

Table S1 – Information regarding the validation sites settings, preplant and sidedress applications. Pre-plant application rates and form were identical for Adapt-N's and the Grower's treatments.

Site	Year	State	County	Soil series or class	Prev. crop€	OM %	Root zone depth (cm)	Pre-plant information				Sidedress Information			
								Rate† (kg ha ⁻¹)	Form‡	Placement (cm)	# of reps	SD date	Form ‡	Placement (cm)	Growth stage¥
1	2014	NY	Wayne	Williamson	SOY	3.0	51	10(s)/50(pe)	MAP/AA	8	3	20/6	UAN	8	V6
2	2014	NY	Cayuga	Langford	CG	4.3	71	56(p)/17(s)	Urea/MAP	3/8	3	23/6	UAN	8	V6
3	2014	NY	Wayne	Honeyoye	CG	2.8	71	20(s)	MAP	8	3	2/7	UAN	Surface	V6
4	2014	NY	Essex	Muskellunge	CG	3.45	30	17(s)	AN	8	8	30/6	UAN	8	V8
5	2014	NY	Essex	Cosad	CG	1.7	30	17(s)	AN	8	8	30/6	UAN	8	V8
6	2014	NY	Cattaraugus	Tioga	LV	1.5	71	72(s)	UAN	3	4	12/7	UAN	8	V13
7	2014	NY	Cattaraugus	Tioga	LV	0.9	71	72(s)	UAN	3	4	12/7	UAN	8	V7
8	2014	NY	Cayuga	Lima	CG	3.3	51	27(S)	MAP	8	2	8/7	UAN	10	V6
9	2014	NY	Cayuga	Lima	CG	2.98	51	27(s)	MAP	8	2	8/7	UAN	10	V6
10	2014	IA	Chickasaw	Kenyon	CG	4.0	99	4(s)	MAP	3	4	21/6	UAN	8	V6
11	2014	IA	Chickasaw	Basset	SOY	4.0	99	118(p)	UAN	Surface	4	6/6	UAN	8	V4
12	2014	IA	Bremer	Basset	SOY	2.7	99	151(p)	UAN	Surface	4	5/6	UAN	8	V4
13	2014	IA	Chickasaw	Oran	SOY	4.2	99	45(p)	UAN	Surface	4	10/6	UAN	8	V4
14	2014	IA	Black Hawk	Silt Loam	SOY	4.0	99	56(p)	AA	23	4	9/6	AA	8	V6
15	2014	IA	Chickasaw	Oran	SOY	3.3	89	67(pe)	UAN	Surface	4	7/7	UAN	8	V9
16	2014	IA	Howard	Racine	CG	3.5	99	6(s)	MAP	3	4	12/6	UAN	8	V5
17	2013	NY	Essex	Muskellunge	CS	3.25	41	17(s)	AN	8	7	21/6	UAN	8	V7
18	2013	NY	Cayuga	Lima	CG	2.4	41	27(s)	DAP	3	2	7/7	UAN	8	V12
19	2013	NY	Wayne	Williamson	SOY	2.6	30	25(s)	APP	8	4	23/6	UAN	8	V6
20	2013	NY	Wayne	Ontario	SOY	3.8	30	25(s)/61(pe)	APP/UAN	8	2	24/6	UAN	10	V6
21	2013	NY	Wayne	Williamson	SOY	3.7	30	37(s)	APP	8	4	20/6	UAN	8	V6
22	2013	NY	Cayuga	Lyons	CG	3.5	41	63(s)	APP	8	2	25/6	UAN	18	V7
23	2013	NY	Wyoming	Volusia	CS	3.5	61	66(s)	UAN	8	2	8/7	UAN	surface	V11
24	2013	NY	Genesee	Odessa	SOY	2.0	41	157(p)/40(s)	UAN	18/8	2	15/7	UAN	surface	V16
25	2013	NY	Genesee	Ontario	SOY	1.3	61	157(p)/41(s)	UAN	18/8	2	15/7	UAN	surface	V16
26	2013	NY	Genesee	Ontario	SOY	1.3	61	157(p)/41(s)	UAN	18/8	2	15/7	UAN	surface	V16
27	2013	NY	Livingston	Conesus	CS	2.4	61	52(p)/4(s)	UAN	18/10	1	16/7	UAN	surface	V14

