



Getting It Just Right

Tools for a Successful Herbicide Program Considering Cover Crops

- 1. Planning
 - What is going on.
 - Changes
 - Cover Crops per Field
 - Timing of planting
 - Approx Harvest
 - 2. Communication
 - Continually talk with grower
 - Map out what is going on.
 - 3. Knowing your Herbicides
 - Systemic, Contact, Residual
 - Persistence, Mode of Action
 - 4. Scouting
 - Stage of Crop
 - Weeds Present
 - Size
 - Grass
 - Brood
 - 5. Application and Timing
 - GPA
 - PSI
 - TIPS
 - Rate
- Timing
- How Related to Soil Conditions
- Talk to Professionals

Herbicide decisions considering Cover Crops

- 1. Herbicide Persistence and Half Life
- 2. Rate and Application frequency
- 3. Herbicide Application Rate
- 4. Soil Characteristics(Organic Matter, pH, Texture)
- 5. Rainfall
- 6. Cover Crop Sensitivity to Herbicide
- 7. Other Environmental Impacts

Absolutely Dictates as to whether herbicide will affect Prospective Cover Crop

Brandes Herbicide Activity

Site of Action	Rate	2017 Soybeans Product
14,2	4.5 oz	Authority First
4	12 oz	Salvo
9	22 oz	Powermax

Site of Action	Rate	2017 corn Product
15	2.0 qt	Warrant
4	12 oz	Salvo
9	22 oz	Powermax

Scout N Spray

10	32 oz	Liberty
15	3.0 pt	Warrant
1	8 oz	Intensity

9	32 oz	Powermax
4	8 oz	Diflexx/Impact
5	.5 pt	Atrazine

Fall Herbicide Application

3 oz	Distinct
20 oz	Salvo

Site of Action	Rate	2016 Soybeans Product
14,2	4.0 oz	Authority First
4	12 oz	Salvo

Site of Action	Rate	2016 Corn Product
15	2.0 qt	Warrant
4	12 oz	Salvo

Scout N Spray

9	44 oz	Powermax
15	3.0 pt	Warrant
14	1.25 pt	Top Gun
1	8 oz	Intensity

9	22 oz	Powermax
9,27	.75 oz	Impact
5	1 pt	Atrazine

Fall Herbicide Application

3 oz	Distinct
20 oz	Salvo

Rate	2015 Soybeans Product
1.5 oz	Valor SX
2.5 oz	Valor XLT
16 oz	Salvo
22 oz	Powermax

Rate	2015 Corn Product
2.5 qt	Degree Xtra
16 oz	Salvo
22 oz	Powermax

Scout N Spray

40 oz	Powermax
8 oz	Intensity One

40 oz	Powermax
.75 oz	Impact
1 pt	Atrazine

Common corn and soybean herbicides, estimated half-lives, cash crop restrictions and their potential to injure fall cover crops.

CORN									
Herbicide	Active ingredient	Normal Rate/acre	Half life (days) ¹	Cash crop restrictions	Fall cover crops		Other		
					OK to plant	Concern for			
2,4-D 4S	2,4-D	1-2 pt	7	Plant anything 30 days after application	All grasses	Wait 30 days before planting sensitive broadleaves	Amine formulations more water soluble and can leach into seed zone		
Accent 75DF/ Steadfast75DF	nicosulfuron/ nicosulfuron+ rimsulfuron	0.66 oz/ 0.75 oz	21	Sensitive crops have 10-18 month restriction	Fall cereal grains, ryegrass	Small seeded legumes, mustards, sorghum	More persistent in high pH soils (> 7)		
Atrazine 4L	atrazine	1-2 qt	60	Can plant corn, sorghum, and soybean the following year (some products allow others)	Sorghum species	Cereals, ryegrass, legumes, and mustards	More persistent in high pH soils (> 7). Rates < 1 lb/acre can allow more flexibility		
Balance Pro 4L	isoxaflutole	2 fl. oz	50-120	Small seeded legumes and vegetables have a 10 to 18 month restriction	Fall cereals grains	Cereals, Ryegrass, legumes, and mustards	15 inches of cumulative precipitation required from rotation crops except soybean, barely, wheat, sorghum, and sunflower		
Callisto (includes Lunax, Lexar, Halex GT)	mesotrione	3-6 fl. oz	5-32	10 to 18 months for legumes and vegetables	All grasses	Small seeded legumes, mustards	Sequential applications (PRE lb POST) increase the potential for injury		
Clarity/ Banvel 4S (Distinct and Status)	dicamba	16 to 24 fl. oz	5-14	15 days per 8 fl. oz/acre for small grains	All crops	Only at high rates or less than 120 days after application	Anything can be planted after 120 days with 24 fl. oz/acre or less		
Dual II Mag 7.62E/Cinch	metolachlor	1.67 pt	15-50	Labeled for use on many crops	Almost anything	Annual ryegrass or other small seeded grasses	Higher rates and later applications more of a potential problem		
Capreno 3.45SC	tembotrione + thiencarbazone	3 fl. oz	50-120	Four mo. for wheat, 10 mo. for barley, sorghum, oats and alfalfa	Wheat, triticale, rye	Small seeded legumes, mustards, sorghum	15 inches of cumulative precipitation required from rotation crops except wheat		

