Сгор	Year	IM	BM	SE	P-value
		(Mg h	la ⁻¹)	- ⁻¹)	
Alf+Grass - Yr. 1	2013	5.78	5.00	0.42	0.11
	2014	12.25	12.28	0.77	0.45
	2015	9.57	8.72	0.59	0.64
Alf+Grass - Yr. 2 ^{$^{\circ}$}	2013	6.65	6.66	0.42	0.97
	2014	17.87	18.55	0.77	0.45
	2015	15.41	16.87	0.59	0.64
Spring Canola	2013	1.07	1.53	0.14	0.10
Rye Silage [#]	2014	6.29	6.89	0.24	0.02
	2015	6.85	6.74	0.48	0.16
SS Grass [#]	2014	4.54	5.53	0.35	0.05
	2015	5.01	4.88	0.43	0.83
Red Clover	2014	9.06	10.06	0.47	0.11
	2015	9.56	10.38	0.48	0.22
Corn Silage (after RC/HV)	2013	13.63	13.42	0.67	0.14
Corn Silage (after RC/CC)	2014	18.09	16.48	0.80	0.25
	2015	17.16	16.08	0.37	0.12
Corn Silage (wheat) ^{\$}	2013	17.96	16.05	0.67	0.14
Corn Silage (after intersd) ^{\$}	2014	15.50	15.96	0.80	0.25
	2015	14.90	16.30	0.40	0.11
Corn Grain	2013	9.97	10.57	0.20	0.13
	2014	10.02	10.34	0.46	0.80
-	2015	9.33	8.85	0.40	0.82
Manure Management Comp	arison		2013	2014	2015

Table 1. 2013-2015 yields (Mg ha⁻¹, dry matter) are presented for the injection manure (IM) versus broadcast manure (BM) treatments in the MANURE ROTATION.

Manure Management Comparison		2013	2014	2015
Sources of Variation	df		p-value	
Crop ^{&}	3	<0.001	<0.001	<0.001
Manure Management	1	0.42	0.6383	0.85
MainMgt*Crop	3	0.05	0.1341	0.04

[^] Due to a failed alfalfa+grass stand in 2012, timothy grass + red clover was planted in 2013, resulting in lower yields.

[#] Spring canola was replaced with rye silage followed by sorghum sudangrass and fall-planted crimson clover or rye silage underseeded by red clover.

^{\$} In 2014-2015, corn silage that was after wheat in 2013 will follow interseeded clovers and annual ryegrass mix.

[&] When crop entry plots received manure treatements, they were included in the manure management comparison analysis. These included canola, both corn silage, and corn grain plots in 2013, corn grain and both corn silage plots in 2014 due to canola winterkill, corngrain, both corn silage, and rye silage in 2015

Сгор	Year	RH	SH	SE	P-value
		(Mg	ha ^{₋1})		
Alf+Grass+Trit (RH)Yr1	2013	3.46	4.95	0.42	0.02
Alfalfa (SH) - Yr. 1	2014	10.57	12.66	0.77	0.22
	2015	11.71	12.17	0.37	0.25
Alf+Grass (RH) - Yr. 2	2013	12.83	13.22	0.42	0.44
Alfalfa (SH) - Yr. 2	2014	17.76	17.99	0.77	0.22
	2015	15.27	16.43	0.37	0.25
Alf+Grass (RH) - Yr. 3	2013	10.43	11.32	0.42	0.11
Alfalfa (SH) - Yr. 3	2014	15.39	15.03	0.77	0.22
	2015	12.17	12.22	0.37	0.25
Canola (winter) [#]	2013	1.83	1.77	0.04	0.41
	2015	2.20	1.98	0.26	0.20
SS grass [#]	2014	10.41	10.67	0.29	0.36
Corn Silage ^{\$}	2013	13.36	15.28	1.28	0.37
	2014	16.27	15.47	0.37	0.23
	2015	16.50	17.40	0.99	0.47
Soybean	2013	3.08	3.31	0.24	0.11
	2014	3.35	3.41	0.11	0.31
	2015	3.49	3.86	0.08	0.05
Pest Management Con	nparisor	1	2013	2014	2015
Sources of Variation	•	df		p-value	

Table 2. 2013-2015 yields (Mg ha⁻¹, dry matter) are presented for the reduced herbicide (RH) versus standard herbicide (RH) treatments in the PEST ROTATION.

