

**Farmers advised by both public and private extension systems
are more likely to adopt climate-smart agriculture in West
Africa**

Supplementary Material

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Table SM1: Sample Size by Country and Year

Country	2017	2018	2019
Ghana	900	540	506
Mali	1350	900	840
Nigeria	2500	1600	1530

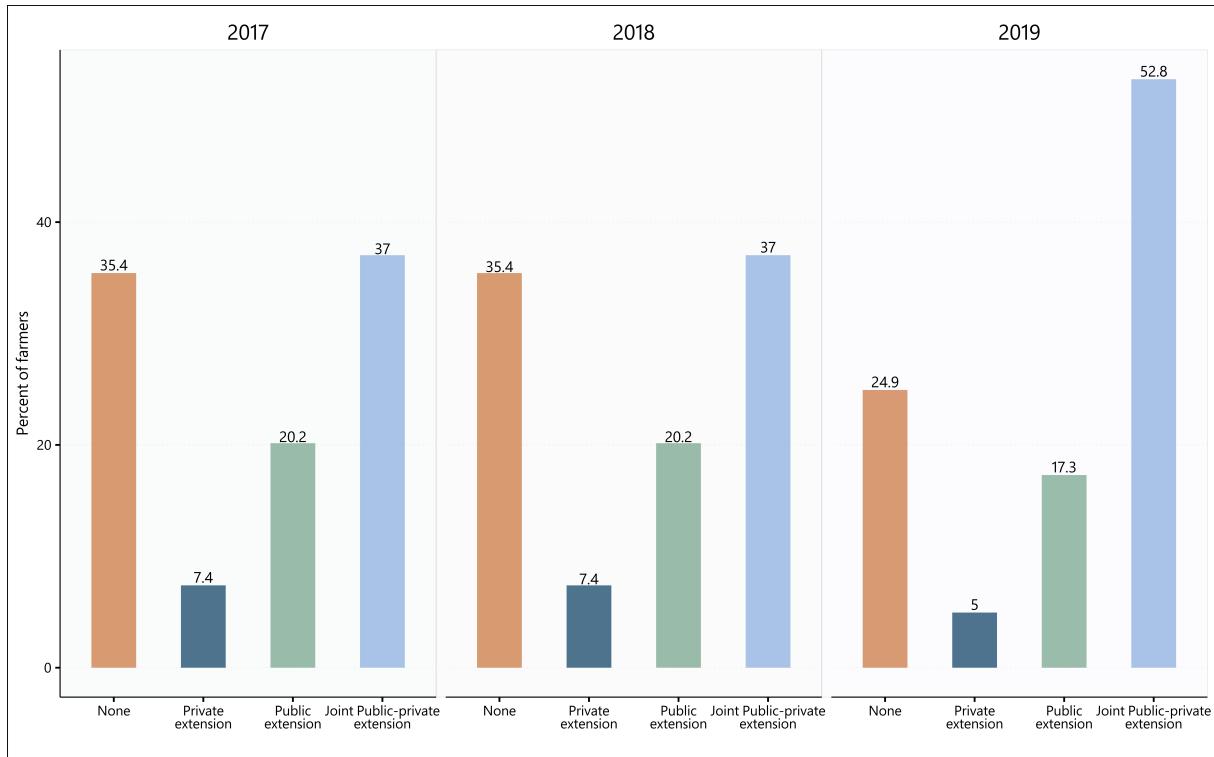


Figure SM1: Descriptive plot: Distribution of extension systems by year

Table SM2: Correlation between CSA practises by country

Variable1	Variable2	Coefficient	Robust std. err.	Z	P > Z	[95% conf. interval]
Overall						
Crop rotation	Improved seeds	-0.049	0.048	-1.02	0.31	-0.143
Crop rotation	Intercropping	0.348	0.104	3.33	0.001	0.143
Crop rotation	Organic fertilizer	0.168	0.084	1.99	0.046	0.003
Improved seeds	Intercropping	-0.136	0.041	-3.33	0.001	-0.216
Improved seeds	Organic fertilizer	0.141	0.079	1.79	0.074	-0.014
Intercropping	Organic fertilizer	0.294	0.083	3.55	0	0.132
Ghana						
Crop rotation	Improved seeds	-0.043	0.08	-0.53	0.595	-0.2
Crop rotation	Intercropping	0.029	0.213	0.14	0.891	-0.389
Crop rotation	Organic fertilizer	0.034	0.098	0.35	0.724	-0.157
Improved seeds	Intercropping	-0.237	0.044	-5.42	0	-0.323
Improved seeds	Organic fertilizer	0.047	0.09	0.52	0.604	-0.13
Intercropping	Organic fertilizer	0.138	0.055	2.52	0.012	0.031
Mali						
Crop rotation	Improved seeds	0.026	0.154	0.17	0.865	-0.276
Crop rotation	Intercropping	0.271	0.119	2.27	0.023	0.037
Crop rotation	Organic fertilizer	0.494	0.044	11.34	0	0.409
Improved seeds	Intercropping	-0.045	0.068	-0.66	0.506	-0.179
Improved seeds	Organic fertilizer	0.24	0.064	3.73	0	0.114
Intercropping	Organic fertilizer	-0.492	0.287	-1.72	0.086	-1.053
Nigeria						
Crop rotation	Improved seeds	-0.07	0.055	-1.27	0.204	-0.177
Crop rotation	Intercropping	0.604	0.117	5.18	0	0.375
Crop rotation	Organic fertilizer	0.205	0.107	1.92	0.055	-0.005
Improved seeds	Intercropping	-0.123	0.05	-2.44	0.015	-0.221
Improved seeds	Organic fertilizer	0.141	0.1	1.41	0.158	-0.054
Intercropping	Organic fertilizer	0.369	0.084	4.39	0	0.204

