Appendix Table 7. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2001.

2001 Swine Manure Nutrient Utilization Project
N Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate targets: (before corn) Low = 75 lb N/ac, High = 150 lb N/ac; (before SB) Low = 100 lb N/ac, High = 200 lb N/ac.
[2] Blanket fertilizer application of 60 lb P_2O_5/acre and 60 lb K_2O/acre applied to fertilizer N rate small-plot area.
[3] Late-Spring soil NO_3^--N (LSNT) values offer a soil sample-based estimate of plant-available soil NO_3^--N in the top foot of soil when corn is 6-12 in. tall.
[4] SPAD chlorophyll meter readings measure relative corn ear leaf greenness when corn is near R1 growth stage. Larger values = greener leaves.
[5] End-of-season cornstalk test measures NO_3^--N in the lower stalk at physiological maturity. Larger values suggest greater plant NO_3^--N avail. "BDL" is < 20 ppm.

Field sites with liquid swine manure applied before 2001 corn crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer N Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer N Rate (lb/acre) Effect on Late-Spring Soil NO_3^--N (ppm)[3]				Fertilizer N Rate (lb/acre) Effect on SPAD Chlorophyll Meter Readings at R1 Stage[4]				Fertilizer N Rate (lb/acre) Effect on End-of-Season Cornstalk NO_3^--N (ppm)[5]			
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Cerro Gordo	Clear Lake	Check	0	0	0	152	169	172	181	9	- - -	22	- - -	54	59	61	62	BDL	954	2438	5903
"CORN after SB" field site		P-60	92	58	66	174	190	185	182	15	- - -	26	- - -	60	61	63	63	2360	3513	5390	8843
Manure injected 04/29/2001		P-100	154	97	111	190	182	204	176	18	- - -	32	- - -	60	63	59	62	1613	5537	9840	11667
			N	P_2O_5	K_2O	0	60	120	180	0	60	120	180	0	60	120	180	0	60	120	180
Cerro Gordo	Clear Lake	Check	0	0	0	170	182	192	192	16	- - -	29	- - -	55	58	59	59	146	3303	5970	9273
"CONTINUOUS CORN" field site		P-60	94	60	66	177	173	185	179	17	- - -	33	- - -	58	60	61	61	1927	5667	10663	10853
Manure injected 04/29/2001		N-192	211	134	150	179	175	189	185	23	- - -	37	- - -	58	60	60	61	1510	7953	10020	11400
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Clay	Rossie	Check	0	0	0	129	158	177	172	12	- - -	23	- - -	52	52	54	55	25	29	150	2463
"CORN after SB" field site		Low[1]	71	35	38	147	157	177	179	12	- - -	34	- - -	54	54	52	57	20	194	1420	2560
Manure applied & inc. 05/15/2001		High[1]	142	70	77	148	174	172	179	14	- - -	39	- - -	52	56	56	57	67	667	2598	3563
			N	P_2O_5	K_2O	0	60	120	180	0	60	120	180	0	60	120	180	0	60	120	180
Hardin	Iowa Falls	Check	0	0	0	159	184	189	182	8	- - -	29	- - -	52	52	55	55	91	778	2565	3458
"CONTINUOUS CORN" field site		P-60	69	55	45	171	183	188	196	10	- - -	31	- - -	52	53	55	54	309	2560	3445	5685
Manure injected 04/26/2001		N-190	189	150	122	189	183	187	196	19	- - -	38	- - -	57	57	59	58	3760	4290	4833	6840
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Story	Story City	Check	0	0	0	"Overplanting" an earlier-maturing				15	- - -	37	- - -	58	62	64	64	1339	1697	2643	4567
"CORN after SB" field site		Low	85	73	48	hybrid in some low-population small				18	- - -	30	- - -	65	64	66	64	1815	4310	4283	4843
Manure injected 11/10/2000		High	171	146	96	plots invalidated yield results.				20	- - -	51	- - -	62	64	63	63	4853	6043	8980	8967
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Washington	West Chester	Check	0	0	0	147	155	187	213	3	- - -	9	- - -	42	45	52	53	79	BDL	28	101
"CORN after SB" field site		Low	105	74	62	207	204	231	227	7	- - -	17	- - -	55	55	58	60	130	46	1156	1415
Manure injected 11/10/2000		High	189	140	112	237	227	240	233	10	- - -	16	- - -	53	56	60	62	58	897	1135	1455
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Wright	Dows	Check	0	0	0	132	171	182	198	4	- - -	13	- - -	43	53	55	58	45	21	1304	4547
"CORN after SB" field site		Low	91	65	61	165	177	192	191	12	- - -	23	- - -	54	55	54	55	1564	2989	6453	6497
Manure injected 11/10/2000		High	181	130	122	183	189	190	181	19	- - -	23	- - -	57	57	57	56	3720	5830	6833	7007

Appendix Table 7 continued. Preliminary small-plot yield and related measures response to liquid swine manure and fertilizer application from each demonstration site, 2001.