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Pest Management Comparison		2013	2014	2015
Sources of Variation	df		p-value	
Crop	3	< 0.001	< 0.001	< 0.001
Pest Management	1	0.04	0.351	0.007
MainMgt*Crop	3	0.004	0.014	0.03

[#] Canola yields were examined in a nested split-split plot model that included canola from the Pest Rotation in 2013, while in 2014, sorghum sudangrass was planted as a rescue crop when canola winterkilled.

^{\$} Corn silage yields were compared for RH-high residue cultivation and for SH. [^] Soybean yields were compared for RH with high residue cultivation and for SH in 37.5 cm rows and were examined in a nested split-split plot model that included soybeans from the Control Rotation. Table 3. 2013-2015 crop yields (Mg ha⁻¹, dry matter) for common crops across rotations are presented for A) canola, B) soybean, and C) corn grain for the injection manure (IM) versus broadcast manure (BM) treatments in the MANURE and C-S ROTATION and for the reduced herbicide (RH) versus standard herbicide (RH) treatments in the PEST ROTATION.

PES	Г (Р)		MANU	RE (M)		(M)	P vs. M
RH	SH	SE	IM	BM	SE	p-\	/alue
(Mg	ha ^{₋1})		(Mg	ha ⁻¹)			
1.83	1.77	0.10	1.07	1.53	0.10	0.02	0.01
PES	Г (Р)		CORN-S	OY (C-S)		(C-S)	P vs. C-S
RH	SH	SE	IM	BM	SE	p-\	/alue
(Mg	ha ^{₋1})		(Mg	ha⁻¹)			
3.08	3.31	0.25	3.25	3.04	0.25	0.16	0.75
3.35	3.41	0.11	3.32	3.54	0.11	0.31	0.61
3.46	4.01	0.25	3.86	3.45	0.25	0.28	0.81
MANU	RE (M)		CORN-S	OY (C-S)		(C-S)	M vs. C-S
IM	BM	SE	IM	BM	SE	p-\	/alue
(Mg	ha⁻¹)		(Mg	ha⁻¹)			
9.97	10.56	0.50	7.72	8.29	0.50	0.39	0.03
10.02	10.34	0.46	8.19	8.18	0.46	0.80	0.01
9.42	8.70	0.60	8.02	9.29	0.60	0.19	0.30
	PES' RH (Mg 1.83 PES' RH (Mg 3.08 3.35 3.46 3.35 3.46 MANU IM (Mg 9.97 10.02 9.42	PEST (P) I.83 I.77 I.83 I.77 I.83 I.77 I.83 I.77 PEST (P) RH SH I.0.56 IMANURE (M) IMANURE (M) IMANURE (M) I.0.56 I.0.34 9.97 10.34 9.42 8.70	PEST (P) RH SH SE (Mg ha ⁻¹) 0.10 1.83 1.77 0.10 1.83 1.77 0.10 PEST (P) RH SH SE (Mg ha ⁻¹) 3.08 3.31 0.25 3.35 3.41 0.11 3.46 4.01 0.25 MANURE (M) SE IM BM SE 0.97 10.56 0.50 10.02 10.34 0.46 9.42 8.70 0.60	PEST (P) MANU RH SH SE IM (Mg ha ⁻¹) (Mg 1.83 1.77 0.10 1.07 1.83 1.77 0.10 1.07 PEST (P) CORN-S RH SH SE IM (Mg ha ⁻¹) (Mg 3.08 3.31 0.25 3.25 3.35 3.41 0.11 3.32 3.46 4.01 0.25 3.86 MANURE (M) CORN-S IM BM SE IM 9.97 10.56 0.50 7.72 10.02 10.34 0.46 8.19 9.42 8.70 0.60 8.02	PEST (P) MANURE (M) RH SH SE IM BM (Mg ha ⁻¹) (Mg ha ⁻¹) (Mg ha ⁻¹) 1.83 1.77 0.10 1.07 1.53 1.83 1.77 0.10 1.07 1.53 CORN-SUY (C-S) RH SH SE IM BM (Mg ha ⁻¹) (Mg ha ⁻¹) 3.04 3.04 3.04 3.08 3.31 0.25 3.25 3.04 3.35 3.41 0.11 3.32 3.54 3.46 4.01 0.25 3.86 3.45 IM BM SE IM BM (Mg ha ⁻¹) 0.25 3.86 3.45 IM BM SE IM BM 9.97 10.56 0.50 7.72 8.29 10.02 10.34 0.46 8.19 8.18 9.42 8.70 0.60 8.02 9.29	PEST (P) MANURE (M) RH SH SE IM BM SE (Mg ha ⁻¹) (Mg ha ⁻¹) (Mg ha ⁻¹) SE (Mg ha ⁻¹) SE 1.83 1.77 0.10 1.07 1.53 0.10 1.83 1.77 0.10 1.07 1.53 0.10 PEST (P) CORN-SUY (C-S) K K K RH SH SE IM BM SE (Mg ha ⁻¹) (Mg ha ⁻¹) 0.25 3.04 0.25 3.08 3.31 0.25 3.86 3.45 0.25 3.35 3.41 0.11 3.32 3.54 0.11 3.46 4.01 0.25 3.86 3.45 0.25 IM BM SE IM BM SE (Mg ha ⁻¹) 0.25 3.86 3.45 0.25 IM BM SE IM SE IM 9.97 10.56	PEST (P) MANURE (M) (M) RH SH SE IM BM SE $p - v$ (Mg ha ⁻¹) (Mg ha ⁻¹) (Mg ha ⁻¹) 0.10 1.07 1.53 0.10 0.02 1.83 1.77 0.10 1.07 1.53 0.10 0.02 PEST (P) CORN-SOY (C-S) (C-S) (C-S) RH SH SE IM BM SE $p - v$ (Mg ha ⁻¹) (Mg ha ⁻¹) (C-S) (C-S) $p - v$ (Mg ha ⁻¹) (Mg ha ⁻¹) (SE 3.25 3.04 0.25 0.16 3.08 3.31 0.25 3.26 3.45 0.25 0.28 MANURE (M) SE IM BM SE IM BM SE $p - v$ (Mg ha ⁻¹) (Mg ha ⁻¹) SE IM BM SE $p - v$ MANURE (M) SE IM BM SE $p - v$ (Mg

