

ONLINE SUPPLEMENTARY MATERIAL

Synergies between different types of agricultural technologies in the Kenyan small farm sector

Table A1: Mean differences in socioeconomic variables between technology adopters and non-adopters

	Improved seeds		Fertilizer		Terraces		Soil bunds		Zero tillage		Crop residue		Manure	
	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters
<i>Socioeconomic characteristics</i>														
Age	53.6*** (13.65)	55.6 (14.85)	53.48 (13.37)	54.68 (14.56)	54.32 (13.76)	53.49 (13.98)	53.47 (13.13)	54.08 (14.05)	53.72 (13.60)	53.99 (13.91)	52.3*** (13.32)	56.34 (14.31)	54.9*** (13.99)	52.35 (13.50)
Male	0.82*** (0.38)	0.73 (0.44)	0.82 (0.38)	0.79 (0.40)	0.83* (0.38)	0.79 (0.41)	0.79 (0.41)	0.82 (0.39)	0.81 (0.39)	0.81 (0.39)	0.82 (0.39)	0.80 (0.40)	0.80* (0.40)	0.84 (0.37)
Education	8.07*** (4.49)	5.69 (3.81)	8.36*** (4.56)	6.71 (4.15)	7.79 (4.01)	7.61 (4.98)	7.82 (4.04)	7.68 (4.58)	7.41 (4.13)	7.75 (4.52)	7.86 (4.13)	7.47 (4.93)	7.65 (4.65)	7.80 (4.15)
Household size	6.46 (2.49)	6.42 (2.91)	6.29*** (2.44)	6.72 (2.71)	6.43 (2.51)	6.50 (2.61)	6.21* (2.36)	6.53 (2.61)	6.83 (2.85)	6.41 (2.51)	6.87*** (2.55)	5.86 (2.45)	6.33** (2.51)	6.69 (2.64)
Farm size	5.79 (9.62)	4.79 (5.10)	4.81*** (7.12)	6.69 (11.35)	5.66 (7.86)	5.43 (10.38)	4.35** (5.01)	5.86 (9.83)	7.66*** (15.00)	5.29 (7.86)	6.04** (10.38)	4.93 (6.82)	5.17** (6.53)	6.24 (12.38)
TLU	5.64*** (6.73)	4.32 (4.76)	4.97** (6.33)	6.16 (6.66)	5.32 (5.99)	5.58 (7.04)	5.45 (6.18)	5.43 (6.56)	5.84 (6.92)	5.38 (6.42)	5.75*** (6.95)	4.98 (5.70)	5.71** (6.75)	4.96 (5.96)
Occupation	0.76 (0.43)	0.80 (0.40)	0.77 (0.42)	0.76 (0.43)	0.76 (0.43)	0.77 (0.42)	0.78 (0.42)	0.76 (0.43)	0.80 (0.40)	0.76 (0.43)	0.77 (0.42)	0.75 (0.43)	0.77 (0.42)	0.76 (0.43)
<i>Institutional characteristics</i>														
Credit	0.22*** (0.41)	0.13 (0.33)	0.23*** (0.42)	0.15 (0.36)	0.22 (0.41)	0.18 (0.39)	0.20 (0.40)	0.20 (0.40)	0.25 (0.43)	0.20 (0.40)	0.21 (0.41)	0.19 (0.39)	0.20 (0.40)	0.21 (0.41)
Group membership	0.88* (0.32)	0.83 (0.37)	0.88 (0.32)	0.86 (0.34)	0.89** (0.31)	0.85 (0.36)	0.90 (0.31)	0.87 (0.34)	0.85 (0.36)	0.88 (0.33)	0.88 (0.33)	0.87 (0.34)	0.90*** (0.30)	0.83 (0.38)
Market distance	1.63** (1.60)	1.92 (1.80)	1.61* (1.67)	1.78 (1.58)	1.68 (1.59)	1.67 (1.68)	1.64 (1.37)	1.69 (1.70)	6.83** (2.85)	6.41 (2.51)	1.73 (1.70)	1.59 (1.53)	1.61** (1.52)	1.80 (1.83)
<i>Climatic shocks</i>														
Drought	3.76*** (4.13)	5.76 (5.09)	3.02*** (3.41)	5.64 (5.08)	4.02 (4.46)	4.11 (4.21)	3.69 (3.84)	4.16 (4.46)	4.27 (4.05)	4.03 (4.39)	4.39*** (4.24)	3.58 (4.45)	3.82*** (4.06)	4.50 (4.79)
Flooding	1.14** (1.64)	0.87 (1.10)	1.24*** (1.58)	0.89 (1.55)	0.94*** (1.49)	1.29 (1.65)	1.07 (1.30)	1.10 (1.63)	0.86** (1.11)	1.13 (1.63)	1.34*** (1.56)	0.73 (1.53)	0.96*** (1.56)	1.34 (1.56)

