

**Droughts and floods in Malawi:
impacts on crop production and the performance of
sustainable land management practices under weather extremes**

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ONLINE APPENDIX

Appendix 1. Full descriptives (1 of 2)

	2013			2015			2016		
	N	Mean	SE	N	Mean	SE	N	Mean	SE
Ag Production Vars, Plot Level									
Maize Yield	1990	1805	48.4	424	776	42.4	2651	1135	24.3
Value Per Hectare	2837	331386	7930	527	125698	6156	3601	247852	4612
Low Maize Yield	1990	0.103	0.007	424	0.340	0.023	2651	0.246	0.008
Low Value Per Hectare	2837	0.111	0.006	527	0.393	0.021	3601	0.212	0.007
Maize Harvest	1990	525	15.90	424	221	15.04	2651	345	12.16
Production Value	2837	95216	3771	527	36146	2122	3601	71539	2074
Weather									
Rainfall Deviations	2837	0.208	0.003	527	0.326	0.010	3601	0.285	0.002
2016 Drought Shock	2837	0	0	527	0	0	3601	0.148	0.003
2015 Flood Shock	2837	0	0	527	0.285	0.020	3601	0	0
High Temperature Shocks	2837	0.011	0.004	527	0.000	0.000	3600	0.057	0.006
Climate									
Mean Rainfall, FS	2837	2.850	0.004	527	2.781	0.011	3601	2.839	0.003
CoV Rainfall, FS	2837	0.331	0.001	527	0.360	0.002	3601	0.335	0.001
Prob. Drought Shock	2837	0.180	0.001	527	0.188	0.002	3601	0.182	0.001
Prob. Flood Shock	2837	0.134	0.005	527	0.172	0.012	3601	0.132	0.005
Mean High Temp. Shock	2837	0.017	0.003	527	0.034	0.005	3600	0.019	0.003
SLM Practices									
MSD Tillage	2837	0.029	0.003	527	0.057	0.010	3601	0.040	0.003
Legume Intercrop	2837	0.320	0.009	527	0.376	0.021	3601	0.278	0.007
Bunds	2837	0.338	0.009	527	0.235	0.018	3601	0.219	0.007
Green Belts	2837	0.076	0.005	527	0.059	0.010	3601	0.095	0.005
SLM * Shocks									
Drought*MSD Tillage							1259	0.019	0.003
Drought*Legume Intercrop							1259	0.181	0.006
Drought*Bunds							1259	0.120	0.006
Drought*Green Belts							1259	0.020	0.003
Flood*MSD Tillage				150	0.047	0.017			
Flood*Legume Intercrop				150	0.393	0.040			
Flood*Bunds				150	0.200	0.033			
Flood*Green Belts				150	0.047	0.017			
Plot Characteristics									
Plot Size	2837	0.349	0.006	527	0.399	0.015	3601	0.347	0.006
Slope	2837	0.445	0.008	527	0.438	0.022	3600	0.430	0.006
Access Index	2837	4.341	0.065	527	3.644	0.136	3600	4.328	0.056
Dummy, Sandy Soil	2837	0.184	0.007	527	0.194	0.017	3601	0.221	0.007
Dummy, Clay Soil	2837	0.269	0.008	527	0.256	0.019	3601	0.263	0.007
Dummy, Owned	2837	0.873	0.006	527	0.935	0.011	3601	0.855	0.006
Dummy, Sell/Collateral	2837	0.495	0.009	527	0.000	0.000	3601	0.555	0.008
Dummy, Female Plot Mgr	2837	0.295	0.009	527	0.361	0.021	3601	0.468	0.008
Dummy, Joint Plot Mgr	2837	0.063	0.005	527	0.336	0.021	3601	0.197	0.007

Table is constructed across all plot observations used in the analysis

Appendix 1. Full descriptives (2 of 2)