Table 4. Cover crop biomass, weeds biomass, and crop yields in soybean: GRAIN Rotation
2010-2015. "SH" refers to standard herbicide weed management strategy and "RH" refers to
reduced herbicide weed management strategy.

Year/Management	Row Spacing	Cover Crop Biomass [£] Mg/ha	SE	Crop Population plants/ha	SE	Weed Biomass [€] g/m2	SE	Yield [€] Mg/ha (DM)	SE
2010									
SH	19 cm	2.0 ^	17	295,163	16377	0.0	3.8	4.2	0.3
RH	76 cm	1.5 ^		343,239	16377	8.0	3.8	4.3	0.3
2011									
SH	19 cm	3.5 b	0.3			0.4 b	11.4	3.3 a	0.3
RH	76 cm	4.4 a	0.3			89.0 a	11.4	2.8 b	0.3
2012									
SH	19 cm	4.9	1.3	289,209 a	26459	0.0	0.5	3.5 a	0.3
	76 cm	4.5	0.9 ^{\$}	151,947 b	39219 ^{\$}	0.1	0.1 ^{\$}	3.1 ab	0.3
RH	76 cm	7.9	1.3	111,278 b	26459	1.2	0.5	2.4 b	0.3
2013									
SH	38 cm	5.3	1.3	264,160	22195	0.1	1.0	3.3	0.2
	76 cm	5.5	1.3	250,049	22195	0.9	1.0	3.3	0.2
RH (High Res. Cult.)	76 cm	5.8	1.3	303,671	22195	2.1	1.0	3.1	0.2
RH (Post Herbicide)	76 cm	4.5	1.3	296,333	22195	0.5	1.0	3.0	0.2
2014									
SH	38 cm	2.8	0.7	344,045	29598	0.0	3.1	3.5	0.1
	76 cm	3.2	0.7	314,475	29598	0.0	3.1	3.3	0.1
RH (High Res. Cult)	76 cm	2.1	0.7	378,318	29598	10.9 a	3.1	3.3	0.1
RH (Post Herbicide)	76 cm	2.3	0.8	395,932	29598	0.4	3.1	3.4	0.1
2015									
SH	38 cm	1.7	0.2	185,276a	8855	0.0	0.66	4.0a	0.14
	76 cm	1.5	0.2	163,826b	8855	.8	0.66	3.7b	0.14
RH (High Res. Cult)	76 cm	1.7	0.2	144,123b [•]	8855	33.2a	0.66	3.5b [*]	0.14
RH (Post Herbicide)	76 cm	1.6	0.2	144,223b	8855	0.7	0.66	3.5b [*]	0.14