2001 Swine Manure Nutrient Utilization Project
N Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate targets: (before corn) Low = 75 lb N/ac, High = 150 lb N/ac; (before SB) Low = 100 lb N/ac, High = 200 lb N/ac.

[2] Blanket fertilizer application of 60 lb P_2O_5/acre and 60 lb K_2O/acre applied to fertilizer N rate small-plot area.

[3] Late-Spring soil NO_3^--N (LSNT) values offer a soil sample-based estimate of plant-available soil NO_3^--N in the top foot of soil when corn is 6-12 in. tall.

[4] SPAD chlorophyll meter readings measure relative corn ear leaf greenness when corn is near R1 growth stage. Larger values = greener leaves.

[5] End-of-season cornstalk test measures NO_3^--N in the lower stalk at physiological maturity. Larger values suggest greater plant NO_3^--N avail. "BDL" is < 20 ppm.

Field sites with liquid swine manure applied before 2000 soybean crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer N Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer N Rate (lb/acre) Effect on Late-Spring Soil NO_3^--N (ppm)[3]				Fertilizer N Rate (lb/acre) Effect on SPAD Chlorophyll Meter Readings at R1 Stage[4]				Fertilizer N Rate (lb/acre) Effect on End-of-Season Cornstalk NO_3^--N (ppm)[5]			
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Clay	Spencer	Check	0	0	0	99	120	149	134	8	- - -	18	- - -	41	47	52	51	BDL	BDL	31	197
"SB after CORN" field site		Low[1]	114	73	54	104	131	147	152	7	- - -	17	- - -	47	49	52	54	BDL	BDL	104	239
Manure applied 4/26, inc. 4/27/00		High[1]	228	146	109	125	170	163	172	8	- - -	17	- - -	50	53	55	56	BDL	350	192	738
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Webster	Fort Dodge	Check	0	0	0	173	204	209	219	9	- - -	21	- - -	57	60	61	61	66	64	385	956
"SB after CORN" field site		Low	91	58	59	178	200	215	229	9	- - -	15	- - -	60	60	60	61	28	71	149	1023
Manure injected 04/24/2000		High	182	115	118	175	198	221	225	9	- - -	17	- - -	58	59	62	61	BDL	155	616	2917

Appendix Table 7 continued. Preliminary small-plot yield and related measures response to liquid swine manure and fertilizer application from each demonstration site, 2001.

2001 Swine Manure Nutrient Utilization Project
P Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before corn) Low = 75, High = 150; (before SB) Low = 100, High = 200.
[2] Blanket fertilizer application of 150 lb total N/acre and 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.
[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.
[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values.

Initial Bray-1 soil test P range by site: Clay: 5-29 ppm; Floyd: 12-27 ppm; Hardin: 3-42 ppm; Washington: 6-130 ppm; Wright: 18-53 ppm
Residual-year sites - Clay: 43-60 ppm; Webster: 16-34 ppm (both sites sampled Spring 2000)

Field sites with liquid swine manure applied before 2001 corn crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4]			
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Clay	Rossie	Check	0	0	0	151	167	182	169	27	29	27	34	1.02	1.1	1.13	1.42	6	6	8	10
"CORN after SB" field site		Low[1]	71	35	38	161	174	185	176	25	24	32	32	0.99	0.64	1.28	1.34	9	9	11	17
Manure applied & inc. 05/15/2001		High[1]	142	70	77	171	187	176	185	27	31	32	34	1.04	1.18	1.23	1.34	16	26	23	33
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Floyd	Nashua	Check	0	0	0	145	151	152	154	42	43	39	42	1.83	1.72	1.63	1.90	31	25	24	32
"CORN after SB" field site		P-60	103	55	81	151	154	149	160	43	45	44	44	1.85	1.93	1.90	1.91	33	29	34	33
Manure injected 04/27/2001		P-120	207	110	163	161	157	160	159	44	45	47	44	1.85	1.90	1.85	1.82	38	35	30	36
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Hardin	Iowa Falls	Check	0	0	0	195	194	177	208	20	22	23	21	0.88	0.90	1.08	0.99	31	43	40	32
"CORN after SB" field site		P-100	115	91	75	212	212	198	211	24	25	23	21	1.20	1.23	1.10	1.04	30	30	37	32
Manure injected 04/26/2001		N-193	192	152	124	236	216	232	225	25	23	27	28	1.22	1.14	1.40	1.48	32	33	44	39
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Washington	West Chester	Check	0	0	0	217	202	209	214	21	20	20	19	0.81	0.78	0.79	0.74	46	54	58	58
"CORN after SB" field site		Low	105	74	62	241	235	231	251	16	21	17	21	0.68	0.83	0.69	0.91	43	55	66	89
Manure injected 11/10/2000		High	189	140	112	245	245	258	240	32	30	25	36	1.26	1.24	0.95	1.44	30	29	33	35
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Wright	Dows	Check	0	0	0	173	185	175	178	12	15	16	14	0.32	0.39	0.43	0.32	39	42	49	40
"CORN after SB" field site		Low	91	65	61	185	198	201	201	17	16	18	17	0.46	0.46	0.50	0.51	37	54	45	53
Manure injected 11/10/2000		High	181	130	122	202	198	193	188	19	19	20	20	0.72	0.63	0.59	0.52	48	56	45	49