	2013			2015			2016		
	N	Mean	SE	N	Mean	SE	N	Mean	SE
Plot Mgr Age (logs)	2837	3.717	0.007	527	3.785	0.016	3601	3.705	0.006
Production Inputs									
Household size	2837	5.411	0.044	527	5.389	0.098	3601	5.225	0.038
Dummy, Hired Labor	2837	0.339	0.009	527	0.230	0.018	3601	0.294	0.008
Maize seed (kg)	1990	9.444	0.216	424	8.085	0.419	2651	7.932	0.182
# weedings	2837	1.817	0.023	527	1.725	0.031	3601	1.826	0.019
Dummy, Pest./Herb.	2837	0.029	0.003	527	0.030	0.007	3601	0.041	0.003
Dummy, Organic Fert.	2837	0.143	0.007	527	0.256	0.019	3601	0.203	0.007
Dummy, Inorganic Fert.	2837	0.599	0.009	527	0.624	0.021	3601	0.609	0.008
Inorganic Fert. (kg)	2837	58.608	2.346	527	36.920	2.073	3601	33.753	1.077
Dummy, Cash Crops	2837	0.090	0.005	527	0.089	0.012	3601	0.083	0.005
Demographics & Wealth									
Highest Years of Educ.	2837	8.956	0.065	527	8.520	0.145	3601	9.166	0.056
Prop. Adults, English Lit.	2837	0.363	0.007	527	0.289	0.014	3601	0.369	0.006
Dummy, Head Disabled	2837	0.114	0.006	527	0.082	0.012	3601	0.101	0.005
Dummy, Spouse Disabled	2837	0.066	0.005	527	0.055	0.010	3601	0.075	0.004
Wealth Index	2837	0.213	0.003	527	0.202	0.006	3601	0.227	0.003
Ag. Implements Index	2837	0.270	0.004	527	0.208	0.008	3601	0.266	0.003
Mobile Phone	2837	0.754	0.020	527	0.753	0.038	3601	0.921	0.019
Dummy, Financial Acct.	2837	0.321	0.009	527	0.296	0.020	3601	0.349	0.008
Household Networks									
Dummy, HH Moved	2837	0.147	0.007	527	0.066	0.011	3601	0.119	0.005
# Adult Children Away	2837	1.126	0.037	527	1.294	0.086	3601	1.121	0.031
# Network, District+	2837	0.307	0.014	527	0.040	0.010	3601	0.444	0.017
# Network, Nearby Towns	2837	2.489	0.037	527	0.171	0.020	3601	2.227	0.032
# Network, In Village	2837	1.950	0.032	527	0.400	0.028	3601	2.442	0.029
# Neighbors, Agroforestry	2837	0.078	0.007	527	0.035	0.006	3601	0.104	0.008
# Neighbors, Min. Tillage	2837	0.060	0.006	527	0.070	0.012	3601	0.078	0.006
# Neighbors, Perm. Org. Cover	2837	1.725	0.070	527	2.601	0.205	3601	1.953	0.071
# Neighbors, SWC	2837	1.676	0.040	527	2.264	0.124	3601	1.718	0.036
Location Characteristics									
# HH in Community	2837	9.170	0.169	527	10.157	0.303	3601	14.216	0.424
Land Heterogeneity	2837	1.433	0.032	527	1.643	0.059	3601	1.703	0.037
Prop. Female Key Inform.	2837	0.351	0.003	527	0.333	0.006	3601	0.359	0.003
Prop. Key Inform. No Education	2837	0.583	0.004	527	0.584	0.008	3601	0.513	0.004
Dummy, Extension Agent	2837	0.409	0.008	527	0.288	0.015	3601	0.402	0.007
# Ag-Based Projects	2837	0.566	0.015	527	0.867	0.026	3601	0.907	0.013
Farmers Group	2837	0.508	0.009	527	0.609	0.018	3601	0.622	0.008
Infra. & Services Index	2837	0.146	0.016	527	0.421	0.030	3601	0.106	0.016
# Radio Stations	2837	1.908	0.068	527	1.231	0.114	3601	1.698	0.057
# ADMARC, District	2837	45.908	0.501	527	44.772	0.652	3601	46.497	0.445
% Estate Land, EPA	2837	0.010	0.000	527	0.048	0.008	3601	0.011	0.001

Table is constructed across all plot observations used in the analysis

Appendix 2. Full production results (1 of 5)

	Maize Yield (log)								Value Per Hectare (log)							
	CRE				FE				CRE				FE			
	Long Panel		FIAS		Long Panel		FIAS		Long Panel		FIAS		Long Panel		FIAS	
Temporal Dummies																
2015		-0.909	***			-1.003	***			-1.086	***			-1.145	**	
		(.205)				(.226)				(.395)				(.435)		
2016	-0.727	***	-0.804	***	-0.722	***	-0.932	***	-0.661	***	-0.689	**	-0.577	***	-0.607	*
	(.092)		(.188)		(.106)		(.221)		(.114)		(.293)		(.123)		(.336)	
Climate																
Mean Rainfall, FS	-0.496		-1.665	*	-1.214		-2.908		0.415		-1.465		-0.606		-5.382	
	(.605)		(.949)		(1.896)		(3.064)		(.922)		(1.252)		(2.800)		(5.618)	
CoV Rainfall, FS	0.989		1.339		2.043		7.118		2.534		2.372		-0.347		11.284	
	(2.780)		(3.020)		(7.347)		(9.638)		(3.606)		(4.508)		(11.234)		(17.626)	
Weather																
Rainfall Deviations	0.806	*	0.408		0.868	*	0.443	*	1.173	**	0.331		0.835		0.207	
	(.444)		(.258)		(.498)		(.245)		(.576)		(.472)		(.642)		(.566)	
2016 Drought Shock	-1.13	**	-1.078	**	-1.489	***	-1.326	***	-1.891	**	-1.976	**	-2.448	**	-2.55	**
	(.463)		(.447)		(.528)		(.491)		(.835)		(.912)		(1.025)		(1.048)	
2015 Flood Shock			-0.82	***			-0.85	***			-0.92	***			-0.976	**
			(.257)				(.266)				(.321)				(.402)	
High Temperature Shocks	0.052		-1.287		-0.182		-2.859	***	-0.098		-1.302	***	-0.015		-1.365	**
	(.198)		(.787)		(.302)		(.452)		(.182)		(.470)		(.311)		(.604)	
SLM Practices																
MSD Tillage	0.245		-0.247		0.285		-0.453	**	0.199		-0.285		0.433		-0.547	
	(.215)		(.195)		(.265)		(.192)		(.293)		(.349)		(.302)		(.446)	
Legume Intercrop	-0.026		-0.128		0.007		-0.086		0.383	***	0.352	**	0.405	***	0.345	**
	(.066)		(.096)		(.074)		(.097)		(.087)		(.152)		(.088)		(.148)	
Bunds	0.016		-0.045		0.009		-0.115		0.018		0.018		-0.012		-0.009	
	(.053)		(.062)		(.081)		(.095)		(.075)		(.087)		(.103)		(.126)	
Green Belts	-0.141	*	-0.148		-0.1		-0.109		-0.137		-0.149		-0.135		0.037	
	(.084)		(.157)		(.104)		(.204)		(.098)		(.241)		(.121)		(.270)	

Appendix 2. Full production results (2 of 5)