a,b- Indicate values that were statistically significant by SH or RH management.

£-Rye terminated in RH soybeans earlier than in SH soybeans in every year, and is rolled down with a roller-crimper

€- Dry matter reported.

€- Dry matter reported.

^- Statistical analysis not performed on cover crop biomass in 2010 as biomass was only collected from half of the plots.

\$- SE reported determined by within Main Management comparison between SH-19 cm row and SH-76 cm row.

* RH treatments compared to the 38 cm SH treatment were significantly different at p =0.06

Table 5. Cover crop biomass, weed biomass, and crop yields in corn: GRAIN Rotation 2010-2015 "SH" refers to standard herbicide weed management strategy and "RH" refers to reduced herbicide weed management strategy.

Year/Management	Row Spacing	Cover Crop Biomass [£] Mg/ha	SE	Weed Biomass [€] g/m2	SE	Yield [€] Mg/ha (DM)	SE
2010 – corn grain							
SH	76 cm	2.2^		1.0	1.3	10.6	0.3
RH	76 cm	2.3^		3.3	1.3	10.9	0.3
2011 – corn grain							
SH	76 cm	0.3	0.1	0.2 b	3.5	8.4	0.3
RH	76 cm	0.5	0.1	20.6 a	3.5	9.0	0.3
2012 – corn grain							
SH	76 cm	1.6 a	0.1	0.3	6.7	8.6	0.3
RH	76 cm	1.0 b	0.1	15.7	6.7	8.3	0.3
2013 – corn silage							
SH	76 cm	0.22	0.03	0.7	5.9	15.3 a	1.3
RH (High Res. Cult.)	76 cm	0.33	0.03	18.9	7.7	13.4 ab	1.3
RH (Post Herbicide)	76 cm	0.25	0.02 ^{\$}	6.8	2.6 ^{\$}	12.3 b	0.3 ^{\$}
2014 – corn silage							
SH	76 cm	1.02	0.17	0.003 a	.23	15.5	0.4
RH (High Res. Cult.)	76 cm	1.53	0.17	1.6 b	0.003	16.3	0.4
RH (Post Herbicide)	76 cm	0.98	0.18 ^{\$}	0.0 a	0.002	12.3	0.3 ^{\$}
2015 – corn silage							
SH	76 cm	0.4	0.03	0.07c	.3	17.4	0.9

a,b- Indicate values that were statistically significant by weed management. In

2013, this comes from pairwise comparisons among treatments.

€- Dry matter reported.

^- Statistical analysis not performed on cover crop biomass in 2010 as biomass was only collected from half of the plots.

\$- SE reported determined by within Main Management comparison between SH and RH-Post herbicide treatments.

Table 6. Average number of plants infested by European corn borer and percent of corn plants lodged in corn silage (a) and corn grain (b) in 2015. Average ± SE (SAS t-test).

