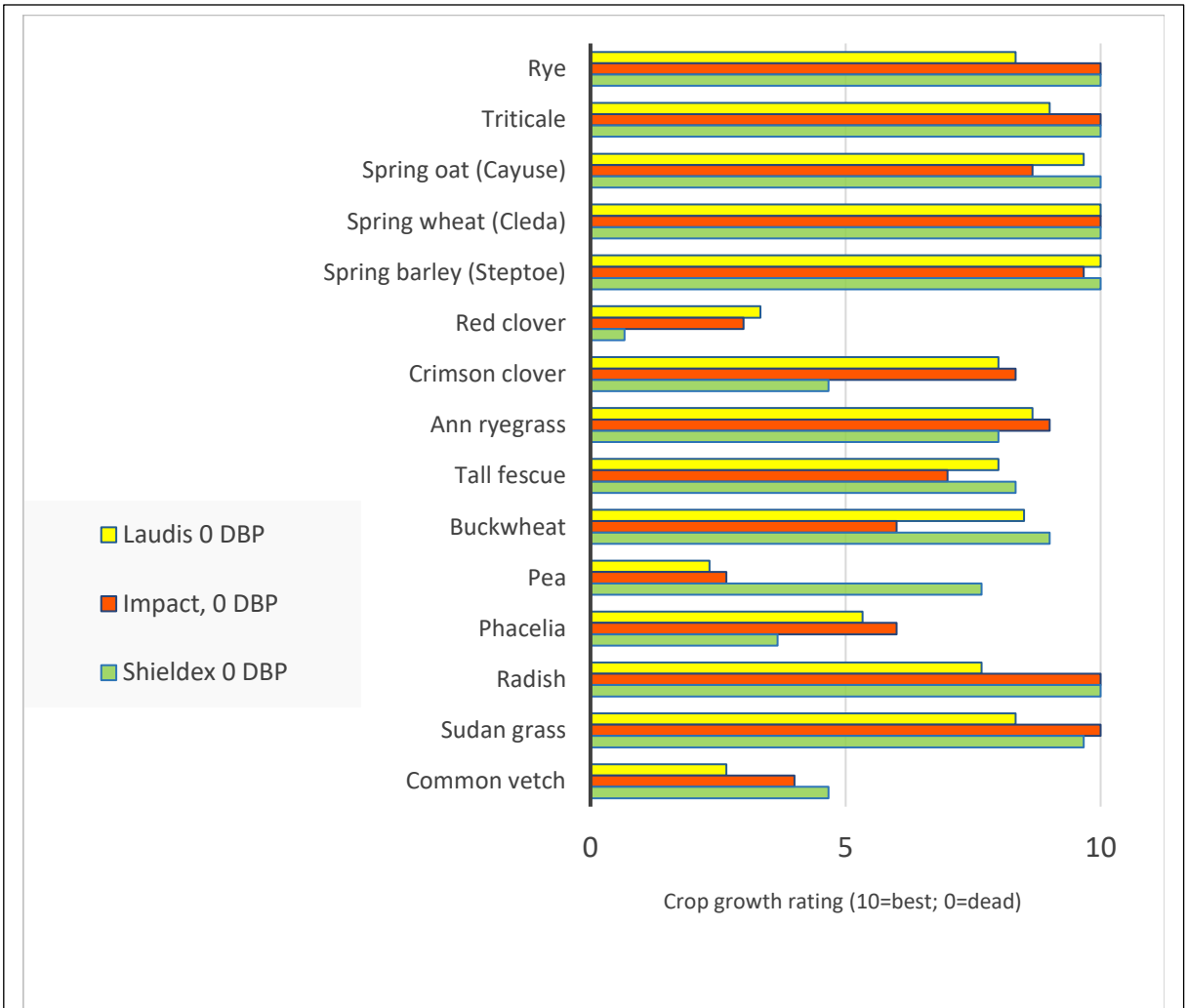


Figure 1. Cover crop tolerance to herbicides applied PRE (0 days before planting).