Mean values are shown with standard deviations in parenthesis. ***, **, and * indicate that mean values between adopters and non-adopters are statistically significant at the 1%, 5%, and 10% level, respectively.

Table A2: Logit models for estimating propensity scores

	Improved seeds	Improved seeds (3 AEZs)	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
Male		-0.377 (0.308)	-0.085 (0.189)	0.288* (0.167)	-0.135 (0.183)	-0.075 (0.171)	-0.035 (0.241)	-0.282 (0.179)
Age	-0.002 (0.007)	0.001 (0.009)	0.003 (0.005)	-0.004 (0.005)	-0.008 (0.006)	-0.021*** (0.005)	-0.012* (0.007)	0.011** (0.005)
Education	0.142*** (0.024)	0.180*** (0.037)	0.090*** (0.020)	-0.015 (0.019)	0.011 (0.017)	0.005 (0.016)	-0.052** (0.025)	0.011 (0.017)
Household size	0.041 (0.036)	0.004 (0.048)	-0.035 (0.028)	0.026 (0.025)	-0.026 (0.028)	0.105*** (0.031)	0.037 (0.037)	-0.028 (0.024)
Farms size		0.019 (0.016)	-0.002 (0.008)	-8.36E-04 (0.007)	-0.033** (0.015)	0.032*** (0.019)	0.024*** (0.008)	-0.039*** (0.008)
TLU		0.024 (0.020)	-0.039** (0.016)	-0.008 (0.011)	0.009 (0.013)	0.005 (0.011)	-0.007 (0.016)	0.041*** (0.014)
Occupation		-0.352 (0.283)	0.051 (0.176)	0.231 (0.161)	-0.018 (0.189)	-0.114 (0.164)	0.229 (0.240)	0.178 (0.162)
Productive assets	0.199*** (0.067)	0.109 (0.110)	0.184*** (0.050)	0.083** (0.040)	-0.006 (0.048)	-0.101** (0.042)	-0.012 (0.056)	0.062 (0.043)
Off farm income	-1.508*** (0.328)	-1.795*** (0.422)	-0.536** (0.249)	0.273 (0.216)	-0.399 (0.255)	-0.254 (0.238)	0.183 (0.334)	-0.245 (0.227)
Group membership		0.052 (0.311)	0.056 (0.198)	0.307* (0.182)	0.309 (0.255)	0.154 (0.196)	-0.249 (0.259)	0.613*** (0.185)
Market distance	-0.107** (0.048)	-0.174*** (0.060)	-0.005 (0.040)	0.027 (0.038)	-0.010 (0.042)	0.054 (0.041)	0.053 (0.055)	-0.057 (0.038)
Credit		0.277 (0.296)	0.422** (0.178)	0.024 (0.160)	-0.009 (0.181)	0.126 (0.176)	0.386* (0.213)	-0.207 (0.161)
Info on zero tillage							1.547*** (0.189)	
Info on crop residues						0.426*** (0.135)		
Info on soil management				0.421*** (0.146)	0.438** (0.184)			
Info improved seeds	0.787*** (0.241)	1.383*** (0.333)						