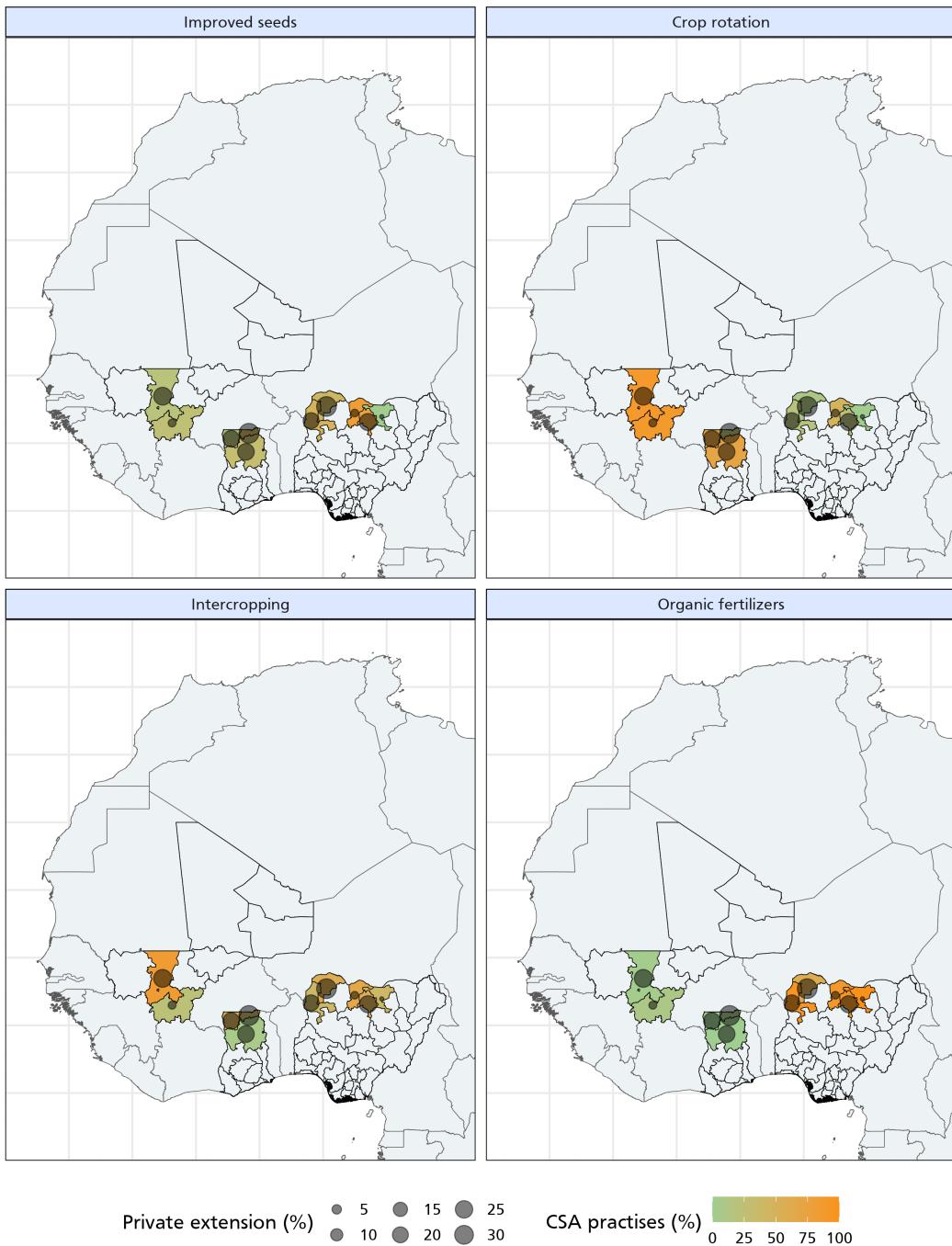


Figure SM2: Private extension system and CSA practises by region (2019)

Note: The map illustrates the CSA practices in Ghana, Mali and Nigeria. The shaded areas on the map indicate the percentage of households adopting these CSA practices, with varying intensities of shade representing different levels of adoption: the lightest shade denotes 0-25% adoption, followed by a light shade for 26-50%, a medium shade for 51-75%, and a dark shade for 76-100% of adoption. Overlaid on these shaded regions are points of varying sizes, each representing the extent of access to private extension services in different regions of the country. The size of these points corresponds to the percentage of households with access to these services: the smallest points indicate 0-5% access, increasing in size from 6-10%, 11-15%, 16-20%, 21 -25% , 25-30% and the largest points for more than 30% access.