	Maize Yield (log)								Value Per Hectare (log)							
	CRE				FE				CRE				FE			
	Long Panel		FIAS		Long Panel		FIAS		Long Panel		FIAS		Long Panel		FIAS	
SLM * Shocks																
Drought*MSD Tillage	-1.759	-0.602	-1.492	0.9	-2.464	-0.764	-2.405	-0.107	(2.197)	(1.650)	(2.147)	(1.392)	(2.503)	(2.316)	(2.826)	(2.237)
Drought*Legume Intercrop	0.51	0.796 **	0.803 **	0.895 **	1.189 **	1.467 **	1.262 **	1.472 *	(.318)	(.400)	(.319)	(.412)	(.498)	(.739)	(.523)	(.756)
Drought*Bunds	-0.669 **	-0.604 *	-0.512	-0.199	-0.791 *	-0.656	-0.602	-0.334	(.334)	(.311)	(.311)	(.356)	(.458)	(.403)	(.487)	(.584)
Drought*Green Belts	0.362	1.547	0.181	1.223	-0.062	0.053	0.337	0.264	(.788)	(1.046)	(.907)	(1.281)	(.709)	(.964)	(.869)	(1.121)
Flood*MSD Tillage		0.129		0.322		-0.441		-0.256		(.902)		(1.124)		(.832)		(1.165)
Flood*Legume Intercrop		1.011 ***		0.863 ***		0.994 ***		0.748		(.262)		(.297)		(.363)		(.477)
Flood*Bunds		0.049		0.247		0.531		0.874		(.683)		(.784)		(.968)		(.999)
Flood*Green Belts		1.18 *		1.3 **		0.783		0.572		(.602)		(.622)		(.633)		(.724)
Plot Characteristics																
Plot Size (logs)	-0.504 ***	-0.473 ***	-0.441 ***	-0.421 ***	-0.438 ***	-0.399 ***	-0.395 ***	-0.338 **	(.045)	(.071)	(.072)	(.106)	(.057)	(.097)	(.077)	(.132)
Slope	-0.055	-0.047	-0.117	-0.049	-0.106	-0.218	-0.643 *	-0.545	(.088)	(.099)	(.244)	(.279)	(.119)	(.144)	(.365)	(.477)
Access Index	-0.025	0.008	-0.08	0.183	0.025	0.082	-0.272	0.001	(.032)	(.057)	(.158)	(.156)	(.041)	(.069)	(.245)	(.321)
Dummy, Sandy Soil	-0.062	-0.031	-0.034	-0.025	-0.043	-0.014	-0.104	-0.059	(.057)	(.060)	(.069)	(.074)	(.068)	(.085)	(.079)	(.115)
Dummy, Clay Soil	0.012	0.057	0.01	0.106	0.021	0.181	-0.007	0.175	(.053)	(.072)	(.071)	(.085)	(.078)	(.111)	(.105)	(.129)

Appendix 2. Full production results (3 of 5)

	Maize Yield (log)				Value Per Hectare (log)			
	CRE		FE		CRE		FE	
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS
Plot Characteristics (continued)								
Dummy, Owned	-0.119 (.085)	-0.174 (.130)	-0.008 (.096)	-0.061 (.104)	-0.072 (.112)	-0.132 (.172)	-0.004 (.126)	-0.052 (.162)
Dummy, Sell/Collateral	0.103 * (.059)	0.007 (.073)	0.147 ** (.065)	0.054 (.078)	0.116 (.077)	0.078 (.103)	0.197 ** (.093)	0.171 (.121)
Dummy, Female Plot Mgr	0 (.055)	-0.119 (.079)	-0.04 (.075)	-0.207 ** (.094)	0.047 (.084)	-0.128 (.155)	-0.016 (.102)	-0.318 * (.161)
Dummy, Joint Plot Mgr	-0.009 (.065)	-0.195 * (.114)	0 (.088)	-0.256 * (.132)	0.035 (.091)	-0.387 ** (.160)	0.083 (.112)	-0.463 *** (.164)
Plot Mgr Age (logs)	-0.085 (.100)	-0.114 (.165)	-0.111 (.154)	-0.291 (.201)	-0.081 (.115)	-0.018 (.210)	0.017 (.179)	0.025 (.267)
Production Inputs								
Household Size (logs)	0.057 (.133)	-0.01 (.194)	0.124 (.139)	0.062 (.202)	0.115 (.167)	-0.113 (.265)	0.175 (.189)	-0.119 (.274)
Dummy, Hired Labor	0.217 *** (.054)	0.175 *** (.067)	0.218 *** (.069)	0.242 *** (.084)	0.217 *** (.079)	0.279 *** (.094)	0.173 * (.094)	0.288 ** (.115)
Maize seed (kg)(logs)	0.094 *** (.024)	0.073 ** (.031)	0.087 ** (.035)	0.089 ** (.033)				
# weedings	0.003 (.012)	0.038 (.028)	0.008 (.019)	0.046 (.034)	0.019 (.014)	0.075 (.049)	0.035 (.024)	0.092 (.065)
Dummy, Pest./Herb.	0.176 (.265)	0.285 (.389)	0.438 (.341)	0.734 (.528)	0.196 (.265)	0.144 (.320)	0.446 (.313)	0.406 (.354)
Dummy, Organic Fert.	0.022 (.048)	0.18 *** (.063)	0.034 (.066)	0.236 *** (.084)	0.039 (.069)	0.211 ** (.105)	0.018 (.095)	0.268 * (.143)
Dummy, Inorganic Fert.	-0.744 *** (.250)	-0.2 (.284)	-0.38 (.273)	-0.113 (.315)	-0.728 ** (.310)	0.151 (.423)	-0.465 (.379)	0.297 (.502)
Inorganic Fert. (kg)(logs)	0.177 *** (.041)	0.089 * (.047)	0.108 ** (.045)	0.065 (.051)	0.194 *** (.049)	0.045 (.070)	0.15 ** (.061)	0.016 (.082)
Dummy, Cash Crops					0.509 *** (.149)	0.372 (.321)	0.503 *** (.145)	0.361 (.297)