	Improved seeds	Improved seeds (3 AEZs)	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
Own land		-0.905 (0.515)	-0.433 (0.353)	0.101 (0.256)	0.024 (0.286)	-0.213 (0.266)	-0.218 (0.358)	0.323 (0.246)
Fertile land		0.260 (0.240)	-0.492*** (0.155)	-0.064 (0.135)	-0.441** (0.158)	-0.131 (0.141)	0.179 (0.187)	-0.185 (0.136)
Slopy land		0.413* (0.227)	0.491*** (0.154)	0.988*** (0.142)	0.094 (0.165)	0.077 (0.149)	-0.041 (0.194)	0.212 (0.140)
Drought	-0.045** (0.018)	-0.056** (0.025)	-0.099*** (0.019)	-0.011 (0.015)	-0.004 (0.018)	0.037* (0.020)	0.009 (0.021)	-0.058*** (0.016)
Flooding			0.059 (0.059)	0.033 (0.043)	-0.077 (0.051)	0.039 (0.062)	-0.236*** (0.078)	-0.017 (0.042)
Dry mid-altitude	-0.291 (0.315)	-0.414 (0.342)	-0.548 (0.336)	1.685*** (0.299)	0.292 (0.409)	-2.508*** (0.381)	-0.740** (0.366)	1.325*** (0.290)
Dry transitional	0.659* (0.370)		1.086*** (0.329)	2.061*** (0.326)	0.135 (0.419)	-2.391*** (0.386)	-1.073** (0.418)	1.046*** (0.303)
Moist transitional	1.766*** (0.425)		1.952*** (0.338)	0.673** (0.298)	0.575 (0.402)	-0.934** (0.379)	-0.233 (0.359)	-0.400 (0.278)
High tropics	1.083*** (0.381)		2.416*** (0.377)	-0.131 (0.313)	1.254*** (0.403)	-1.169*** (0.384)	-0.149 (0.392)	-0.755*** (0.288)
Moist mid-altitude	-0.884*** (0.313)	-1.047*** (0.341)	0.552* (0.332)	0.402 (0.302)	0.194 (0.417)	0.0767 (0.409)	-0.226 (0.376)	0.271 (0.288)
Constant	-0.787 (0.742)	0.480 (1.177)	-1.793*** (0.689)	-3.018*** (0.636)	-1.763** (0.822)	2.547*** (0.667)	-1.410 (0.870)	-0.823 (0.594)
Pseudo R ²	0.225	0.176	0.274	0.130	0.051	0.200	0.118	0.117

Estimation coefficients are shown with standard errors in parentheses. ***, **, * significant at 1%, 5%, and 10% level, respectively.

Table A3: Multivariate probit model of technology adoption

	Improved seeds	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
Male		-0.051 (0.108)	0.171* (0.099)	-0.068 (0.107)	-0.054 (0.104)	-0.011 (0.129)	-0.154 (0.102)
Age	-0.001 (0.004)	0.001 (0.003)	-0.002 (0.003)	-0.001 (0.003)	-0.013*** (0.003)	-0.006 (0.004)	0.006** (0.003)
Education	0.075*** (0.014)	0.052*** (0.012)	-0.010 (0.009)	0.008 (0.010)	0.003 (0.010)	-0.031** (0.014)	0.007 (0.010)
Household size		-0.020 (0.017)	0.018 (0.015)	-0.012 (0.017)	0.057*** (0.016)	0.028 (0.019)	-0.016 (0.016)
Farms size		-0.002 (0.006)	-4.33e-05 (0.005)	-0.014* (0.007)	0.020*** (0.006)	0.013*** (0.005)	-0.023*** (0.005)
TLU		-0.024*** (0.007)	-0.005 (0.006)	0.005 (0.007)	0.003 (0.007)	-0.005 (0.009)	0.024*** (0.007)
Occupation		0.029 (0.103)	0.148 (0.095)	0.028 (0.104)	-0.071 (0.099)	0.123 (0.126)	0.113 (0.097)
Productive assets	0.110*** (0.033)	0.104*** (0.027)	0.050** (0.024)	-0.006 (0.027)	-0.060** (0.026)	-0.005 (0.032)	0.035 (0.025)
Off farm income	-0.775*** (0.171)	-0.310** (0.146)	0.155 (0.135)	-0.225 (0.146)	-0.153 (0.140)	0.106 (0.174)	-0.145 (0.136)
Group membership		0.020 (0.125)	0.179 (0.112)	0.202 (0.128)	0.102 (0.117)	-0.122 (0.140)	0.381*** (0.112)
Market distance	-0.055** (0.027)	-0.003 (0.025)	0.013 (0.022)	-0.005 (0.025)	0.031 (0.025)	0.033 (0.027)	-0.031 (0.023)
Credit		0.226** (0.104)	0.006 (0.094)	2.37e-04 (0.101)	0.061 (0.098)	0.200* (0.117)	-0.133 (0.094)
Info on zero tillage						0.839*** (0.097)	
Info on crop residues					0.253*** (0.079)		
Info on soil management			0.249*** (0.090)	0.267*** (0.103)			
Info improved seeds	0.413*** (0.146)						
Own land		-0.209 (0.173)	0.042 (0.152)	-0.038 (0.164)	-0.149 (0.159)	-0.135 (0.191)	0.216 (0.151)
Fertile land		-0.296*** (0.088)	-0.049 (0.080)	-0.254*** (0.090)	-0.072 (0.084)	0.099 (0.103)	-0.116 (0.081)
Slopy land		0.277***	0.582***	0.035	0.041	-0.009	0.126