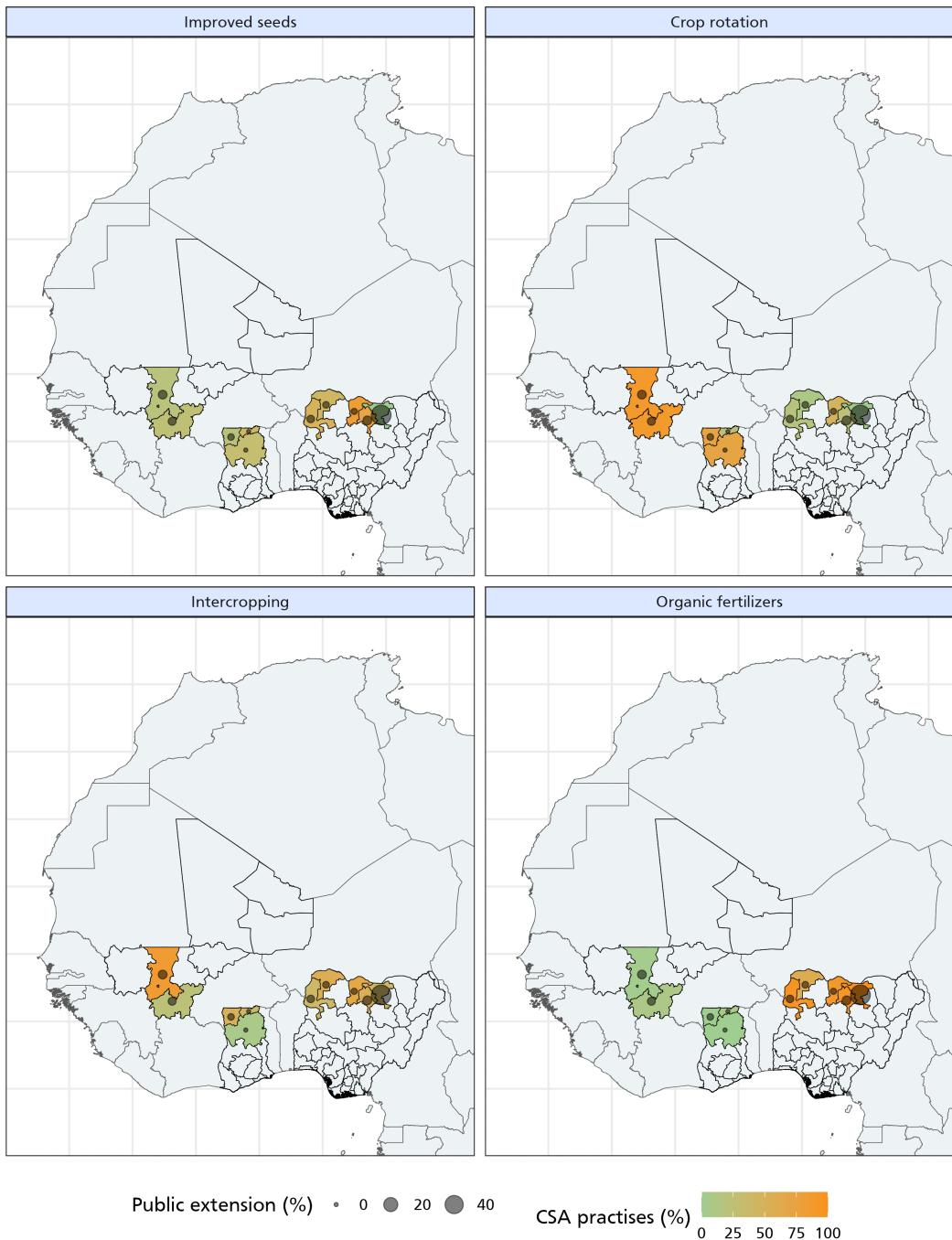


Figure SM3: Public extension system and CSA practises by region (2019)

Note: The map illustrates the CSA practices in Ghana, Mali and Nigeria. The shaded areas on the map indicate the percentage of households adopting these CSA practices, with varying intensities of shade representing different levels of adoption: the lightest shade denotes 0-25% adoption, followed by a light shade for 26-50%, a medium shade for 51-75%, and a dark shade for 76-100% of adoption. Overlaid on these shaded regions are points of varying sizes, each representing the extent of access to public extension services in different regions of the country. The size of these points corresponds to the percentage of households with access to these services: the smallest points indicate 0% access, increasing to 0-20%, 20-40%, and the largest points for more than 40% access.