	2015 European Corn Borer: Corn Silage					
Table (a)	Rotat	D				
	Pest Manure		P			
Percent of Infested Plants (96 plants/plot)	4.4 ± 1.8	2.7 ± 0.96	0.3688			
Percent of Lodged Plants (16 rows/plot)	0.039 ± 0.027	0.053 ± 0.021	0.7289			

	2015 European Corn Borer: Corn Grain					
Table (b)	Rotat	Р				
	Control Manure					
Percent of Infested Plants (96 plants/plot)	0 ± 0	8.3 ± 4.0	0.0561			
Percent of Lodged Plants (16 rows/plot)	0 ± 0	0.036 ± 0.025	0.1641			

Table 7. Average number of plants infested by European corn borer and percent of corn plants lodged in corn silage (a) and corn grain (b) in 2014. Average ± SE (SAS t-test).

	2014 European Corn Borer: Corn Silage					
Table (a)	Rotat					
	Pest Manure					
Percent of Infested Plants (96 plants/plot)	0 ± 0	2.86 ± 0.80	0.0012			
Percent of Lodged Plants (16 rows/plot)	0.018 ± 0.073	0.092 ± 0.031	0.0445			

	2014 European Corn Borer: Corn Grain					
Table (b)	Rotat	D				
	Control	Manure	P			
Percent of Infested Plants (96 plants/plot)	0 ± 0	0.52 ± 0.52	0.3332			
Percent of Lodged Plants (16 rows/plot)	0 ± 0	0.018 ± 0.073	0.3332			

Forage/Feed Type					Reference	Reference	
	2010	2011	2012	2013	forage CP	forage TDN	
		\$,	/Mg		%		
Legume hay (SH)	177	209	243	253	20.67	56.90	
Mixed mostly grass hav							
(RH 1 st harvest year 1)	141	147	182	NA	13 89	53 40	
(Itil, 1 hurvest, year 1)	111	117	102	1 17 1	15.07	55.10	
Mixed mostly legume							
have (DII all auto after							
hay (RH all cuts after	1.10		• • • •		10. f =		
$1^{\mathfrak{n}}$ cut, year 1)	148	165	200	224	18.67	55.10	
Corn	177	297	296	249			
Soybean meal	396	427	531	560			

Table 8. Pennsylvania reference forages market value and quality, Pennsylvania market prices for corn and soybean meal

Table 9. Annual forage yield (Mg ha⁻¹) in the year of establishment and in the first production year, comparing RH and SH management schemes. Different letters indicate statistical difference in annual forage yield between management within a year at P < 0.05.

	Yea	ar 1	Year 2			
Initiation Year	RH SH		RH	SH		
2010	7.0 b	8.6 a	14.1	14.2		
2011	4.4 a	3.5 b	10.7 b	12.9 a		
2012	7.4 a	7.4 a 6.0 b		13.2		
SE	(0.	04)	(0.04)			

[^]In year 2 of the 2011 forage stand, the RH treatment was cut two weeks earlier than the SH treatment at each cutting, partly for quality purposes and partly in response to PLHs on two occasions. In contrast, the SH forage received 2 rounds of insecticide in response to PLHs in the summer months. Table 10. Least square means for quality data for pure alfalfa (SH) and triticale, pea, alfalfa, and orchardgrass (RH) in A) establishment year and B) 1st production year. Different letters within a harvest date, main management, and year indicate a difference in herbicide management at the P < 0.05 level. CP = crude protein, NDF = natural detergent fiber, ADF = acid detergent fiber, NEL = net energy of lactation, and RFV = relative forage value. (SE) for each year x quality data is indicated