Appendix 2. Full production results (4 of 5)

	Maize Yield (log)				Value Per Hectare (log)					
	CRE		FE		CRE		FE			
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS		
Demographics & Wealth										
Highest Years of Educ.	-0.024 (.017)	0.045 ** (.022)	-0.039 ** (.015)	-0.047 ** (.022)	-0.026 (.022)	-0.029 (.031)	-0.036 * (.021)	-0.031 (.029)		
Prop. Adults, English Lit.	0.16 (.158)	0.285 (.177)	0.302 ** (.149)	0.291 (.195)	0.325 (.222)	0.51 * (.283)	0.407 * (.214)	0.576 * (.302)		
Dummy, Head Disabled	0.146 (.102)	0.275 * (.147)	0.204 * (.122)	0.359 ** (.164)	0.19 (.129)	0.288 (.208)	0.18 (.149)	0.292 (.224)		
Dummy, Spouse Disabled	-0.169 * (.100)	0.103 (.156)	-0.251 (.151)	-0.397 (.250)	-0.266 * (.157)	-0.286 (.272)	-0.327 (.255)	-0.523 (.389)		
Wealth Index	-0.175 (.336)	0.391 (.389)	0.136 (.439)	-0.188 (.535)	0.268 (.564)	0.01 (.699)	0.471 (.664)	-0.089 (.820)		
Ag. Implements Index	0.41 (.294)	0.315 (.336)	0.299 (.295)	0.421 (.348)	0.343 (.331)	0.673 (.470)	0.195 (.297)	0.797 * (.446)		
Mobile Phone	0.038 (.052)	0.134 * (.068)	0.033 (.039)	0.149 ** (.061)	0.012 (.073)	0.145 (.104)	0.02 (.064)	0.205 ** (.099)		
Dummy, Financial Acct.	0.069 (.102)	0.042 (.125)	0.117 (.111)	0.027 (.119)	0.068 (.147)	-0.097 (.206)	0.124 (.153)	-0.104 (.206)		
Household Networks										
Dummy, HH Moved	-0.157 (.097)	0.327 ** (.161)	-0.12 (.128)	-0.398 ** (.171)	-0.023 (.113)	-0.284 (.224)	-0.032 (.147)	-0.526 ** (.244)		
# Adult Children Away	0.014 (.020)	0.019 (.024)	0.021 (.021)	0.032 (.023)	0.021 (.032)	0.017 (.048)	0.02 (.034)	0.015 (.050)		
# Network, District+	0.124 ** (.063)	0.16 ** (.069)	0.095 (.066)	0.11 (.074)	0.138 * (.081)	0.138 (.089)	0.117 (.084)	0.085 (.103)		
# Network, Nearby Towns	0.011 (.018)	0.002 (.028)	-0.005 (.020)	-0.009 (.032)	-0.014 (.031)	-0.091 * (.054)	-0.022 (.035)	-0.108 * (.060)		
# Network, In Village	-0.017 (.024)	0.017 (.032)	-0.019 (.024)	-0.013 (.035)	-0.014 (.032)	0.026 (.047)	-0.021 (.033)	0.018 (.051)		

Appendix 2. Full production results (5 of 5)

	Maize Yield (log)				Value Per Hectare (log)					
	CRE		FE		CRE		FE			
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS		
Location Characteristics										
# HH in Community	-0.001 (.004)	-0.027 *** (.009)	-0.001 (.004)	-0.014 * (.008)	-0.002 (.005)	-0.04 *** (.013)	-0.003 (.006)	-0.032 ** (.015)		
Land Heterogeneity	0.004 (.018)	0.04 * (.024)	-0.009 (.019)	0.037 (.027)	-0.004 (.024)	0.024 (.038)	-0.024 (.028)	0.033 (.041)		
Prop. Female Key Inform.	-0.1 (.276)	-0.725 * (.399)	-0.125 (.324)	-0.52 (.461)	-0.089 (.346)	-1.052 * (.562)	-0.32 (.391)	-1.339 * (.713)		
Prop. Key Inform. No Education	-0.002 (.195)	0.358 (.263)	-0.26 (.276)	0.246 (.352)	-0.237 (.375)	0.196 (.443)	-0.486 (.501)	0.453 (.686)		
Dummy, Extension Agent	-0.31 ** (.142)	-0.537 ** (.218)	-0.299 * (.166)	-0.54 ** (.247)	-0.467 ** (.238)	-1.035 *** (.354)	-0.428 (.270)	-1.106 *** (.396)		
# Ag-Based Projects	0.179 ** (.083)	0.143 (.122)	0.23 *** (.082)	0.266 * (.139)	0.146 (.138)	-0.002 (.236)	0.183 (.150)	0.023 (.281)		
Farmers Group	0.095 (.125)	0.102 (.199)	0.004 (.131)	0.061 (.244)	0.17 (.201)	0.246 (.364)	0.046 (.232)	0.169 (.468)		
Infra. & Services Index	-0.038 (.056)	0.014 (.074)	0.012 (.061)	0.103 (.094)	-0.059 (.067)	-0.025 (.127)	-0.058 (.080)	0.042 (.169)		
# Radio Stations	-0.016 (.032)	-0.124 (.138)	0.086 (.117)	-0.567 *** (.154)	-0.043 (.041)	-0.208 (.158)	0.1 (.165)	-0.676 ** (.272)		
# ADMARC, District	0.006 * (.003)	0.029 *** (.009)	-0.013 (.014)	0.044 ** (.019)	0.009 * (.005)	0.031 ** (.015)	-0.018 (.021)	0.023 (.037)		
% Estate Land, EPA	0.199 (.308)	0.193 (.373)	0.177 (.284)	0.247 (.371)	0.372 (.591)	0.535 (.573)	0.254 (.508)	0.398 (.617)		
Constant	5.7 ** (2.592)	9.544 *** (3.428)	9.047 (5.628)	12.829 (8.573)	7.497 ** (3.306)	13.491 *** (3.861)	12.126 (7.707)	20.146 (16.616)		
Household Means, Co-variates	Yes	Yes	No	No	Yes	Yes	No	No		
EPA Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Number of Observations	4640	2735	4640	2735	6437	3346	6437	3346		
R-squared (within)	0.193	0.254	0.255	0.293	0.120	0.165	0.169	0.194		
R-squared (between)	0.410	0.398	0.005	0.000	0.406	0.440	0.002	0.000		
R-squared (overall)	0.312	0.330	0.000	0.006	0.238	0.273	0.003	0.004		