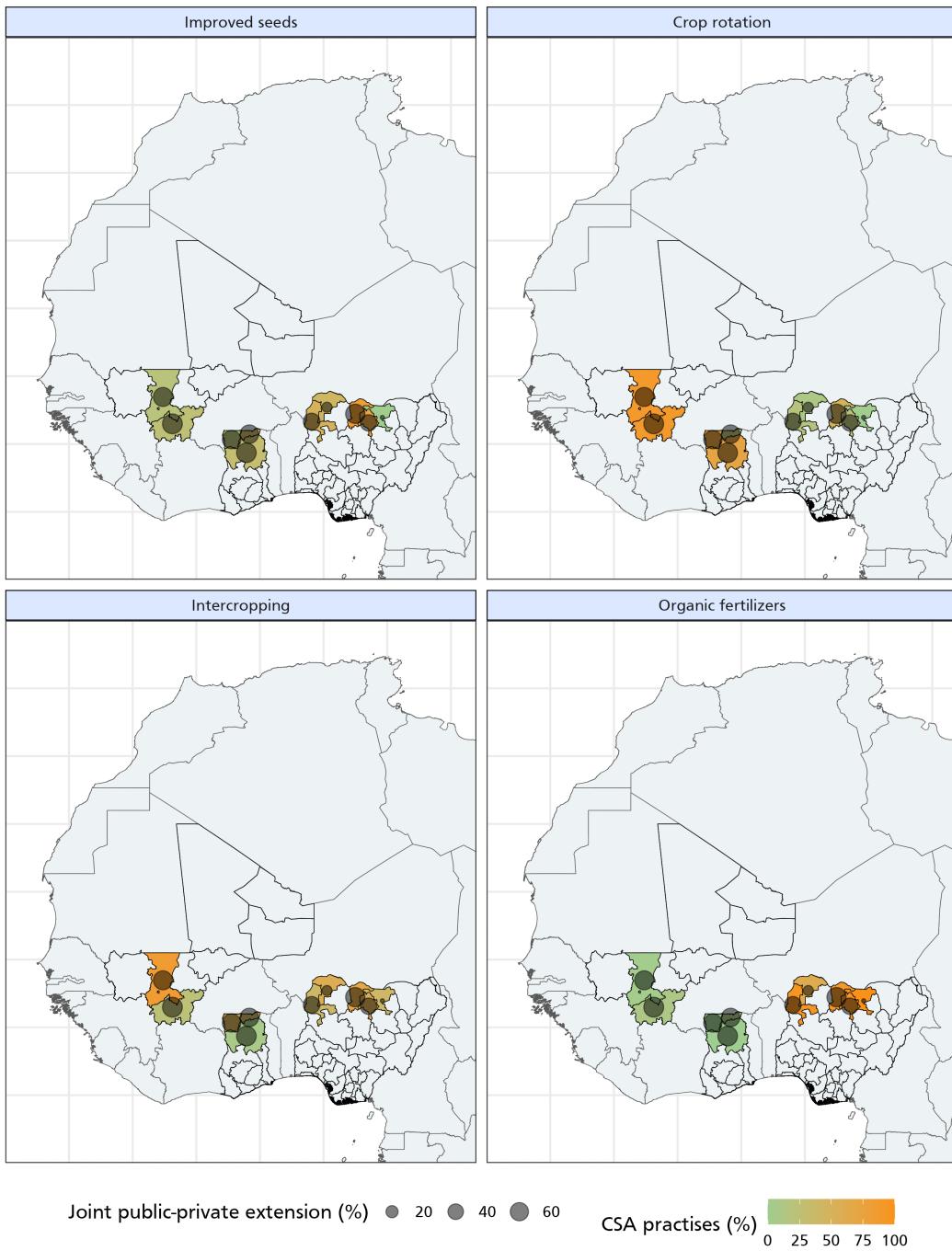


Figure SM4: Note: Joint Public-private extension system and CSA practises by region (2019)

The map illustrates the CSA practices in Ghana, Mali and Nigeria. The shaded areas on the map indicate the percentage of households adopting these CSA practices, with varying intensities of shade representing different levels of adoption: the lightest shade denotes 0-25% adoption, followed by a light shade for 26-50%, a medium shade for 51-75%, and a dark shade for 76-100% of adoption. Overlaid on these shaded regions are points of varying sizes, each representing the extent of access to joint public-private extension services in different regions of the country. The size of these points corresponds to the percentage of households with access to these services: the smallest points indicate 0% access, increasing to 0-20%, 20-40%, 40-60% and the largest points for more than 60% access.

Table SM3: Access to extension services and CSA - (CRE) (Without Controls)

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	0.185 (0.397)	-0.552** (0.240)	-0.290 (0.231)	-0.883*** (0.224)
Public extension	0.527*** (0.201)	-0.0885 (0.208)	0.175 (0.144)	-0.606*** (0.194)
Joint Public-private extension	0.607*** (0.183)	0.524** (0.238)	0.00917 (0.171)	-0.376* (0.219)
Constant	-0.482** (0.191)	-0.502** (0.244)	-0.313*** (0.118)	0.252 (0.188)
Observations	8,604	8,604	8,604	8,604
Additional controls	No	No	No	No
District FE	No	No	No	No
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM4: Access to extension services and CSA - (CRE)