	Improved seeds	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
		(0.090)	(0.083)	(0.092)	(0.088)	(0.106)	(0.085)
Drought	-0.022** (0.011)	-0.055*** (0.011)	-0.009 (0.009)	0.004 (0.010)	0.018* (0.010)	0.002 (0.012)	-0.035*** (0.010)
Flooding		0.038 (0.028)	0.019 (0.026)	-0.044 (0.031)	0.021 (0.027)	-0.124*** (0.045)	-0.010 (0.027)
Dry mid-altitude	-0.223 (0.183)	-0.299 (0.191)	1.019*** (0.175)	0.096 (0.205)	-1.447*** (0.204)	-0.375* (0.204)	0.782*** (0.178)
Dry transitional	0.309 (0.204)	0.698*** (0.193)	1.240*** (0.188)	0.024 (0.216)	-1.389*** (0.213)	-0.542** (0.227)	0.612*** (0.187)
Moist transitional	0.835*** (0.217)	1.186*** (0.191)	0.393** (0.176)	0.275 (0.209)	-0.491** (0.209)	-0.125 (0.212)	-0.236 (0.177)
High tropics	0.492** (0.216)	1.410*** (0.203)	-0.084 (0.183)	0.684*** (0.214)	-0.646*** (0.216)	-0.081 (0.218)	-0.462*** (0.185)
Moist mid-altitude	-0.518*** (0.184)	0.348* (0.191)	0.233 (0.179)	0.042 (0.214)	0.0847 (0.219)	-0.130 (0.220)	0.177 (0.179)
Constant	-0.204 (0.398)	-1.061*** (0.400)	-1.768*** (0.369)	-1.029** (0.408)	1.538*** (0.394)	-0.913** (0.456)	-0.511 (0.368)

Estimation coefficients are shown with standard errors in parentheses. ***, **, * significant at 1%, 5%, and 10% level, respectively.

Table A4: Separate probit models of technology adoption

	Improved seeds	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
Male		-0.036 (0.109)	0.177* (0.100)	-0.071 (0.106)	-0.054 (0.101)	-0.010 (0.128)	-0.162 (0.106)
Age	-0.001 (0.004)	0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)	-0.013*** (0.003)	-0.006 (0.004)	0.006** (0.003)
Education	0.077*** (0.013)	0.052*** (0.012)	-0.009 (0.011)	0.006 (0.010)	0.004 (0.010)	-0.029** (0.013)	0.006 (0.010)
Household size		-0.021 (0.016)	0.016 (0.015)	-0.014 (0.016)	0.057*** (0.018)	0.025 (0.020)	-0.016 (0.015)
Farms size		-0.002 (0.005)	-2.73e-04 (0.005)	-0.017** (0.008)	0.019*** (0.005)	0.013*** (0.005)	-0.023*** (0.005)
TLU		-0.022*** (0.008)	-0.005 (0.007)	0.006 (0.007)	0.003 (0.007)	-0.006 (0.009)	0.024*** (0.008)
Occupation		0.036 (0.103)	0.154 (0.096)	-0.001 (0.106)	-0.067 (0.098)	0.117 (0.127)	0.110 (0.097)
Productive assets	0.111*** (0.036)	0.106*** (0.028)	0.050** (0.024)	-0.005 (0.027)	-0.061** (0.025)	-0.003 (0.030)	0.035 (0.025)
Off farm income	-0.779*** (0.176)	-0.295** (0.145)	0.161 (0.132)	-0.214 (0.144)	-0.149 (0.141)	0.098 (0.174)	-0.159 (0.136)
Group membership		0.0320 (0.116)	0.186* (0.111)	0.172 (0.128)	0.092 (0.116)	-0.121 (0.138)	0.376*** (0.112)
Market distance	-0.055** (0.027)	-0.004 (0.024)	0.017 (0.023)	-0.007 (0.024)	0.031 (0.024)	0.031 (0.028)	-0.033 (0.023)
Credit		0.252** (0.104)	0.011 (0.096)	-2.89e-04 (0.103)	0.062 (0.102)	0.183 (0.115)	-0.127 (0.096)
Info on zero tillage						0.821*** (0.097)	
Info on crop residues					0.252*** (0.0795)		
Info on soil management			0.254*** (0.089)	0.256** (0.103)			
Info improved seeds	0.411*** (0.139)						
Own land		-0.197 (0.193)	0.048 (0.155)	0.003 (0.166)	-0.139 (0.158)	-0.137 (0.190)	0.201 (0.151)
Fertile land		-0.281*** (0.089)	-0.044 (0.081)	-0.262*** (0.089)	-0.078 (0.084)	0.085 (0.101)	-0.114 (0.082)