Standard Errors in parentheses. Asterisks denote significance; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix 3. Full SLM adoption results (1 of 8)

	MSD				Legume Intercrop							
	CRE		FE		CRE		FE					
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS
Climate												
Mean Rainfall, FS	-0.295 ***	-0.314 **	-0.202	-0.911 ***	0.228 *	0.036	-0.315	-0.815				
	(.098)	(.127)	(.129)	(.296)	(.135)	(.267)	(.417)	(.559)				
Prob. Drought Shock	0.046	-0.095	-0.126	-0.777	0.34	0.514	-0.265	-2.741 **				
	(.105)	(.211)	(.244)	(.635)	(.341)	(.641)	(.741)	(1.357)				
Prob. Flood Shock	-0.04	-0.043	0.125	0.08	-0.02	-0.063	-0.144	-0.205				
	(.030)	(.048)	(.083)	(.089)	(.048)	(.067)	(.144)	(.156)				
Mean High Temp. Shock	0.407 **	0.48 **	-0.182	-1.963 ***	-0.264 **	-0.786 *	-0.389	-0.731				
	(.158)	(.238)	(.377)	(.227)	(.132)	(.422)	(.418)	(.555)				
Temporal Dummies												
2015		-0.027		-0.02		-0.07 **		-0.073 **				
		(.020)		(.020)		(.035)		(.035)				
2016	0.012 **	0.021	0.01 *	0.025	-0.037 **	-0.01	-0.039 **	-0.011				
	(.006)	(.021)	(.006)	(.021)	(.017)	(.038)	(.019)	(.037)				
Plot Characteristics												
Plot Size (logs)	-0.002	0	-0.003	-0.002	0.064 ***	0.084 ***	0.07 ***	0.09 ***				
	(.003)	(.007)	(.004)	(.007)	(.007)	(.012)	(.007)	(.012)				
Slope	-0.024 ***	-0.025 **	-0.026	-0.074 **	0.032	0.044	0.135 **	0.058				
	(.008)	(.012)	(.018)	(.032)	(.025)	(.033)	(.054)	(.055)				
Access Index	-0.015 ***	-0.016 **	-0.004	-0.01	0.002	0.009	-0.01	-0.028				
	(.005)	(.007)	(.009)	(.023)	(.007)	(.017)	(.023)	(.033)				
Dummy, Sandy Soil	-0.016 ***	-0.013	-0.017 ***	-0.013	-0.015	-0.002	-0.034 *	-0.015				
	(.006)	(.010)	(.006)	(.012)	(.015)	(.026)	(.018)	(.027)				
Dummy, Clay Soil	0.015 **	0.011	0.022 **	0.024 *	-0.035 **	-0.063 ***	-0.041 **	-0.076 ***				
	(.007)	(.011)	(.008)	(.014)	(.014)	(.019)	(.017)	(.021)				
Dummy, Owned	-0.011	-0.03	-0.008	-0.041 *	0.019	0.02	0.018	0.02				
	(.009)	(.020)	(.010)	(.024)	(.018)	(.032)	(.024)	(.039)				
Dummy, Sell/Collateral	-0.013 **	-0.039 ***	-0.011 *	-0.036 ***	-0.009	-0.023	-0.019	-0.02				
	(.006)	(.010)	(.006)	(.011)	(.015)	(.021)	(.016)	(.024)				

Appendix 3. Full SLM adoption results (2 of 8)