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	-0.0118 (0.195)	0.277 (0.231)	0.343*** (0.133)	-0.149 (0.391)
Public extension	0.178* (0.104)	0.0161 (0.161)	0.378** (0.150)	0.00671 (0.129)
Joint Public-private extension	0.284** (0.127)	0.842*** (0.222)	0.253 (0.154)	0.295 (0.191)
Age of household head (years)	0.0139 (0.0812)	-0.00917 (0.0957)	0.0625 (0.0809)	-0.0953 (0.0919)
Sex of household head (dummy, male=1)	0.133 (0.119)	0.209* (0.111)	-0.0630 (0.111)	-0.0245 (0.247)
Education level (Number of years)	-0.00311 (0.00905)	0.0112* (0.00676)	-0.00896 (0.0106)	-0.00210 (0.00617)
Household size (number of persons)	0.00605 (0.00649)	-0.0113 (0.0102)	0.0214*** (0.00674)	-0.0240** (0.0107)
Distance to the nearest urban market (km)	0.00943** (0.00419)	-0.00599 (0.00730)	0.000657 (0.00533)	0.00240 (0.00614)
Distance the nearest village market (km)	-0.0206** (0.00896)	0.00989 (0.00997)	-0.0219** (0.0107)	-0.0263 (0.0166)
Cooperative membership (dummy)	0.0819 (0.108)	-0.00866 (0.0783)	-0.0605 (0.132)	0.130 (0.114)
Labor cost (USD/ha)	0.000652 (0.00160)	0.00373*** (0.00139)	0.000473 (0.00136)	0.00685*** (0.00207)
Groundnut area (ha)	0.158*** (0.0506)	0.0378 (0.0326)	0.0684* (0.0379)	0.228*** (0.0848)
Off-farm income (dummy)	0.00842 (0.154)	0.220 (0.225)	0.0102 (0.154)	-0.341 (0.256)
Dependency ratio	-0.00586 (0.0227)	-0.0215 (0.0318)	0.0515** (0.0236)	0.0832** (0.0353)
Clay soil (dummy)	0.136*** (0.0526)	-0.00972 (0.0526)	0.0280 (0.0533)	0.0604 (0.0854)
Sandy-clay soil (dummy)	0.113* (0.0593)	0.000136 (0.0561)	0.0290 (0.0396)	0.119** (0.0570)
Silty soil (dummy)	0.169** (0.0666)	-0.00204 (0.0673)	-0.0224 (0.0509)	0.0321 (0.0817)
agebar	-0.0164 (0.0811)	0.00874 (0.0951)	-0.0603 (0.0806)	0.0964 (0.0916)
hhsizobar	-0.00718 (0.00980)	0.0137 (0.0120)	-0.0255*** (0.00834)	0.0103 (0.0115)
gsizebar	-0.0476 (0.0479)	0.0904*** (0.0324)	-0.0266 (0.0352)	-0.0915 (0.0739)
off_farmbar	0.0512 (0.178)	-0.166 (0.163)	0.0508 (0.155)	0.272 (0.281)
dratiobar	0.00862 (0.0250)	0.0313 (0.0365)	-0.0458 (0.0286)	-0.0435 (0.0394)
Constant	-1.845*** (0.188)	-0.500* (0.272)	-0.290 (0.259)	-1.264*** (0.436)
Observations	8,604	8,604	8,604	8,604
Additional controls	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM5: Access to extension services and CSA - (CRE) (Ghana)