	Improved seeds	Fertilizer	Terracing	Soil bunds	Crop residue	Zero tillage	Manure
Slopy land		0.275*** (0.089)	0.598*** (0.085)	0.040 (0.092)	0.036 (0.088)	-0.011 (0.105)	0.127 (0.084)
Drought	-0.022** (0.010)	-0.056*** (0.011)	-0.008 (0.009)	0.002 (0.010)	0.019 (0.012)	0.003 (0.011)	-0.034*** (0.009)
Flooding		0.039 (0.032)	0.020 (0.026)	-0.046 (0.029)	0.020 (0.032)	-0.116*** (0.040)	-0.010 (0.026)
Dry mid-altitude	-0.219 (0.177)	-0.313 (0.192)	1.027*** (0.178)	0.171 (0.214)	-1.457*** (0.205)	-0.376* (0.200)	0.791*** (0.174)
Dry transitional	0.299 (0.201)	0.682*** (0.193)	1.236*** (0.191)	0.080 (0.221)	-1.399*** (0.209)	-0.567** (0.223)	0.625*** (0.182)
Moist transitional	0.855*** (0.214)	1.189*** (0.195)	0.404** (0.180)	0.328 (0.213)	-0.504** (0.204)	-0.133 (0.201)	-0.232 (0.172)
High tropics	0.493** (0.207)	1.384*** (0.209)	-0.087 (0.188)	0.725*** (0.216)	-0.650*** (0.208)	-0.089 (0.216)	-0.453*** (0.179)
Moist mid-altitude	-0.515*** (0.180)	0.338* (0.192)	0.240 (0.182)	0.101 (0.220)	0.077 (0.218)	-0.142 (0.208)	0.173 (0.177)
Constant		-1.135*** (0.398)	-1.818*** (0.376)	-1.032** (0.425)	1.554*** (0.386)	-0.893* (0.461)	-0.486 (0.360)

Estimation coefficients are shown with standard errors in parentheses. ***, **, * significant at 1%, 5%, and 10% level, respectively.

