Summary of Cover Crop Expert Panel Report Addendum for P and S Reduction Efficiencies

- Met in Frederick MD, Oct. 15, 2014; with conference callers too
- Reviewed options for estimating P and S Reduction Efficiencies
  - Continue with “Relative to Rye” approach
  - Reviewed current rye P and S Reduction Efficiencies
  - Develop a BPJ approach to estimate P and S Reduction Efficiencies
  - Conduct anonymous “poll”, each Panelist submitting their BPJ estimates

Review existing P and S Reduction Efficiencies in P5.3.2

Total Phosphorus Estimates

Coastal Plain/Piedmont Crystalline/Karst Settings

Seeding method:	Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn	
Species:	**Rye**		Rye		Rye		Rye		Wheat		Wheat		Wheat		Wheat		Barley		Barley		Barley		Barley	
Till:	**High**	**Low**	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Early planting	**0.15**	**0**	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0
Normal planting	**0.07**	**0**	0.07	0					0.07	0	0.07	0					0.07	0	0.07	0				
Late planting	**0**	**0**	0	0					0	0	0	0												

Mesozoic Lowlands/Valley and Ridge Siliciclastic

Seeding method:	Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn	
Species:	Rye		Rye		Rye		Rye		Wheat		Wheat		Wheat		Wheat		Barley		Barley		Barley		Barley	
Till:	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Early planting	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0	0.15	0
Normal planting	0.07	0	0.07	0					0.07	0	0.07	0					0.07	0	0.07	0				
Late planting	0	0	0	0					0	0	0	0												

Total Sediment Estimates

Coastal Plain/Piedmont Crystalline/Karst Settings

Seeding method:	Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn	
Species:	**Rye**		Rye		Rye		Rye		Wheat		Wheat		Wheat		Wheat		Barley		Barley		Barley		Barley	
Till:	**High**	**Low**	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Early planting	**0.2**	**0**	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0
Normal planting	**0.1**	**0**	0.1	0					0.1	0	0.1	0					0.1	0	0.1	0				
Late planting	**0**	**0**	0	0					0	0	0	0												

Mesozoic Lowlands/Valley and Ridge Siliciclastic

Seeding method:	Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn		Drilled		Other		Aerial/soy		Aerial/corn	
Species:	Rye		Rye		Rye		Rye		Wheat		Wheat		Wheat		Wheat		Barley		Barley		Barley		Barley	
Till:	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Early planting	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0	0.2	0
Normal planting	0.1	0	0.1	0					0.1	0	0.1	0					0.1	0	0.1	0				
Late planting	0	0	0	0					0	0	0	0												

New Cover Crops Already Accepted :

Annual Ryegrass

Annual Legumes

Annual Legume plus Grass Mixtures

Brassica (winter hardy)

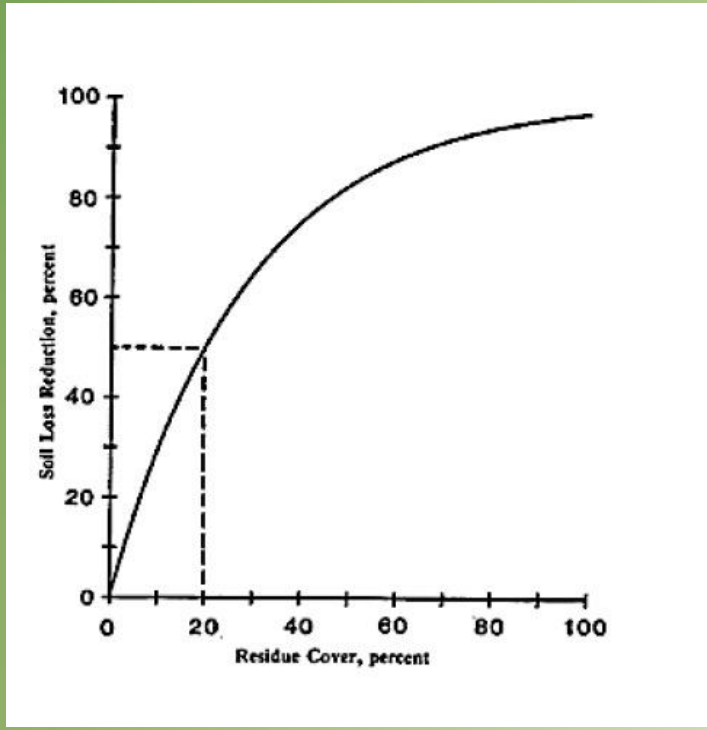
Forage Radish

Forage Radish plus Grass Mixtures

Triticale

Oats (winter hardy)

Oats (winter killed)



Summary of CC Panelists BPJ estimates of P & S Reduction Efficiencies, relative to rye

Recommended relative-to-rye phosphorus reduction efficiencies (RPRE) and relative-to-rye sediment reduction efficiencies (RSRE) based on best professional judgment of panel members.