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	-0.909* (0.540)	0 0	-1.042** (0.447)	0.936*** (0.100)
Public extension	-0.134 (0.175)	1.180*** (0.425)	-0.0590 (0.226)	0.0992 (0.266)
Joint Public-private extension	0.0418 (0.148)	2.336*** (0.379)	-0.0913 (0.263)	0 0
Age of household head (years)	-0.267 (0.172)	-0.202 (0.165)	0.103 (0.197)	-0.107 (0.180)
Sex of household head (dummy, male=1)	0.0430 (0.146)	0.166 (0.191)	-0.314** (0.149)	0.332 (0.258)
Education level (Number of years)	-0.0103 (0.0185)	0.0337** (0.0143)	0.0192* (0.0115)	-0.0196 (0.0141)
Household size (number of persons)	-0.0200 (0.0345)	0.0176 (0.0179)	-0.0303 (0.0198)	0.0701*** (0.0199)
Distance to the nearest urban market (km)	-0.0319 (0.0259)	0.00251 (0.0153)	0.0254 (0.0205)	0.180*** (0.0551)
Distance the nearest village market (km)	-0.0168 (0.0204)	-0.0197 (0.0248)	-0.0393 (0.0330)	-0.113*** (0.0417)
Cooperative membership (dummy)	0.518*** (0.193)	0.241 (0.184)	0.0564 (0.208)	0.454 (0.301)
Labor cost (USD/ha)	0.00312 (0.00226)	0.0111*** (0.00228)	0.000712 (0.00199)	0.00175 (0.00125)
Groundnut area (ha)	0.333** (0.139)	0.0419 (0.0675)	-0.0511 (0.105)	0.528*** (0.0859)
Off-farm income (dummy)	0.519 (0.733)	-0.431 (0.334)	0.712*** (0.169)	1.961*** (0.282)
Dependency ratio	0.0903* (0.0547)	-0.00890 (0.0514)	0.0111 (0.0890)	0.0252 (0.116)
Clay soil (dummy)	0.245** (0.105)	-0.00160 (0.0822)	-0.0609 (0.118)	0.532*** (0.161)
Sandy-clay soil (dummy)	0.224*** (0.0869)	0.133 (0.0908)	-0.0752 (0.116)	0.613*** (0.213)
Silty soil (dummy)	0.365** (0.184)	0.106 (0.0907)	-0.182 (0.206)	0.243 (0.156)
agebar	0.255 (0.171)	0.195 (0.163)	-0.0964 (0.197)	0.0791 (0.183)
hysizebar	0.0325 (0.0475)	0.00467 (0.0259)	0.0166 (0.0164)	0.0692** (0.0281)
gsizebar	-0.0298 (0.0881)	0.0171 (0.0721)	-0.0412 (0.123)	0.239 (0.162)
off_farmbar	-0.154 (0.612)	0.564 (0.389)	-0.345 (0.448)	-2.104*** (0.449)
dratiobar	-0.0672 (0.0700)	-0.0701 (0.0903)	-0.0718 (0.0825)	0.0361 (0.163)
Constant	0.390 (0.504)	-1.844*** (0.426)	-0.547 (0.347)	-6.351*** (1.081)
Observations	1,494	1,494	1,494	1,494
Additional controls	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM6: Access to extension services and CSA - (CRE) (Mali)