	Bunds								Green Belts						
	CRE				FE				CRE		FE				
	Long Panel		FIAS		Long Panel		FIAS		Long Panel		Long Panel		FIAS		
Climate															
Mean Rainfall, FS	0.429	***	0.116		0.157		0.089		-0.064		-0.031		0.23		-0.343
	(.143)		(.220)		(.446)		(.877)		(.125)		(.109)		(.226)		(.292)
Prob. Drought Shock	-0.578	*	-0.167		-2.825	***	-3.247	**	0.403		-0.039		-0.369		-0.924
	(.333)		(.484)		(.893)		(1.325)		(.294)		(.256)		(.593)		(.925)
Prob. Flood Shock	0.048		0.002		-0.113		-0.452	*	-0.018		0.054		0.125		0.169
	(.066)		(.073)		(.183)		(.245)		(.063)		(.035)		(.159)		(.170)
Mean High Temp. Shock	0.108		-0.179		-0.394		-1.66	*	0.221		0.336	**	0.68		2.299
	(.213)		(.351)		(.496)		(.830)		(.205)		(.157)		(.580)		(.270)
Temporal Dummies															
2015			-0.232	***			-0.25	***			0.013				0.012
			(.051)				(.054)				(.020)				(.023)
2016	-0.1	***	-0.163	***	-0.107	***	-0.171	***	0.021	*	0.021	*	0.021		0.02
	(.022)		(.037)		(.024)		(.040)		(.013)		(.011)		(.014)		(.013)
Plot Characteristics															
Plot Size (logs)	0.035	***	0.039	***	0.038	***	0.044	***	0.015	***	0.009		0.018	***	0.011
	(.007)		(.010)		(.008)		(.011)		(.004)		(.006)		(.005)		(.007)
Slope	0.052	**	0.017		0.016		0.047		0.004		-0.009		0.022		-0.041
	(.022)		(.020)		(.038)		(.060)		(.014)		(.010)		(.024)		(.036)
Access Index	0.019	**	0.031	**	-0.002		-0.073		-0.011	**	-0.007		-0.013		0.018
	(.008)		(.014)		(.051)		(.060)		(.004)		(.005)		(.015)		(.024)
Dummy, Sandy Soil	-0.016		-0.001		-0.022		0.001		0.016		0.009		0.013		0.008
	(.016)		(.020)		(.018)		(.025)		(.012)		(.009)		(.014)		(.011)
Dummy, Clay Soil	-0.013		-0.006		-0.005		-0.004		0.005		0.007		0.009		0.002
	(.020)		(.027)		(.025)		(.032)		(.012)		(.011)		(.013)		(.010)
Dummy, Owned	0.036		0.01		0.044		0.019		0.034	**	0.02		0.035	**	0.019
	(.024)		(.041)		(.031)		(.055)		(.013)		(.013)		(.014)		(.015)
Dummy, Sell/Collateral	-0.023		-0.056	*	-0.04		-0.073	**	0.021	**	-0.005		0.021	*	-0.004
	(.020)		(.032)		(.025)		(.036)		(.010)		(.010)		(.011)		(.012)

Appendix 3. Full SLM adoption results (3 of 8)

	MSD								Legume Intercrop					
	CRE				FE				CRE		FE			
	Long Panel		FIAS		Long Panel		FIAS		Long Panel		Long Panel		FIAS	
Plot Characteristics (continued)														
Dummy, Female Plot Mgr	-0.018	***	-0.024	**	-0.019	**	-0.027	**	0.02		-0.023		0.027	-0.028
	(.007)		(.011)		(.008)		(.012)		(.019)		(.030)		(.024)	(.035)
Dummy, Joint Plot Mgr	-0.003		0.002		0.003		0.003		0.037	**	0.067	***	0.034	0.08
	(.008)		(.021)		(.011)		(.025)		(.019)		(.024)		(.023)	(.025)
Plot Mgr Age (logs)	0.001		-0.001		-0.01		-0.018		-0.033		-0.045		-0.054	-0.034
	(.008)		(.013)		(.012)		(.016)		(.024)		(.035)		(.036)	(.044)
Demographics & Wealth														
Household Size (logs)	-0.004		-0.001		-0.004		-0.006		0		-0.027		-0.017	-0.049
	(.009)		(.014)		(.010)		(.015)		(.025)		(.034)		(.026)	(.036)
Highest Years of Educ.	0		0.001		0.001		0.002		-0.004		0.003		-0.002	0.003
	(.001)		(.002)		(.001)		(.002)		(.006)		(.007)		(.006)	(.007)
Prop. Adults, English Lit.	-0.008		-0.035		-0.005		-0.034		-0.042		-0.025		-0.03	0.008
	(.015)		(.029)		(.017)		(.027)		(.036)		(.051)		(.039)	(.052)
Dummy, Head Disabled	-0.005		-0.018		-0.002		-0.016		0.038		0.059		0.048	0.07
	(.010)		(.017)		(.011)		(.017)		(.031)		(.048)		(.032)	(.048)
Dummy, Spouse Disabled	-0.006		0		-0.023		-0.031		0.02		-0.009		0.049	0.057
	(.010)		(.017)		(.015)		(.023)		(.025)		(.040)		(.037)	(.061)
Wealth Index	-0.004		-0.015		0.024		0.003		-0.119		-0.322	**	-0.138	-0.323
	(.039)		(.060)		(.044)		(.065)		(.107)		(.161)		(.115)	(.163)
Ag. Implements Index	0.071	***	0.119	***	0.065	***	0.112	***	0.011		0.128		0.018	0.126
	(.022)		(.041)		(.023)		(.042)		(.050)		(.080)		(.053)	(.087)
Mobile Phone	0.005		0.006		0.004		0.009		-0.009		-0.006		-0.004	-0.006
	(.004)		(.008)		(.005)		(.009)		(.012)		(.020)		(.012)	(.021)
Dummy, Financial Acct.	0.002		0.005		0.002		0.003		0.052	**	0.043		0.041	0.04
	(.009)		(.016)		(.009)		(.016)		(.024)		(.034)		(.024)	(.034)

Appendix 3. Full SLM adoption results (4 of 8)