Table A5: Balancing tests before and after matching

Technologies	Before matching			After RM			After KBM		
	Pseudo R ²	Mean bias	LR χ^2 p value	Pseudo R ²	Mean bias	LR χ^2 P value	Pseudo R ²	Mean bias	LR χ^2 P value
Improved seeds only	0.225	45.2	0.000	0.008	3.8	0.065	0.008	3.8	0.059
Improved seeds for the 3 AEZs	0.176	26.3	0.000	0.008	3.7	0.986	0.009	3.6	0.982
Fertilizer only	0.274	30.5	0.000	0.013	4.2	0.204	0.013	4.3	0.198
Terracing only	0.130	17.7	0.000	0.006	2.6	0.981	0.005	2.6	0.994
Soil bunds only	0.051	11.9	0.000	0.005	3.5	1.000	0.003	2.5	1.000
Crop residue only	0.200	23.5	0.000	0.014	3.9	0.185	0.012	3.6	0.303
Zero tillage only	0.118	15.3	0.000	0.006	3.1	1.000	0.003	2.1	1.000
Manure only	0.117	18.6	0.000	0.007	3.1	0.775	0.006	3.0	0.891
Improved seeds+ fertilizer	0.255	28.6	0.000	0.013	4.0	0.294	0.013	4.1	0.349
Improved seeds + manure	0.097	16.5	0.000	0.003	2.5	1.000	0.002	2.0	1.000
Improved seeds+ fertilizer+ manure	0.124	19.5	0.000	0.003	2.6	1.000	0.002	2.2	1.000
Improved seeds+ zero tillage	0.115	17.0	0.000	0.007	3.5	1.000	0.006	3.3	1.000
Zero tillage+ crop residues	0.136	18.3	0.000	0.012	3.9	1.000	0.009	3.4	1.000
Zero tillage + manure	0.119	17.5	0.000	0.008	4.0	1.000	0.008	3.9	1.000
Zero tillage + fertilizers	0.140	20.9	0.000	0.011	4.6	1.000	0.008	3.7	1.000
Improved seeds + zero tillage+ manure	0.123	18.9	0.000	0.012	4.9	1.000	0.123	4.3	1.000
Terracing + manure	0.162	20.6	0.000	0.003	2.4	1.000	0.003	2.0	1.000
Improved seeds + terracing + manure	0.157	21.1	0.000	0.003	2.3	1.000	0.002	1.9	1.000
Improved seeds + terracing + manure + fertilizer	0.157	24.3	0.000	0.004	2.7	1.000	0.004	2.5	1.000

Table A6: Differences between matched and unmatched adopters of improved seeds

Attribute	Matched adopters (N=976)		Unmatched (N=156)		P value
	Mean	Std. dev.	Mean	Std. dev.	
Household income	237,604***	273,507	504,455	616,763	0.0000
Per capita income	41,321***	48,712	96,219	154,012	0.0000
Propensity score	0.863***	0.130	0.985	0.077	0.0000
Education	7.49***	3.98	11.71	5.67	0.0000
Age	53.78	13.82	52.77	12.61	0.4141
Household size	6.50	2.53	6.28	2.33	0.3015
Productive assets	30,288***	141,507	159,452	339,407	0.0000
Off-farm income	0.483***	0.294	0.240	0.284	0.0000
Market distance	1.695***	1.646	1.247	1.239	0.0011
Drought	4.022***	4.299	2.083	2.170	0.0000
Dry mid-altitude	0.163***	0.370	0.000	0.000	0.0000
Dry transitional	0.178***	0.382	0.044	0.206	0.0000
Moist transitional	0.225***	0.418	0.776	0.419	0.0000
High tropics	0.198	0.399	0.190	0.393	0.8085
Moist mid-altitude	0.166***	0.373	0.006	0.080	0.0000

*** significant at 1% level

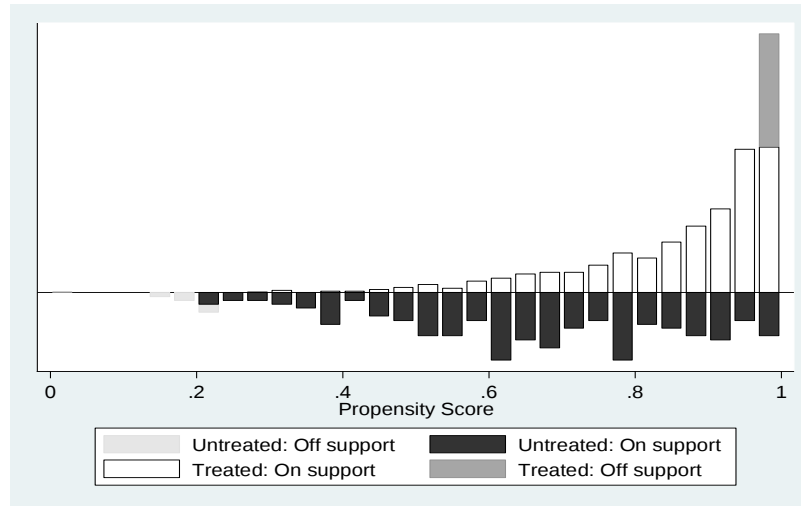
Table A7: Estimated treatment effects with IV models