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	0.0116 (0.299)	0.0223 (0.274)	0.385*** (0.122)	-0.0803 (0.115)
Public extension	0.580*** (0.167)	0.159 (0.394)	0.356 (0.264)	-0.689*** (0.170)
Joint Public-private extension	0.192 (0.255)	1.610*** (0.335)	0.408* (0.240)	0.312** (0.133)
Age of household head (years)	0.134 (0.119)	-0.164** (0.0664)	0.0618 (0.133)	-0.126 (0.124)
Sex of household head (dummy, male=1)	0.117 (0.223)	0.157 (0.212)	0.179 (0.128)	-0.305 (0.192)
Education level (Number of years)	0.0596*** (0.0173)	0.0656*** (0.0150)	-0.0487*** (0.0158)	-0.0127 (0.0241)
Household size (number of persons)	0.0116** (0.00521)	-0.00707 (0.00722)	0.0263*** (0.00713)	-0.00501 (0.0137)
Distance to the nearest urban market (km)	0.00990** (0.00473)	0.00278 (0.00771)	0.00178 (0.0147)	-0.00661*** (0.00188)
Distance the nearest village market (km)	-0.0178 (0.0119)	0.0151 (0.0121)	-0.0234** (0.0112)	-0.0230 (0.0176)
Cooperative membership (dummy)	-0.0768 (0.183)	-0.0613 (0.104)	-0.441*** (0.136)	0.113 (0.143)
Labor cost (USD/ha)	0.00196 (0.00357)	0.00224 (0.00238)	-0.00125 (0.00301)	-0.00349 (0.00272)
Groundnut area (ha)	0.127*** (0.0440)	0.0146 (0.0142)	0.00203 (0.0280)	0.00461 (0.0605)
Off-farm income (dummy)	0.191 (0.432)	-0.363* (0.212)	1.044*** (0.324)	0.797* (0.436)
Dependency ratio	-0.00222 (0.0909)	-0.0334 (0.0403)	0.0436 (0.0581)	0.0316 (0.0467)
Clay soil (dummy)	0.0780 (0.115)	-0.0710 (0.105)	0.0548 (0.123)	-0.188 (0.118)
Sandy-clay soil (dummy)	-0.0568 (0.132)	-0.0963 (0.0760)	-0.0104 (0.0937)	0.0110 (0.128)
Silty soil (dummy)	0.234** (0.111)	-0.141 (0.158)	-0.0434 (0.0848)	-0.0106 (0.182)
agebar	-0.141 (0.117)	0.168** (0.0681)	-0.0584 (0.134)	0.125 (0.124)
hysizebar	-0.0165* (0.00954)	0.0162 (0.00992)	-0.0316*** (0.00801)	-0.00359 (0.0157)
gsizebar	0.0215 (0.0341)	0.0866** (0.0361)	-0.0406 (0.0388)	0.00398 (0.0871)
off_farmbar	-0.424 (0.628)	-0.0412 (0.322)	-0.378 (0.885)	-0.0192 (0.641)
dratiobar	0.0138 (0.0561)	-0.0309 (0.0707)	-0.0735 (0.0856)	0.0217 (0.0898)
Constant	1.690*** (0.369)	-2.743*** (0.565)	-0.464 (0.434)	-0.619** (0.269)
Observations	2,520	2,520	2,520	2,520
Additional controls	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM7: Access to extension services and CSA - (CRE) (Nigeria)