A) Esta	blishment Year		%	СР	% r	NDF	%	ADF	NEL (N	lcal Lb⁻¹)	RFV	Score
Year	Harvest Date	Туре	RH	SH	RH	SH	RH	SH	RH	SH	RH	SH
2010	6/29	silage	17.1 b	20.5 a	51.8 a	35.7 b	37.2 a	29.1 b	0.605 b	0.678 a	107.8 b	173.0 a
	RH: 8/26 SH: 8/3	hay	18.9 b	25.0 a	43.6	44.0	33.9	32.6	0.573 a	0.528 b	133.7	134.2
	9/4	hay	-	25.3	-	38.6	-	38.6	-	0.650	-	158.7
		(SE)	(0	.9)	(1	.1)	(1	.0)	(0.0	010)	(4	.9)
2011	6/20	silage	19.9 b	23.3 a	57.4 a	32.2 b	39.5 a	25.5 b	0.555 b	0.720 a	94.3 b	200.0 a
	8/10	hay	23.3 b	29.0 a	45.9 a	39.7 b	32.1	30.1	0.530 b	0.624 a	130.0 b	153.7 a
	10/7	silage	18.5 b	21.6 a	48.0 a	40.3 b	31.9	34.2	0.643	0.634	124.4 b	144.1 a
		(SE)	(1	.0)	(1	.3)	(1	.1)	(0.0	010)	(5	.7)
2012	6/20	silage	19.0 b	31.0 a	54.3 a	30.7 b	37.8 a	25.9 b	0.567 b	0.677 a	102.5 b	208.5 a
	7/30	hay	21.7 b	25.0 a	43.9 a	37.1 b	33.9	31.2	0.587 b	0.633 a	132.2 b	163.9 a
	9/6	hay	20.1	22.3	45.2 a	40.3 b	33.6	33.0	0.580	0.593	129.2 b	145.9 a
		(SE)	(1	.0)	(1	.3)	(1	.1)	(0.0	010)	(5	.8)
B) 2nd	Year		%	СР	% r	NDF	%	ADF	NEL (Mcal Lb ⁻¹)		RFV	Score
Year	Harvest Date	Туре	RH	SH	RH	SH	RH	SH	RH	SH	RH	SH
2011	6/29	silage	15.6 b	21.8 a	59.5 a	47.2 b	43.6 a	37.7 b	0.490 b	0.567 a	85.7 b	118 a
	RH: 8/26 SH: 8/3	hay	20.6	21.4	45.8 a	38.3 b	31.5	31.2	0.647	0.657	131 b	157 a
	Q/A	hay	24.5 b	27.3 a	43.2 a	38.6 b	31.5	32.3	0.620	0.620	139	15/
	5/4		24.6 h	276a	49.6 a	40.4 h	35 0 a	31 1 h	0 580	0.600	116 h	134
			21.05	27.00	15.0 0		55.0 u	51.1 0	0.500	0.000		149 a
			21.9 b	25.8 a	46.1 a	34.1 b	31.8	29.0	0.653 b	0.687 a	129 b	181 a
	<i>c</i> /22	(SE)	(0	.8)	(1	.4)	(1	.2)	(0.0	010)	(5	.8)
2012	6/20	silage	22.0 b	24.5 a	42.4	45.5	30.1 b	35.7 a	0.667 a	0.580 b	144 a	125 b
	8/10	hay	18.1 b	25.3 a	49.5 a	43.4 b	33.9	34.2	0.613	0.600	11/b	134 a
	10/7	silage	17.7 b	23.5 a	52.5 a	41.2 b	32.6	34.5	0.577	0.600	113 b	141 a
			25.3	25.1	44.4 a	50.4 b	31.5 b	35.9 a	0.637 a	0.513 b	135 b	112 a
		(05)	21.2	-	49.0	-	34.0	-	0.590	-	120	-
2012	c/20	(SE)	21.7 h	.8)	(1	.3) 42 E b	25.6	.2)	0.0	010)	(5	.8)
2015	0/20	slidge	21.7 D	25.5 d	51.0 d	42.5 D	20.0	24.0	0.560	0.590	110	130
	7/30	nay	20.5 0	24.6 a	51.6 a	42.0 D	36.1	34.0	0.593	0.610	110 0	138 a
	9/6	nay	21.5	23.2	48.8 a	40.8 D	36.3	33.8	0.580	0.607	116.0	143 a
			23.5	24.3	41.0	31.3	32.6	31.1	0.630	0.647	145	101
		(SE)	- (0	- 8)	- (1	- 3)	- (1	- 2)	- (0)	-	- (5	- 8)
		(32)	(0	.07	(1		(1	1	(0.0	5101	(5	,

Table 11. Economic value, cost of production and economic returns for each harvest and in total in the first year or the establishment year, second year of production, and two year total for RH and SH treatments in years 2010-2013. Costs of production includes variable costs of production (seed, fertilizer, herbicides, insecticides, labor, fuel, and custom hire costs) but not the fixed land cost.