	Treated (N)	Impact on	Estimated treatment effect	Estimated athro ^e	Conclusion from test
Improved seeds (for 3 AEZs) ^{a, b}	388	Household income	20,415	0.028	No hidden bias
		Per capita income	4,936	0.009	No hidden bias
Fertilizers ^a	807	Household income	-10,241	0.029	No hidden bias
		Per capita income	3,666	-0.025	No hidden bias
Terracing ^{c, d}	731	Household income	-51,954	0.093	No hidden bias
		Per capita income	-3,722	0.045	No hidden bias
Soil bunds ^{a, d}	270	Household income	21,037	-0.011	No hidden bias
		Per capita income	10,772	-0.083	No hidden bias
Zero tillage ^{a, d}	169	Household income	23,456	0.046	No hidden bias
		Per capita income	239	0.071	No hidden bias
Crop residue ^{a, d}	797	Household income	17,066	-0.042	No hidden bias
		Per capita income	-3,126	-0.001	No hidden bias
Manure ^a	858	Household income	104,337***	-0.198***	Hidden bias
		Per capita income	24,930***	-0.209***	Hidden bias

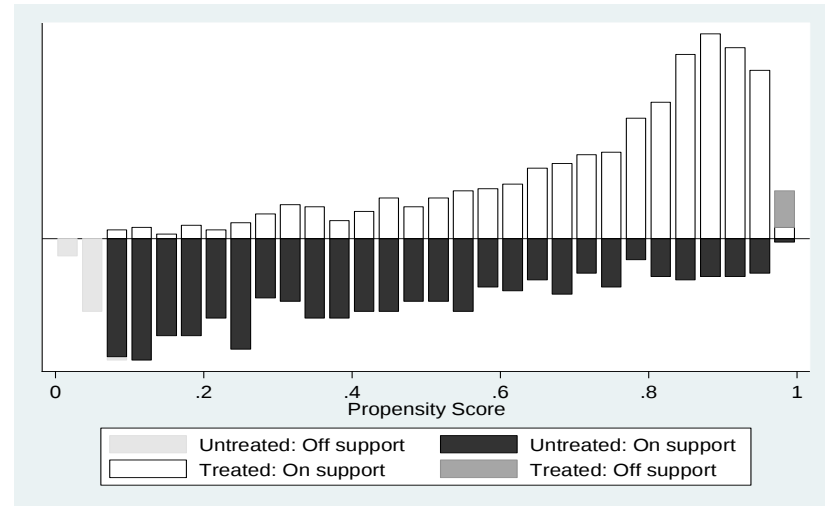
*** significant at 1%. ^a Technology adoption rate at sub-location level used as instrument. ^b Farmer's awareness of improved maize varieties used as instrument. ^c Proportion of land with slopes at farm level used as instrument. ^d Received extension on soil and water management practices used as instrument. ^e The parameter athrho represents the inverse hyperbolic tangent of the correlation between the error terms in the selection and outcome equations. A significant athro indicates that the null hypothesis of "no hidden bias" has to be rejected. An insignificant athro indicates that the null hypothesis cannot be rejected.

Figure A1: Propensity score histograms using radius matching showing common support between treated and untreated