	Bunds				Green Belts				
	CRE		FE		CRE		FE		
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	
Plot Characteristics (continued)									
Dummy, Female Plot Mgr	0.007 (.019)	-0.01 (.027)	0.015 (.023)	0.003 (.030)	-0.017 (.011)	0.009 (.011)	-0.016 (.013)	0.011 (.015)	
Dummy, Joint Plot Mgr	0.005 (.023)	-0.014 (.043)	0.025 (.029)	0 (.049)	-0.016 (.016)	-0.001 (.019)	-0.021 (.016)	-0.002 (.022)	
Plot Mgr Age (logs)	-0.062 ** (.026)	-0.01 (.033)	-0.086 ** (.043)	-0.028 (.053)	0 (.013)	-0.02 * (.012)	0.001 (.020)	-0.024 (.017)	
Demographics & Wealth									
Household Size (logs)	0.006 (.032)	-0.029 (.044)	0.013 (.036)	-0.018 (.048)	0.003 (.018)	0.004 (.017)	0 (.020)	0.003 (.018)	
Highest Years of Educ.	0.005 (.005)	0.006 (.007)	0.005 (.005)	0.005 (.007)	0.004 (.003)	-0.003 (.002)	0.003 (.003)	-0.003 (.003)	
Prop. Adults, English Lit.	0.084 * (.048)	0.072 (.064)	0.094 * (.051)	0.086 (.069)	0.013 (.028)	0.022 (.028)	0.015 (.031)	0.021 (.027)	
Dummy, Head Disabled	-0.068 * (.035)	-0.021 (.047)	-0.077 ** (.036)	-0.013 (.050)	0.002 (.021)	0.005 (.023)	0.011 (.021)	0.005 (.023)	
Dummy, Spouse Disabled	-0.022 (.031)	0.03 (.040)	-0.023 (.045)	0.019 (.057)	0.032 (.023)	0.04 (.026)	0.013 (.030)	0.026 (.032)	
Wealth Index	-0.012 (.125)	-0.093 (.175)	0.037 (.136)	-0.06 (.194)	0.001 (.073)	0.252 *** (.069)	0 (.077)	0.283 *** (.082)	
Ag. Implements Index	0.184 *** (.065)	0.234 *** (.076)	0.163 ** (.069)	0.19 ** (.076)	0.039 (.040)	-0.007 (.045)	0.022 (.042)	-0.017 (.046)	
Mobile Phone	-0.009 (.014)	0.008 (.024)	-0.006 (.015)	0.011 (.024)	-0.008 (.007)	-0.003 (.009)	-0.009 (.007)	-0.002 (.009)	
Dummy, Financial Acct.	0.01 (.026)	0.019 (.035)	0.01 (.027)	0.022 (.036)	0.014 (.017)	-0.013 (.013)	0.017 (.017)	-0.015 (.014)	

Appendix 3. Full SLM adoption results (5 of 8)

	MSD								Legume Intercrop			
	CRE		FE		CRE		FE					
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS
Household Networks												
Dummy, HH Moved	-0.007 (.006)	-0.001 (.015)	-0.006 (.009)	0 (.018)	-0.003 (.022)	0.029 (.036)	0.014 (.033)	-0.014 (.045)				
# Adult Children Away	-0.004 ** (.002)	-0.006 ** (.003)	-0.004 * (.002)	-0.006 * (.003)	0.004 (.008)	0.006 (.009)	0.005 (.009)	0.009 (.011)				
# Neighbors, Min. Tillage	0.012 (.017)	0 (.030)			-0.138 *** (.036)	-0.148 ** (.058)						
# Neighbors, Perm. Org. Cover	0 (.002)	0.001 (.003)			0.015 *** (.005)	0.014 ** (.006)						
# Neighbors, SWC	-0.007 *** (.002)	-0.004 (.004)			-0.003 (.005)	-0.002 (.007)						
# Neighbors, Agroforestry	0.002 (.004)	0.039 * (.021)			-0.04 ** (.016)	-0.104 (.069)						
Location Characteristics												
# HH in Community	0 (.000)	0.001 (.001)	0 (.000)	0.001 (.001)	0.001 (.000)	0.002 (.004)	0.001 (.001)	0.001 (.004)				
Land Heterogeneity	0 (.001)	0.004 (.003)	-0.002 (.001)	0.001 (.003)	-0.011 ** (.005)	-0.003 (.011)	-0.009 (.006)	0.002 (.012)				
Prop. Female Key Inform.	0.002 (.020)	-0.051 (.038)	0.015 (.018)	-0.043 (.035)	-0.022 (.073)	-0.148 (.132)	-0.079 (.081)	-0.265 * (.137)				
Prop. Key Inform. No Education	-0.016 (.018)	0.017 (.030)	-0.038 * (.019)	-0.011 (.031)	-0.068 * (.041)	-0.026 (.083)	-0.071 (.054)	0.057 (.123)				
Dummy, Extension Agent	0.019 ** (.010)	0.011 (.017)	0.017 * (.010)	0.001 (.018)	0.005 (.023)	-0.036 (.045)	0.018 (.027)	-0.041 (.045)				
# Ag-Based Projects	-0.005 (.006)	-0.018 (.019)	-0.006 (.007)	-0.025 (.021)	-0.053 *** (.015)	-0.071 *** (.028)	-0.048 *** (.015)	-0.072 ** (.031)				
Farmers Group	0 (.008)	-0.002 (.016)	-0.009 (.008)	-0.018 (.020)	0.006 (.027)	-0.03 (.042)	0.005 (.030)	-0.01 (.051)				
Infra. & Services Index	0.007 ** (.004)	-0.001 (.006)	0.005 (.004)	-0.003 (.007)	-0.011 (.012)	-0.021 (.018)	-0.013 (.013)	-0.034 * (.017)				

Appendix 3. Full SLM adoption results (6 of 8)