28	2013	IA	Pocahontus	Canisteo	SOY	4.9	51	50(p)/3(s)	UAN/MAP	3	4	27/6	UAN	5	V8
29	2013	IA	Pocahontus	Webster	SOY	4.2	51	50(p)/3(s)	UAN/MAP	3	4	27/6	UAN	5	V8
30	2013	IA	Cherokee	Primghar	SOY	3.9	99	0	0	0	4	18/6	UAN	5	V6
31	2013	IA	Fillmore	Racine	SOY	3.7	61	20(p)/34(pe)	DAP/UAN	18/surface	4	27/6	UAN	3	V7
32	2013	IA	Howard	Rockton	SOY	2.9	61	20(p)/34(pe)	DAP/UAN	18/surface	4	28/6	UAN	3	V6
33	2013	IA	Black Hawk	Kenyon	SOY	3.7	99	90(p)/34(pe)	AA/UAN	23	3	18/6	UAN	18	V5
34	2013	IA	Mills County	Silty Clay Loam	SOY	4.0	99	90(p)	UAN	8	5	12/6	UAN	18	V5
35	2012	NY	Cayuga	Silt Loam	CG	2.7	79	25(s)	APP	8	4	8/6	AP	18	V4
36	2012	NY	Cayuga	Silt Loam	CG	2.8	79	25(s)	APP	8	4	8/6	AP	18	V4
37	2012	NY	Cayuga	Silt Loam	CG	2.7	79	25(s)	UAN	8	4	8/6	AP	18	V4
38	2012	NY	Cayuga	Silt Loam	CG	2.1	51	37(s)	APP	3	4	5/6	AP	13	V4
39	2012	NY	Cayuga	Gravelly Silt Loam	SOY	2.7	79	25(s)	APP	8	2	16/6	AP	18	V5
40	2012	NY	Cayuga	Silt Loam	SOY	3.35	79	25(s)	APP	8	2	20/6	AP	18	V6
41	2012	NY	Cayuga	Silt Loam	CG	3.15	79	25(s)	APP	8	2	20/6	AP	18	V6
42	2012	NY	Montgomery	Fredon	SOY	4.47	71	43(s)	AS	8	4	15/6	AP	23	V5
43	2012	NY	Montgomery	Phelps	CG	3.85	79	43(s)	AS	8	4	11/6	AP	23	V6
44	2012	NY	Clinton	Bombay	CS	3.2	79	24(s)	AS	8	4	15/6	AS	18	V5
45	2012	NY	Clinton	Adjidaumo	CG	4.0	99	26(s)	AS	8	4	15/6	Urea	15	V5
46	2012	NY	Clinton	Adjidaumo	CS	4.36	41	24(s)	AS	3	4	1/7	UAN	8	V9
47	2012	NY	Essex	Muskellunge	CS	3.92	30	17(s)	AN	8	8	22/6	UAN	8	V6
48	2012	NY	Essex	Cosad	CS	1.97	30	17(s)	AN	8	8	22/6	UAN	8	V6
49	2012	NY	Cayuga	Lima	CG	2.71	71	17(s)	AN	8	2	26/6	AN	8	V7
50	2012	NY	Cayuga	Lima	CG	2.43	71	-	-	-	2	26/6	UAN	8	V7
51	2012	NY	Orleans	Silt Loam	CG	2.40	61	50(s)	UAN	8	4	5/7	UAN	8	V10
52	2012	NY	Orleans	Silt Loam	SOY	2.40	61	34(s)	UAN	8	4	5/7	UAN	8	V10
53	2012	NY	Wyoming	Sand	CS	3.3	71	102(p)/35(s)	UAN	18/8	3	5/7	UAN	8	V16
54	2012	NY	Genesee	Sand	CG	2.9	71	102(p)/35(s)	UAN	18/8	4	31/5	UAN	18	V5
55	2012	NY	Suffolk	Sandy Loam	CG	2.02	41	28(p)/54(s)	Urea/MAP	8/8	4	20/7	Urea	8	V8
56	2012	NY	Suffolk	Sandy Loam	CG	1.57	41	49(s)	MAP	8	4	10/7	UAN	8	V9
57	2012	NY	Seneca	Silt Loam	SOY	2.2	61	22(s)	APP	8	4	26/6	AA	18	V7
58	2012	NY	Lewis	Galway	SOD	5.9	61	3(s)	MAP	8	4	5/7	UN	8	V10
59	2012	NY	Cayuga	Silt Loam	CG	2.4	79	25(s)	APP	8	4	8/6	AA	18	V4
60	2012	NY	Cayuga	Silt Loam	CG	2.4	79	25(s)	APP	8	2	8/6	AA	18	V4