CORN, continued

Herbicide	Active ingredient	Normal Rate/acre	Half life (days) ¹	Cash crop restrictions	Fall cover crops		Other
					OK to plant	Concern for	
Corvus 2.63SC	isoxaflutole+ thiencarbazono	5.6 fl. oz	50-120	Four mo. for wheat, 9 mo. for barley and 17 mo. For alfalfa, oats, sorghum, and canola	Wheat, triticale, rye	Small seeded legumes, mustards, sorghum	15 to 30 inches of cumulative precipitation from application to planting for sensitive crops Nonfood/feed winter cover crops are allowed after corn harvest We have not seen this herbicide carryover in PA.
Harness 7E (Degree, Warrant)	acetochlor	2 pt	10-20	Four mo. for wheat and 9 mo. for alfalfa and clovers	Most crops should be fine	Food or feed residues rather than crop injury may be a concern	
Impact 2.8SC	topromesone	0.75 fl. oz	14	Alfalfa, canola, soybean and sunflower have a 9 mo. restriction	Wheat, barley, oats, and rye are allowed after 3 mo. Ryegrass should also be OK	Although many broadleaves are restricted, Impact does not have much soil activity	
Laudis 3.5SC	tembotrione	3 fl. oz	14	Four mo. for cereal grains, 10 mo. for sorghum, canola, and alfalfa	Cereal grains after 4 mo.	Unknown - Small seeded legumes, mustards could be a problem	Other crops may be seeded after a successful field bioassay.
Peak 57WG (& Spirit)	prosulfuron	1 oz	9-152	Cash crop restrictions ranged from 10 mo. for soybean and tobacco to 22 mo. for alfalfa and canola	Cereal grains and sorghum are labeled, other grasses	Small seeded legumes, mustards	More persistent in high pH soils (> 7)
Permit/Sandea 75DF	halosulfuron	2/3 oz	9-27	Nine mo. for alfalfa, clovers, soybean and 15 mo. for canola	Cereal grains and sorghum after 2 mo. and other grasses	Small seeded legumes, mustards	Halosulfuron also an ingredient in Yukon
Resolve 25DF (Resolve Q)	rimsulfuron	2 oz	2-4	Winter cereals have a 3 mo. restriction and many crops are restricted for 10 mo.	Based on the short half-life, most fall cover crops should be OK in PA	None	More persistent in drought conditions
Simazine 4L (Princep)	simazine	1-2 qt	60	Can plant corn, sorghum, and soybean the following year (some products allow others)	Sorghum species	Cereals, Ryegrass, legumes, and mustards	Soil pH > 7
Stinger 3S (Hornet and Surestart)	clopyralid	5 oz	40	Recrop intervals 10.5 to 18 mo. for legumes.	All grasses	Small seeded legumes	

CORN AND SOYBEAN

Herbicide	Active ingredient	Normal Rate/acre	Half life (days) ¹	Cash crop restrictions	OK to plant	Fall cover crops	Other
Glyphosate 4L	glyphosate	0.75 to 1.25 lb	47	No restrictions preemergence	All	None	Glyphosate does not have soil activity at normal use rates
Gramoxone 2S	paraquat	2 pt	1000	No restrictions preemergence	All	None	Paraquat does not have soil activity at normal use rates
Harmony 50WDG	thifensulfuron	1/8 oz	12	Any crop can be planted 45 days after application	No restrictions for wheat, barley, and oats	None with 45 day waiting interval	Harmony Extra also contains tribenuron
Liberty 2.34L	glufosinate	22 - 36 fl. oz	7	No restrictions for canola, corn, and soybean. Small grains have a 70 day restriction.	All	Food or feed residues rather than crop injury may be a concern	Glufosinate does not have soil activity at normal use rates
Outlook 6E	dimethenamid	16 fl. oz	20	Four mo. for cereal grains and anything the following spring	Most crops should be fine	Food or feed residues rather than crop injury may be a concern	Nonfood/feed winter cover crops should be OK after corn harvest
Prowl H2O 3.8CS	pendamethalin	3 pt	44	Wheat and barley after 4 mo. Other rotational crops the following year.	Cereal grains	Small seeded legumes and annual ryegrass	We have not seen this herbicide carryover in P.A. Nonfood/feed winter cover crops should be OK
Pythox 80WDG (Hornet and Surestart)	flumetsulam	1 oz	14-120	Cash crop restrictions from 4 mo. for alfalfa and cereals to 26 mo. for canola	Cereal grains	Small seeded legumes, mustards, and annual ryegrass	Cover crops and forage grasses are restricted for 9 mo.
Metribuzin 75DF (Sencor)	metribuzin	0.33 lb	14-60	Recrop restrictions range from 4 to 12 mo.	Cereal grains and ryegrass	Slight risk for small seeded legumes and mustards	Nonfood/feed winter cover crops allowed
Sharpen 2.85SC (Verdict and Optill)	safinufenacil	3 fl. oz	7-35	Any crop can be planted 4 mo. after application	All	None	This product has been reported more persistent in western Canada