	201	10	2011		2012	2
Year 1, Harvest	RH	SH	RH	SH	RH	SH
			\$ ha	-1		
First	366	202	176	33	414	192
Second	207	431	79	198	132	281
Third	NA	244	163	193	277	391
Total Yr 1 Economic value	573	633	255	231	546	472
Total Yr 1 Costs	918	852	757	730	904	841
Yr 1 Economic return	-345	-219	-501	-498	-358	-368

	2011		2012	2	2013	
Year 2, Harvest	RH	SH	RH	SH	RH	SH
			\$ ha	ι^{-1}		
First	800	1123	691	1151	1009	1435
Second	507	625	522	1027	849	995
Third	410	490	401	415	637	716
Fourth	560	850	335	734	557	601
Fifth	324	287	548	NA		
Total Yr 2 Economic value	2601	3374	2497	3326	3052	3747
Total Yr 2 Costs	672	672	620	655	681	681
Yr 2 Economic return	1929	2702	1877	2671	2371	3066
2 Yr Total Economic return	1584	2483	1376	2172	2013	2698

BMSH unit cost per crop per year									
Crop	2010	2011	2012	2013	2014				
			\$/bushel						
Canola	0.51	0.34	0.39	0.26	-				
Soybeans	3.59	5.62	5.74	4.75	4.98				
Corn	1.96	1.77	2.41	1.65	1.55				
Rye/wheat	2.88	5.53	3.29	-	12				
			\$/ton						
Alfalfa/grass silage	86.34	23.36	-	-	-				
Alfalfa silage	31.32	29.42	22.39	40.69	26.20				
Alfalfa/grass hay	188.32	145.45	270.91	122.42	128.66				
Alfalfa hay	5.75	152.97	197.78	65.84	66.61				
Alfalfa/grass wet wraps	78.91	115.22	153.38	122.47	34.04				
Alfalfa wet wraps	118.72	86.42	109.37	-	52.75				
Corn silage	29.20	39.12	36.02	36.21	32.35				
Red clover wet wraps	30.96	59.99	40.89	55.22	29.33				
Sorghum-Sudan silage	-	-	61.57	-	46.61				
RC/Tim/Alfhay	-	2	-	77.29	6				
Ryelage	-	-	-	-	35.83				
Straw	163.06	379.36	91.20	67.65	1.7				

Table 12. Unit cost per ton or bushel for all home raised feeds from 2010 through 2014. Broadcast manure, standard herbicide (BMSH).

IMRH unit cost per crop per year									
Crop	2010	2011	2012	2013	2014				
			\$/bushel						
Canola	0.48	0.34	0.28	0.25	-				
Soybeans	3.46	5.93	7.18	4.39	5.18				
Corn	1.77	1.53	2.32	1.74	1.61				
Rye/wheat	5.06	5.56	3.24	-	-				
			\$/ton						
Alfalfa/grass silage	54.41	38.79	99.36	50.23	40.05				
Alfalfa/grass hay	59.93	117.92	195.61	120.75	97.93				
Alfalfa/grass wet wraps	-	152.91	2	123.12	20.38				
Corn silage	31.01	39.17	33.19	34.37	32.43				
Red clover wet wraps	31.07	71.12	46.46	72.29	31.52				
Sorghum-Sudan silage	25	_	49.46	2	33.74				
Triticale	57.41	156.79	67.56	246.95	115.16				
Ryelage	-	-	5	-	29.73				
Straw	182.76	426.54	97.18	58.50	-				

Table 13. Unit cost per ton or bushel for all home raised feeds from 2010 through 2014. Injection manure, reduced herbicide (IMRH).