	Bunds				Green Belts								
	CRE		FE		CRE		FE						
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS					
Household Networks													
Dummy, HH Moved	-0.002 (.026)	0.015 (.045)	-0.021 (.046)	-0.005 (.074)	-0.008 (.016)	0.016 (.017)	-0.013 (.027)	0.032 (.024)					
# Adult Children Away	0.008 (.009)	0.001 (.011)	0.008 (.010)	0 (.011)	-0.005 (.003)	0 (.003)	-0.006 (.004)	0 (.004)					
# Neighbors, Min. Tillage	-0.076 (.027)	*** (.039)	-0.062		-0.006 (.024)	0.022 (.020)							
# Neighbors, Perm. Org. Cover	0.002 (.005)	-0.01 (.006)	*		-0.002 (.003)	0.001 (.002)							
# Neighbors, SWC	0.021 (.006)	*** (.012)	0.039	***	0 (.006)	-0.003 (.003)							
# Neighbors, Agroforestry	-0.055 (.017)	*** (.088)	-0.137		0.056 (.020)	*** (.060)	0.166	***					
Location Characteristics													
# HH in Community	0.001 (.001)	* (.002)	0.007	***	0.002 (.001)	** (.003)	0.008	***	0 (.000)	0 (.001)	0 (.000)	0 (.001)	
Land Heterogeneity	-0.002 (.005)	-0.009 (.009)	0		-0.01 (.005)	-0.01 (.009)	0.002 (.003)	-0.006 (.003)	* (.003)	0.002 (.003)	-0.006 (.004)	* (.004)	
Prop. Female Key Inform.	-0.094 (.090)	-0.044 (.145)	-0.08 (.099)	-0.001 (.154)	0.014 (.048)	0.051 (.064)	0.006 (.054)	0.038 (.081)					
Prop. Key Inform. No Education	0.049 (.068)	0.099 (.101)	0.076 (.080)	0.068 (.112)	-0.002 (.027)	-0.009 (.029)	0.004 (.035)	-0.004 (.044)					
Dummy, Extension Agent	0.042 (.029)	0.066 (.053)	0.047 (.032)	0.07 (.052)	0.006 (.017)	0.049 (.028)	* (.020)	0.014 (.036)	0.056 (.036)				
# Ag-Based Projects	-0.058 (.018)	*** (.029)	-0.041 (.020)	-0.057	*** (.034)	-0.036 (.013)	-0.019 (.012)	-0.027 (.014)	** (.014)	-0.017 (.013)	-0.024 (.013)	* (.013)	
Farmers Group	-0.02 (.033)	0.089 (.043)	** (.037)	-0.024 (.048)	0.075 (.048)	0.032 (.019)	* (.020)	0.053 (.021)	*** (.021)	0.039 (.021)	* (.027)	0.061 (.027)	** (.027)
Infra. & Services Index	0.01 (.016)	0.026 (.025)	0.008 (.018)	0.022 (.030)	-0.009 (.008)	0.001 (.009)	-0.012 (.009)	-0.002 (.012)					

Appendix 3. Full SLM adoption results (7 of 8)

	MSD				Legume Intercrop					
	CRE		Long Panel	FE	CRE		FE			
	Long Panel	FIAS		FIAS	Long Panel	FIAS	Long Panel	FIAS		
Location Characteristics (continued)										
# Radio Stations	0.001 (.001)	0.005 (.008)	0.002 (.004)	-0.029 * (.015)	0.002 (.007)	0.001 (.034)	0.102 *** (.019)	0.068 (.044)		
# ADMARC, District	0 ** (.000)	-0.001 (.001)	0 (.000)	-0.002 (.002)	0.001 (.001)	0.004 (.004)	-0.01 *** (.003)	0.002 (.007)		
% Estate Land, EPA	-0.013 (.018)	0.029 (.027)	0.012 (.017)	0.04 (.030)	-0.401 *** (.077)	-0.236 * (.121)	-0.467 *** (.082)	-0.329 *** (.121)		
Constant	1.177 *** (.248)	1.34 *** (.393)	0.566 * (.328)	2.873 *** (.780)	-0.12 (.345)	0.551 (.710)	3.06 *** (1.016)	4.023 *** (1.258)		
Household Means, Co-variates	Yes	Yes	No	No	Yes	Yes	No	No		
EPA Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Number of Observations	6437	3346	6437	3346	6437	3346	6437	3346		
R-squared (within)	0.019	0.038	0.038	0.075	0.055	0.068	0.084	0.093		
R-squared (between)	0.534	0.605	0.013	0.074	0.496	0.477	0.095	0.000		
R-squared (overall)	0.278	0.319	0.011	0.026	0.304	0.252	0.086	0.004		

Standard Errors in parentheses. Asterisks denote significance; * p<0.10, ** p<0.05, *** p<0.01.

Appendix 3. Full SLM adoption results (8 of 8)

	Bunds				Green Belts				
	CRE		FE		CRE		FE		
	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	Long Panel	FIAS	
Location Characteristics (continued)									
# Radio Stations	0.014 (.009)	0.078 *** (.026)	0.064 *** (.023)	-0.072 * (.038)	0.005 (.007)	0.007 (.008)	0.015 (.012)	0.014 (.014)	
# ADMARC, District	0 (.001)	-0.004 * (.002)	-0.007 ** (.003)	0 (.004)	0 (.001)	-0.001 (.001)	-0.001 (.002)	-0.001 (.002)	
% Estate Land, EPA	-0.036 (.096)	0.127 (.097)	-0.009 (.089)	0.172 (.106)	-0.004 (.032)	0.094 ** (.043)	-0.014 (.034)	0.056 (.048)	
Constant	-0.526 (.399)	0.037 (.607)	1.445 (1.148)	1.974 (1.946)	-0.007 (.365)	0.008 (.309)	-0.578 (.607)	0.542 (.675)	
Household Means	Yes	Yes	No	No	Yes	Yes	No	No	
EPA Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Number of Observations	6437	3346	6437	3346	6437	3346	6437	3346	
R-squared (within)	0.074	0.113	0.102	0.138	0.053	0.044	0.073	0.069	
R-squared (between)	0.237	0.295	0.010	0.019	0.177	0.226	0.002	0.045	
R-squared (overall)	0.146	0.178	0.013	0.017	0.142	0.110	0.010	0.022	

Standard Errors in parentheses. Asterisks denote significance; * p<0.10, ** p<0.05, *** <0.01.