

Table 1. Grain crop performance at the LTAR.

Rotation ²	Corn				Soybean		Oat		Wheat		Alfalfa
	Yield bu/acre	Population plants/acre	LSNT $\mu\text{g}\cdot\text{g}^{-1}\text{N}\cdot\text{NO}_3$	Stalk nitrate (ppm)	Yield bu/acre	Population plants/acre	Yield bu/acre	Straw tons/acre	Yield bu/acre	Straw tons/acre	Yield (tons/acre)
Conv. C-S	187.52b ^y	26,500	53.56a	5061.25a	61.31ab	115,750ab	N/A	N/A	N/A	N/A	N/A
Org. C-S-O/A	191.38b	26,250	14.63b	2456.00b	65.04a	92,500c	108.26	1.00	N/A	N/A	N/A
Org. C-S-O/A-A	209.35a	25,083	16.25b	3098.75b	58.59b	106,917b	104.26	0.91	N/A	N/A	3.32
Org. S-W	N/A	N/A	N/A	N/A	53.12c	123,000a	N/A	N/A	46.97	0.84	N/A
LSD _{0.05}	6.41	NS	11.65	1415.98	3.78	11.46	NS	NS	N/A	N/A	N/A

²C = corn, S = soybean, O = oat, and A = alfalfa.^yMeans within a column are not statistically different (NS), or different at $P \geq 0.05$ (Fisher's protected LSD test).**Table 2. Weed populations at the LTAR.**

Treatment	Corn				Soybean			
	June 5, 2007		June 20, 2007		June 11-21, 2007		June 27, 2007	
	Grass	Broadleaves	Grass	Broadleaves	Grass	Broadleaves	Grass	Broadleaves
Conv. C-S	0.00 ^y	0.25	0.58	0.58	0.17	3.33	4.92a	0.50b
Org. C-S-O/A	0.00	0.08	0.00	0.67	0.33	0.92	0.42b	0.00b
Org. C-S-O/A-A	0.08	0.83	0.00	0.58	0.17	2.75	0.17b	0.00b
Org. S-W	N/A	N/A	N/A	N/A	0.42	0.75	3.92a	59.75a
LSD _{0.05}	NS	NS	NS	NS	NS	NS	1.92	9.95

²C = corn, S = soybean, O = oat, and A = alfalfa.^yMeans within a column are not statistically different (NS), or different at $P \geq 0.05$ (Fisher's protected LSD test).**Table 3. Insect populations at the LTAR.**

Treatment	Corn borer damage (%)	Soybean cyst nematode (eggs/100 cc)	Bean leaf beetle population average	Bean leaf beetle peak population	Pest insect population average	Pest peak population	Beneficial insects population average	Beneficial insect peak population
			Insects/20 sweeps		Insects/20 sweeps		Insects/20 sweeps	
Conv. C-S	0.00 ^y	0.00	1.50	3.00b	119.50	586.00	4.00	17.25
Org. C-S-O/A	0.17	0.00	1.85	2.25b	124.50	601.50	5.50	23.00
Org. C-S-O/A-A	0.08	25.00	1.50	1.50b	217.75	1,073.75	6.20	26.00
Org. S-W	N/A	0.00	1.55	7.50a	146.60	724.25	6.25	29.25
LSD _{0.05}	NS	NS	NS	4.24	NS	NS	NS	NS

²C = corn, S = soybean, O = oat, and A = alfalfa.^yMeans within a column are not statistically different (NS), or different at $P \geq 0.05$ (Fisher's protected LSD test).**Table 4. Grain quality at the LTAR.**

Treatment	Corn					Soybean					Wheat		Kettle test wt (kg hL ⁻³)
	Density	Starch	Oil	Protein	Moisture	Carbohydrates	Linolenic	Oil	Protein	Moisture	Protein	Moisture	
Conv. C-S	1.28 ^y	60.11b	3.56	8.48a	17.85	24.95	8.20a	18.72	33.83	13.15b	N/A	N/A	N/A
Org. C-S-O/A	1.29	60.55a	3.55	8.10b	17.83	24.94	7.96ab	18.80	33.76	13.53ab	N/A	N/A	N/A
Org. C-S-O/A-A	1.29	60.43a	3.53	8.33ab	18.54	24.76	7.70c	18.58	34.16	13.70a	N/A	N/A	N/A
Org. S-W	N/A	N/A	N/A	N/A	N/A	25.25	7.92bc	18.87	33.38	13.17b	13.78	12.93	73.56
LSD _{0.05}	NS	0.29	NS	0.28	NS	NS	0.26	NS	NS	0.42	N/A	N/A	N/A

²C = corn, S = soybean, O = oat, and A = alfalfa.^yMeans within a column are not statistically different (NS), or different at $P \geq 0.05$ (Fisher's protected LSD test).