61	2012	NY	Cayuga	Sandy Loam	SOY	2.5	71	25(s)	APP	8	4	17/6	AA	18	V5
62	2012	NY	Cayuga	Sandy Loam	SOY	2.5	71	25(s)	APP	8	2	17/6	AA	18	V5
63	2012	NY	Cayuga	Silt Loam	SOY	1.8	79	25(s)	APP	8	4	15/6	AA	18	V5
64	2012	NY	Cayuga	Silt Loam	SOY	1.8	79	25(s)	APP	8	2	15/6	AA	18	V5
65	2012	NY	Cayuga	Silt Loam	CG	2.6	79	25(s)	APP	8	4	16/6	AA	18	V5
66	2012	NY	Cayuga	Silt Loam	CG	2.6	79	25(s)	APP	8	2	16/6	AA	18	V5
67	2012	NY	Cayuga	Silt Loam	CG	2.7	79	25(s)	APP	8	4	15/6	AA	18	V5
68	2012	NY	Cayuga	Silt Loam	CG	2.7	79	25(s)	APP	8	2	15/6	AA	18	V5
69	2012	NY	Cayuga	Silt Loam	CG	2.7	79	25(s)	APP	8	2	15/6	AA	18	V5
70	2012	NY	Cayuga	Silt Loam	CG	2.8	79	25(s)	APP	8	2	15/7	AA	18	V16
71	2012	NY	Cayuga	Silt Loam	CG	2.8	79	25(s)	APP	8	2	21/6	AA	18	V6
72	2012	NY	Cayuga	Silt Loam	CG	2.8	79	25(s)	APP	8	2	21/6	AA	18	V6
73	2012	NY	Cayuga	Silt Loam	CG	2.8	79	25(s)	APP	8	2	21/6	AA	18	V6
74	2012	NY	Cayuga	Silt Loam	CG	2.9	79	25(s)	APP	8	4	15/7	AA	18	V16
75	2012	NY	Cayuga	Silt Loam	CG	2.9	79	25(s)	APP	8	2	21/6	AA	18	V6
76	2012	NY	Cayuga	Silt Loam	CG	4.6	79	25(s)	APP	8	4	21/6	AA	18	V6
77	2012	IA	Buena Vista	Clarion	CG	3.2	99	25(s)	APP	8	4	11/6	UAN	8	V7
78	2012	IA	Buena Vista	Canisteo	SOY	6.3	99	34(s)	UAN	8	4	5/6	UAN	8	V4
79	2012	IA	Kossuth	Webster	SOY	5.02	99	101(p)/39(s)	Urea/Urea	13/8	4	13/6	UAN	13	V4
80	2012	IA	Kossuth	Webster	CG	4.0	99	39(s)	Urea	8	4	11/6	UAN	13	V5
81	2012	IA	Kossuth	Canisteo	SOY	4.0	99	67(s)	Urea	8	4	11/6	AN	10	V5
82	2012	IA	Kossuth	Clarion	SOY	3.25	99	123(p)/67(s)	Urea/UAN	13/8	4	13/6	AN	10	V5
83	2012	IA	Palo Alto	Webster	SOY	5.87	99	57(s)	Urea	8	4	11/6	AN	13	V7
84	2012	IA	Palo Alto	Canisteo	SOY	3.42	99	57(p)	Urea	8	4	11/6	AN	13	V6
85	2012	IA	Black Hawk	Dinsdale	SOY	3.27	99	90(p)	AA	9	4	30/5	AA	18	V5
86	2012	IA	Howard	Tripoli	CG	4.34	99	8(s)	MAP	8	4	11/6	UAN	8	V5
87	2012	IA	Winneshiek	Racine	CG	2.59	89	24(p)/34(p)/68(s)	AS/ DAP/UAN	8/8/8	4	25/6	UAN	8	V8
88	2012	IA	Chickasaw	Oran	CG	4.35	89	4(s)	MAP	8	4	12/6	UAN	8	V5
89	2012	IA	Chickasaw	Oran	SOY	3.1	99	3(s)	MAP	8	4	5/6	AA	23	V5
90	2012	IA	Chickasaw	Kenyon	CG	4	99	3(s)	MAP	2	4	4/6	AA	23	V4
91	2012	IA	Howard	Ostrander	SOY	3.8	99	17(p)/34(pe)	DAP/ UAN	18/ Surface	7	11/6	UAN	3	V5
92	2012	IA	Howard	Oran	SOY	3.7	61	17(p)/33(pe)	DAP/UAN	18/3	4	14/6	UAN	3	V7
93	2012	IA	Chickasaw	Readlyn	CG	4.4	89	10(s)	APP	3	4	5/6	UAN	8	V5
94	2011	NY	Cayuga	Silt Loam	CG	2.14	41	25(s)	MAP	8	4	19/6	AA	23	V4