Appendix Table 7 continued. Preliminary small-plot yield and related measures response to liquid swine manure and fertilizer application from each demonstration site, 2001.

2001 Swine Manure Nutrient Utilization Project
P Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before corn) Low = 75, High = 150; (before SB) Low = 100, High = 200.

[2] Blanket fertilizer application of 150 lb total N/acre and 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.

[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values.

Initial Bray-1 soil test P range by site: Clay: 5-29 ppm; Floyd: 12-27 ppm; Hardin: 3-42 ppm; Washington: 6-130 ppm; Wright: 18-53 ppm
Residual-year sites - Clay: 43-60 ppm; Webster: 16-34 ppm (both sites sampled Spring 2000)

Field sites with liquid swine manure applied before 2000 soybean crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4]			
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Clay	Spencer	Check	0	0	0	137	151	138	147	26	26	28	28	1.08	1.07	1.14	1.15	42	46	43	41
"CORN after SB" field site		Low[1]	114	73	54	151	150	144	139	26	27	30	33	1.09	1.13	1.23	1.38	48	47	44	56
Manure applied 4/26, inc. 4/27/00		High[1]	228	146	109	149	148	158	168	33	29	32	33	1.22	1.18	1.23	1.36	55	51	70	63
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Webster	Fort Dodge	Check	0	0	0	213	198	187	213	55	50	43	48	2.16	1.91	1.63	1.88	27	26	20	21
"CORN after SB" field site		Low	91	58	59	216	210	210	207	43	51	38	41	1.63	1.97	1.51	1.52	19	20	26	21
Manure injected 04/24/2000		High	182	115	118	206	205	204	213	50	49	45	57	2.04	1.96	1.83	2.31	30	30	28	33

Appendix Table 7 continued. Preliminary small-plot yield and related measures response to liquid swine manure and fertilizer application from each demonstration site, 2001.

2001 Swine Manure Nutrient Utilization Project
P Fertilizer SOYBEAN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before SB) Low = 100, High = 200; (before corn) Low = 75, High = 150.
[2] Blanket fertilizer application of 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.
[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.
[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values.
Initial Bray-1 soil test P range by site: First-year sites: Clay - 6 to 17 ppm; Washington - 9 to 18 ppm
Residual site: Webster - 16 to 34 ppm (sampled Spring 2000)

Field sites with liquid swine manure applied before 2001 soybean crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre)[2]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth grams/10 plants)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4]			
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Clay	Rossie	Check	0	0	0	39	38	39	40	28	24	26	26	0.78	0.69	0.73	0.77	12	12	15	18
"SB after CORN" field site		Low[1]	100	53	54	40	36	39	37	26	25	30	29	0.74	0.73	0.90	0.85	20	17	22	21
Manure applied & inc. 5/15/2001		High[1]	201	105	109	41	40	38	40	37	35	34	34	1.08	1.06	1.09	1.03	21	20	23	28
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Washington	West Chester	Check	0	0	0	37	39	38	42	25	25	29	28	0.68	0.64	0.74	0.75	12	15	16	19
"SB after CORN" field site		Low	114	68	61	41	42	42	41	34	32	34	42	0.92	0.82	0.91	1.03	14	15	16	18
Manure injected 04/19/2001		High	201	125	114	37	40	40	38	39	48	43	36	1.06	1.27	0.97	0.97	17	20	27	23

Field sites with liquid swine manure applied before 2000 corn crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre)[2]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth grams/10 plants)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3]				Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4]			
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Webster	Fort Dodge	Check	0	0	0	34	34	35	37	24	29	33	26	0.78	0.95	1.10	0.89	13	14	15	13
"SB after CORN" field site		Low[1]	70	48	43	33	34	32	33	25	25	25	33	0.81	0.80	0.84	1.13	12	16	16	20
Manure injected 4/24/2000		High[1]	139	96	86	36	38	37	38	21	20	23	21	0.64	0.66	0.75	0.67	15	18	21	20