Panelist	Annual Ryegrass		Annual Legume		Legume + Grass Mix.		Brassica (winter hardy)		Forage Radish		Forage Radish + Grass Mix.		Triticale		Oats (winter hardy)		Oats (winter killed)	
	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE	RPRE	RSRE
Anonymous A	0.6	0.7	0.2	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.9	0.4	0.4	0.3	0.3
Anonymous B	1.0	0.9	1.0	0.7	1.1	1.0	1.2	0.9	0.6	0.7	0.9	1.0	1.0	0.9	0.9	0.9	0.8	0.8
Anonymous C	0.7	0.7	0.2	0.3	0.6	0.6	0.6	0.6	0.4	0.5	0.5	0.5	0.9	0.9	0.3	0.4	0.3	0.4
Anonymous D	1.0	1.0	0.5	0.5	1.0	1.0	0.7	0.7	0.6	0.6	0.6	0.6	0.9	1.0	0.7	0.9	0.4	0.4
Anonymous E	0.7	0.8	0.5	0.8	0.6	0.8	0.7	0.8	0.6	0.6	0.6	0.8	0.9	0.8	0.6	0.7	0.4	0.4
Anonymous F	0.7	0.8	0.5	0.4	0.6	0.7	0.7	0.4	0.6	0.3	0.6	0.5	0.9	0.9	0.8	0.9	0.4	0.5
Anonymous G	0.8	0.8	0.2	0.2	0.5	1.0	0.5	0.7	0.0	0.4	0.2	0.7	1.0	1.0	1.0	1.0	0.2	0.2
Anonymous H	0.7	0.7	0.2	0.2	0.4	0.4	0.7	0.7	0.3	0.3	0.5	0.5	0.9	0.9	0.6	0.6	0.3	0.3
Anonymous I	0.3	0.3	0.1	0.1			0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3		
Anonymous J	0.7	0.8	0.4	0.6	0.7	0.8	0.5	0.7	0.0	0.1	0.4	0.5	1.0	1.0	0.7	0.8	0.2	0.4
Average	**0.70**	**0.73**	**0.38**	**0.42**	**0.66**	**0.75**	**0.65**	**0.65**	**0.40**	**0.44**	**0.54**	**0.62**	**0.81**	**0.85**	**0.63**	**0.68**	**0.37**	**0.41**
Standard Error	*0.06*	*0.06*	*0.08*	*0.07*	*0.08*	*0.08*	*0.07*	*0.05*	*0.08*	*0.06*	*0.06*	*0.06*	*0.07*	*0.07*	*0.07*	*0.08*	*0.06*	*0.06*
Avgerage with high and low	0.68	0.76	0.33	0.41	0.66	0.71	0.61	0.69	0.35	0.45	0.54	0.60	0.81	0.86	0.66	0.69	0.33	0.39
Median	0.68	0.80	0.30	0.45	0.60	0.80	0.65	0.70	0.48	0.43	0.55	0.57	0.86	0.88	0.63	0.75	0.33	0.40

Proposed New Species, or Reference Species (i.e.)	**Relative Sediment Reduction Efficiency** (relative to rye) as estimated by Panelists Best Professional Judgment	**Final Sediment** Effectiveness Phase 5.3.2
---------- Early planting, all seeding methods, high tillage ----------		
Annual Ryegrass (ARG)	0.73	0.15
Annual Legume	0.42	0.08
Annual Legume + Grass	0.75	0.15
Brassica (winter hardy)	0.65	0.13
Forage Radish	0.44	0.09
Forage Radish + Grass	0.62	0.12
Triticale	0.85	0.17
Oats (winter hardy)	0.68	0.14
Oats (winter killed)	0.41	0.08
(Ref. Species)	1.00	0.20

Proposed New Species, or Reference Species (i.e.)	Relative Phosphorus Reduction Efficiency (relative to rye) as estimated by Panelists Best Professional Judgment	Final Phosphorus Effectiveness Phase 5.3.2
---------- Early planting, all seeding methods, high tillage ----------		
Annual Ryegrass (ARG)	0.70	0.10
Annual Legume	0.38	0.06
Annual Legume + Grass	0.66	0.10
Brassica (winter hardy)	0.65	0.10
Forage Radish	0.40	0.06
Forage Radish + Grass	0.54	0.08
Triticale	0.81	0.12
Oats (winter hardy)	0.63	0.09
Oats (winter killed)	0.37	0.06
(Ref. Species)	1.00	0.15