95	2011	NY	Cayuga	Silt Loam	CG	2.8	71	56(s)	MAP	8	4	20/6	AA	23	V6
96	2011	NY	Clinton	Sandy Loam	CG	3.4	79	38(s)	Urea	3	3	5/7	AN	8	V12
97	2011	NY	Suffolk	Silt Loam	CG	2.5	79	52(s)	MAP	8	4	27/6	Urea	8	V5
98	2011	NY	Suffolk	Loam	CG	2.6	61	53(s)	Urea	8	4	26/6	Urea	8	V6
99	2011	NY	Wyoming	Silt Loam	CG	3.0	41	90(p)/34(s)	UAN/AS	18/8	4	7/7	UAN	8	V4
100	2011	NY	Clinton	Sand	CG	3.3	71	24(s)	AN	8	4	27/6	UAN	8	V6
101	2011	NY	Essex	Cosad	CG	1.9	41	17(s)	AN	8	8	13/7	UAN	8	V8
102	2011	NY	Essex	Muskellunge	CG	3.3	41	17(s)	AN	8	8	13/7	UAN	8	V8
103	2011	NY	Cayuga	Silt Loam	CG	3.0	41	28(s)	MAP	8	2	16/6	UAN	8	V5
104	2011	NY	Cayuga	Silt Loam	CG	3.0	41	28(s)	MAP	8	2	16/6	UAN	8	V5
105	2011	IA	Chickasaw	Oran	SOY	3.4	89	-	-	-	4	10/6	UAN	8	V5
106	2011	IA	Buena Vista	Canisteo	SOY	4.6	89	1(s)	AN	3	4	19/6	UAN	8	V7
107	2011	IA	Woodbury	Galva	SOY	2.9	99	135(p)/11(s)	AA /DAP	18/surface	4	6/6	UAN	8	V5
108	2011	IA	Cherokee	Galva	SOY	2.9	99	-	-	-	4	24/6	UAN	8	V8
109	2011	IA	Cherokee	Galva	SOY	3.7	99	129(p)/20(p)/8(p)	AA/DAP/AS	18/18/18	4	24/6	UAN	8	V8
110	2011	IA	Cherokee	Galva	SOY	4.0	99	129(p)/20(p)/9(p)	AA/DAP/AS	18/18/18	4	24/6	UAN	8	V8
111	2011	IA	Kossuth	Nicollet	SOY	3.6	79	45(pe)/1(s)	UAN/MAP	8/3	4	6/6	UAN	8	V4
112	2011	IA	Kossuth	Canisteo	CG	3.8	89	146(p)/34(s)	Urea/UAN	18/8	4	13/6	UAN	8	V5
113	2011	IA	Kossuth	Canisteo	CG	4.2	89	1(s)	MAP	3	4	16/6	UAN	8	V6

€ (CG) = Corn Grain; (CS) = Corn Silage; (SOY) = Soybean; (SOD)=Sod; (VL) = Vegetable legume

† (s) = Starter; (p) = pre-plant; (pe) = Pre-emergence

‡ MAP = Monoammonium Phosphate; AA = Anhydrous Ammonia; AN = Ammonium Nitrate; UAN = Urea Ammonium Nitrate; DAP = Diammonium Phosphate; APP = Ammonium Polyphosphate; AS = Ammonium Sulfate

¥ Simulated by Adapt-N