

Table 8: Crop yields (Mg/ha) from the Grain rotation that compares reduced herbicide (RH) and "standard" herbicide (SH) treatments.

Crop	Year	RH (6 yr)	SH (6 yr)	SE	Constrast RH vs. SH	
		Mg ha⁻¹				p value
Corn Grain	2010	10.94	10.61	0.29	0.450	
	2011	8.95	8.39	0.25	0.127	
Soybean Grain	2010	4.33	4.22	0.26	0.791	
	2011	2.78	3.34	0.25	0.132	
Forages Yr. 1	2010	6.95	8.60	0.57	0.001	
	2011	4.42	3.46	0.39	0.020	
Forages Yr. 2	2010	8.30	8.90	0.57	0.145	
	2011	14.06	14.16	0.39	0.755	
Forages Yr. 3	2010	4.58	6.16	0.40	0.001	
	2011	9.44	10.35	0.39	0.026	
Canola	2010	1.42	1.01	0.30	0.380	
	2011	2.06	1.99	0.25	0.843	

Tests of Fixed Effects

Source of Variation	df	p value	
Year		2010	2011
Crop	5	<0.001	<0.001
Weed Mgt	1	0.008	0.983
MainMgt*Crop	5	0.005	0.025

Table 9: Forage yield (Mt/ha) by harvest date for the GRAIN rotation in 2011. Management comparison is reduced herbicide (RH) vs. "standard" herbicide. RH treatment is alfalfa, orchard grass, pea, and triticale; the SH treatment is alfalfa alone.

Crop Entry	Harvest Date	Dry Matter Yield (Mt/ha)		
		RH	SH	(SE)
Forage Yr. 1 (cut #1)/silage	6/20/2011	1.93 a	0.26 b	0.117
Forage Yr. 1 (cut #2)/hay	8/10/2011	0.77 b	1.51 a	0.117
Forage Yr. 1 (cut #3)/silage	10/7/2011	1.72	1.69	0.117
Forage Yr. 2 (cut #1)/silage	6/3/2011	5.22	5.09	0.266
Forage Yr. 2 (cut #2)/hay	7/1/2011	2.56	2.67	0.266
Forage Yr. 2 (cut #3)/silage	8/1/2011	1.93	1.94	0.266
Forage Yr. 2 (cut #4)/silage	8/31/2011	2.74	3.32	0.266
Forage Yr. 2 (cut #5)/silage	11/3/2011	1.60	1.13	0.266
Forage Yr. 3 (cut #1)/silage	6/3/2011	5.24	5.15	0.263
Forage Yr. 3 (cut #2)/hay	7/1/2011	2.64	2.59	0.263
Forage Yr. 3 (cut #3)/silage	8/1/2011	1.56	2.61	0.263

a,b: Different lowercase letters between RH and SH for a particular variable indicate a statistical difference between main management treatments at the 0.05 level.

Table 10: Forage and feed quality analyses for the GRAIN rotation in 2011. The main management comparison in this rotation is reducing herbicide (RH) use via a variety of weed management tactics compared to a more "standard" herbicide program. In the RH rotation, forage is composed of alfalfa, orchard grass, pea, triticale, with pea and triticale permanently removed in the first cutting (year 1). In the SH rotation, forage is pure alfalfa for all three years. Standard errors (SE) are presented.

Crop Entry	Harvest Date	% Crude Protein			% Neutral Detergent Fiber			Net Energy of Lactation (Mcal/lb)		
		RH	SH	(SE)	RH	SH	(SE)	RH	SH	(SE)
Canola [^]	9/13/11	37.00	37.20	--	29.30	28.00	--	0.880	0.880	--
Corn Grain	9/13/11	8.47	8.53	(0.25)	11.27	10.30	(0.99)	0.950	0.950	(0.006)
Soybean	7/5/11	38.00	37.87	(0.81)	24.03	18.93	(3.55)	1.190	1.200	(0.014)
Forage Yr. 1 (cut #1)/silage	6/20/11	19.9	23.25	(0.90)	57.38 a	32.20 b	(1.06)	0.555 b	0.720 a	(0.012)
Forage Yr. 1 (cut #2)/hay	8/10/11	23.30*	29.04	(1.04)	45.96 a	39.72 b	(1.20)	0.529 b	0.624 a	(0.013)
Forage Yr. 1 (cut #3)/silage	10/7/11	18.50	21.57	(1.04)	47.99 a	40.32 b	(1.20)	0.643	0.635	(0.013)
Forage Yr. 2 (cut #1)/silage	6/3/11	15.63	21.83	(0.85)	59.53	47.17	(1.86)	0.490 a	0.567 b	(0.011)
Forage Yr. 2 (cut #2)/hay	7/1/11	20.57	21.40	(0.85)	45.77	38.30	(1.86)	0.647	0.657	(0.011)
Forage Yr. 2 (cut #3)/silage	8/1/11	24.53*	27.30	(0.85)	43.20 *	38.60	(1.86)	0.620	0.620	(0.011)
Forage Yr. 2 (cut #4)/silage	8/31/11	24.60	27.57	(0.85)	49.63	40.40	(1.86)	0.580	0.600	(0.011)
Forage Yr. 2 (cut #5)/silage	11/3/11	21.87	25.83	(0.85)	41.73	34.07	(1.86)	0.653	0.687	(0.011)
Forage Yr. 3 (cut #1)/silage	6/3/11	15.63 a	21.83 b	(0.80)	59.53 a	47.17 b	(1.44)	0.490 b	0.567 a	(0.014)
Forage Yr. 3 (cut #2)/hay	7/1/11	20.60	22.40	(0.80)	49.00 a	37.13 b	(1.44)	0.633	0.670	(0.014)
Forage Yr. 3 (cut #3)/silage	8/1/11	24.87	27.30	(0.80)	42.87	38.60	(1.44)	0.643	0.620	(0.014)

a,b: Different lowercase letters between RH and SH for a particular variable indicate a statistical difference between main management treatments at the 0.05 level.

—*—: Indicates a main management difference across cuttings for a particular forage crop entry point at the 0.05 level.

[^]For canola, results shown are the averages from two representative samples and were not analyzed statistically.