¹ Herbicide half-life estimates derived from the WSSA Herbicide Handbook, 2007 or other scientific literature.

SOYBEAN

Herbicide	Active ingredient	Normal Rate/acre	Half life (days) ¹	Cash crop restrictions	Fall cover crops		Other
					OK to plant	Concern for	
Assure II/Targa 0.88E	quizalofop	8 oz	60	Most broadleaves OK	Most broadleaves	All grasses if less than 120 days or at high rates	Plant anything after 120 days
Authority 75DF (Spartan 4F)	sulfentrazone	4 oz	32-302	12 to 24 months for legumes and some vegetables	Cereals and ryegrass	Small seeded legumes, mustards, sorghum	Labeled on tobacco, sunflowers, transplanted tomato
Classic 25DF (Canopy, Envive, etc.)	chlorimuron	0.5-2 oz	40	12 to 30 months for small seeded legumes	Cereals and ryegrass	Small seeded legumes, mustards, sorghum	More persistent in high pH soils (> 7) and with higher soil applied rates
FirstRate 84WDG	cloransulam	0.3 to 0.6 oz	8-33	Four months to wheat, 9 mo. to alfalfa, corn, sorghum and oats, 12 mo. for barley, and 18 mo. for tobacco	Wheat, triticale, rye	Small seeded legumes, mustards, sorghum	The restriction for transplanted tobacco is 10 mo. for 0.3 oz/acre. Sugarbeet and sunflower have a 30 month restriction.
Pursuit 2S	imazethapyr	4 fl. oz	60-90	Recrop restrictions range from 4 to 18 mo.	Wheat, triticale, rye, alfalfa, clover	Oats, sorghum, mustards	Any crop can be planted 40 months after Pursuit application
Raptor 1E	imazamox	5 fl. oz	20-30	Recrop intervals range from 3 to 18 mo.	Wheat, triticale, rye, alfalfa, clovers	Slight risk for mustards	Most cash crops allowed 9 mo. following application
Reflex 2E/ Flexstar 1.88E	fomesafen	1.5 pt	100	Recrop intervals range from 4 to 18 months	Cereal grains	Small seeded legumes, mustards, sorghum	Since fomesafen is often applied postemergence, soil activity can surprise users
Scepter 1.5AS	imazaquin	0.66 pt	60-90	Recrop intervals range from 11 to 18 months	Cereal grains	Small seeded legumes, mustards	Carryover much more of a risk with drought
Select 2E	clethodim	10 oz	3 d	Most broadleaves OK	All broadleaves	None assuming at least 30 days.	Plant anything after 30 days
Valor 51WDG	flumioxazin	2.5 oz	12-20	Recrop restrictions up to 10 mo. for no-till alfalfa, clover and 12 mo. for no-till canola	All grasses	Small seeded legumes and mustards	Based on the half-life, all nonfood/feed winter cover crops should be OK

Engenia™ Herbicide Spray Checklist



Nozzle:

TTI11004 and 11005. Visit www.engeniatankmix.com for a list of approved nozzles.



Ground speed:

≤ 15 mph



Boom height:

≤ 24 inches
above target



Spray volume:

≥ 10 GPA



Approved tank-mixes & adjuvants:

See www.engeniatankmix.com



Sensitive areas:

- Leave 110' downwind buffer as needed according to label directions
- Identify sensitive crops and follow label directions



Wind speed:

- Do not spray if wind is blowing in the direction of neighboring specialty crops
- **< 3 mph:** DO NOT spray during temperature inversions
- **> 10–15 mph:** DO NOT spray if wind is blowing toward neighboring sensitive non-specialty crop
- **> 15 mph:** DO NOT spray



Sprayer cleanout:

Triple rinse, use a detergent based commercial cleaner

Engenia™
Herbicide

Always read and follow label directions.

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