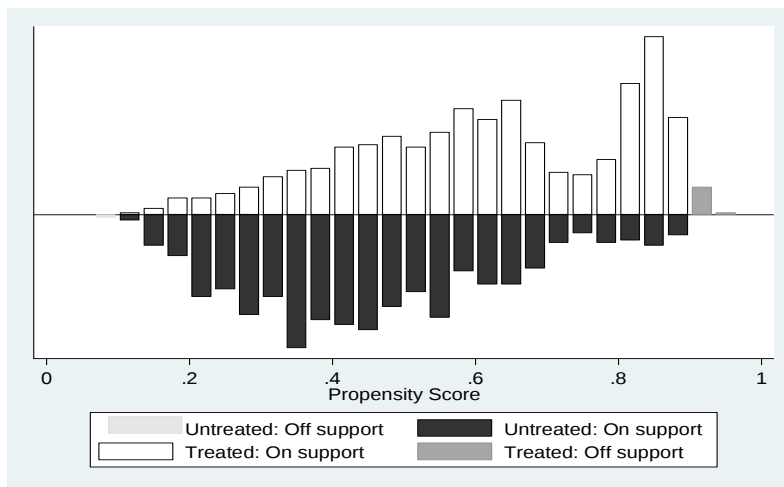
Improved seeds



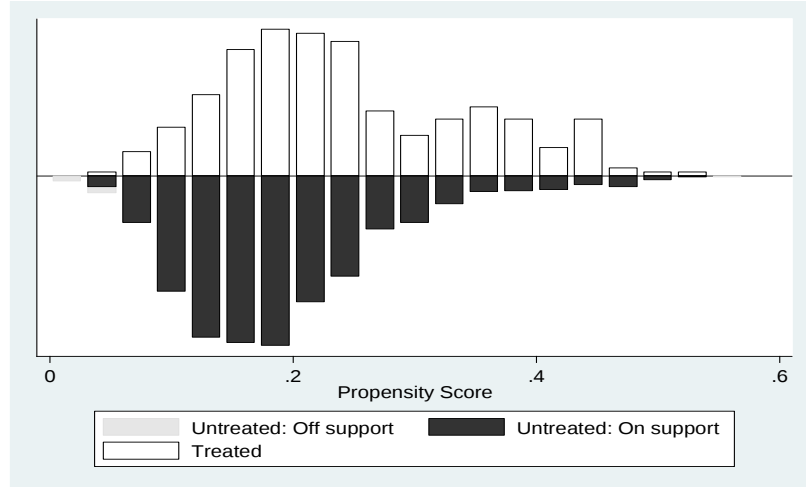
Fertilizers



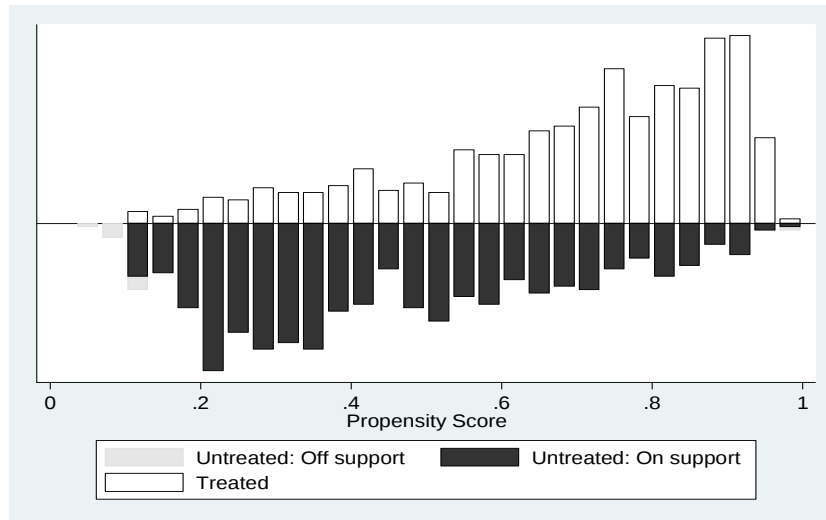
Terracing



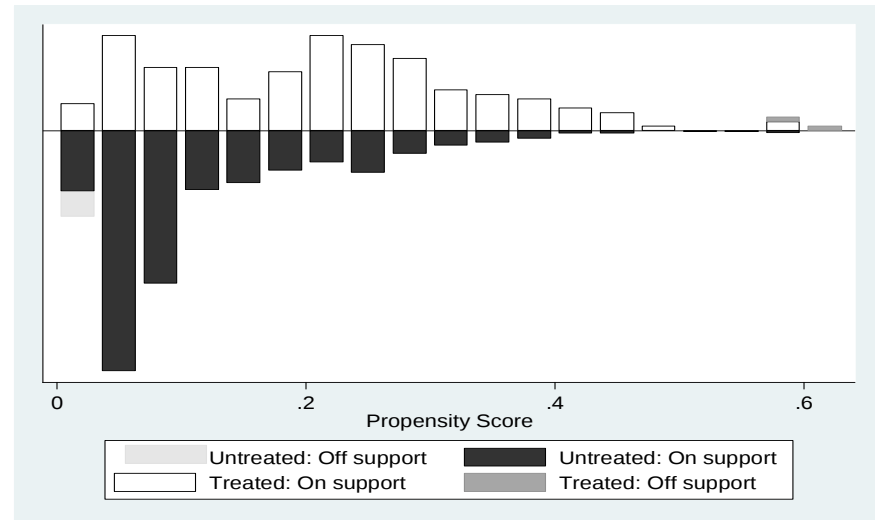
Soil bunds



Crop residues



Zero tillage



Manure