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	0.152 (0.312)	0.717*** (0.265)	0.519* (0.273)	-0.207 (0.425)
Public extension	0.0638 (0.146)	0.0660 (0.172)	0.471* (0.242)	0.218 (0.166)
Joint Public-private extension	0.455*** (0.152)	0.471* (0.242)	0.184 (0.174)	0.0353 (0.246)
Age of household head (years)	0.0698 (0.0966)	0.0664 (0.142)	0.0664 (0.113)	-0.000880 (0.110)
Sex of household head (dummy, male=1)	0.420* (0.230)	-0.0769 (0.133)	0.207 (0.242)	0.111 (0.267)
Education level (Number of years)	-0.0110 (0.0126)	-0.00321 (0.00649)	-0.0126 (0.0137)	-0.00915 (0.00637)
Household size (number of persons)	-0.00181 (0.0114)	-0.0142 (0.0195)	0.0178 (0.0126)	-0.0454** (0.0208)
Distance to the nearest urban market (km)	0.0108** (0.00469)	-0.00853 (0.00985)	-0.00109 (0.00487)	0.00379 (0.00756)
Distance the nearest village market (km)	-0.0494* (0.0277)	0.0270 (0.0303)	-0.00474 (0.0338)	-0.00224 (0.0306)
Cooperative membership (dummy)	-0.0130 (0.105)	0.0321 (0.0821)	0.149 (0.243)	0.103 (0.140)
Labor cost (USD/ha)	-0.000566 (0.00187)	0.00300 (0.00186)	0.00110 (0.00181)	0.0171*** (0.00440)
Groundnut area (ha)	0.0800 (0.0489)	0.0742 (0.0629)	0.176*** (0.0605)	0.551*** (0.126)
Off-farm income (dummy)	-0.0387 (0.127)	0.176 (0.221)	-0.109 (0.161)	-0.487* (0.284)
Dependency ratio	-0.0182 (0.0223)	-0.0155 (0.0425)	0.0715** (0.0279)	0.0757 (0.0473)
Clay soil (dummy)	0.122 (0.0770)	0.0296 (0.0812)	0.0820 (0.0634)	0.147 (0.0937)
Sandy-clay soil (dummy)	0.164*** (0.0612)	0.0253 (0.0834)	0.0884** (0.0352)	0.133** (0.0533)
Silty soil (dummy)	0.0534 (0.0889)	0.0490 (0.0874)	0.0414 (0.0514)	-0.00442 (0.0735)
agebar	-0.0648 (0.0964)	-0.0649 (0.141)	-0.0681 (0.112)	0.00229 (0.110)
hhsizobar	-0.00656 (0.0209)	-0.00412 (0.0246)	-0.0129 (0.0168)	0.0321 (0.0257)
gsizebar	-0.0295 (0.0601)	0.101* (0.0613)	0.0115 (0.0498)	-0.157* (0.0931)
off_farmbar	0.125 (0.163)	-0.124 (0.168)	0.101 (0.168)	0.272 (0.283)
dratiobar	0.0206 (0.0334)	0.0547 (0.0467)	-0.0483 (0.0294)	-0.0355 (0.0380)
Constant	-2.022*** (0.364)	-0.128 (0.409)	-1.063** (0.486)	0.387 (0.370)
Observations	4,590	4,590	4,590	4,590
Additional controls	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM8: Coefficient stability and Unobserved selection

		Private extension	Public extension	Joint Public-Private extension
Croprotation	Beta	0.059	0.026	0.13
	Delta	-2.69	-1.17	5.88
	R^2_{max}	0.078	0.078	0.078
	Observations	8604	8604	8604
Improved seed	Beta	0.11	0.086	0.18
	Delta	-2.66	-0.51	1.95
	R^2_{max}	0.075	0.075	0.075
	Observations	8604	8604	8604
Intercropping	Beta	0.2	0.22	0.2
	Delta	-5.41	-5.62	-95.53
	R^2_{max}	0.073	0.073	0.073
	Observations	8604	8604	8604
Organic fertilizer	Beta	-0.027	-0.012	0.012
	Delta	2.35	3.65	1.39
	R^2_{max}	0.11	0.11	0.11
	Observations	8604	8604	8604

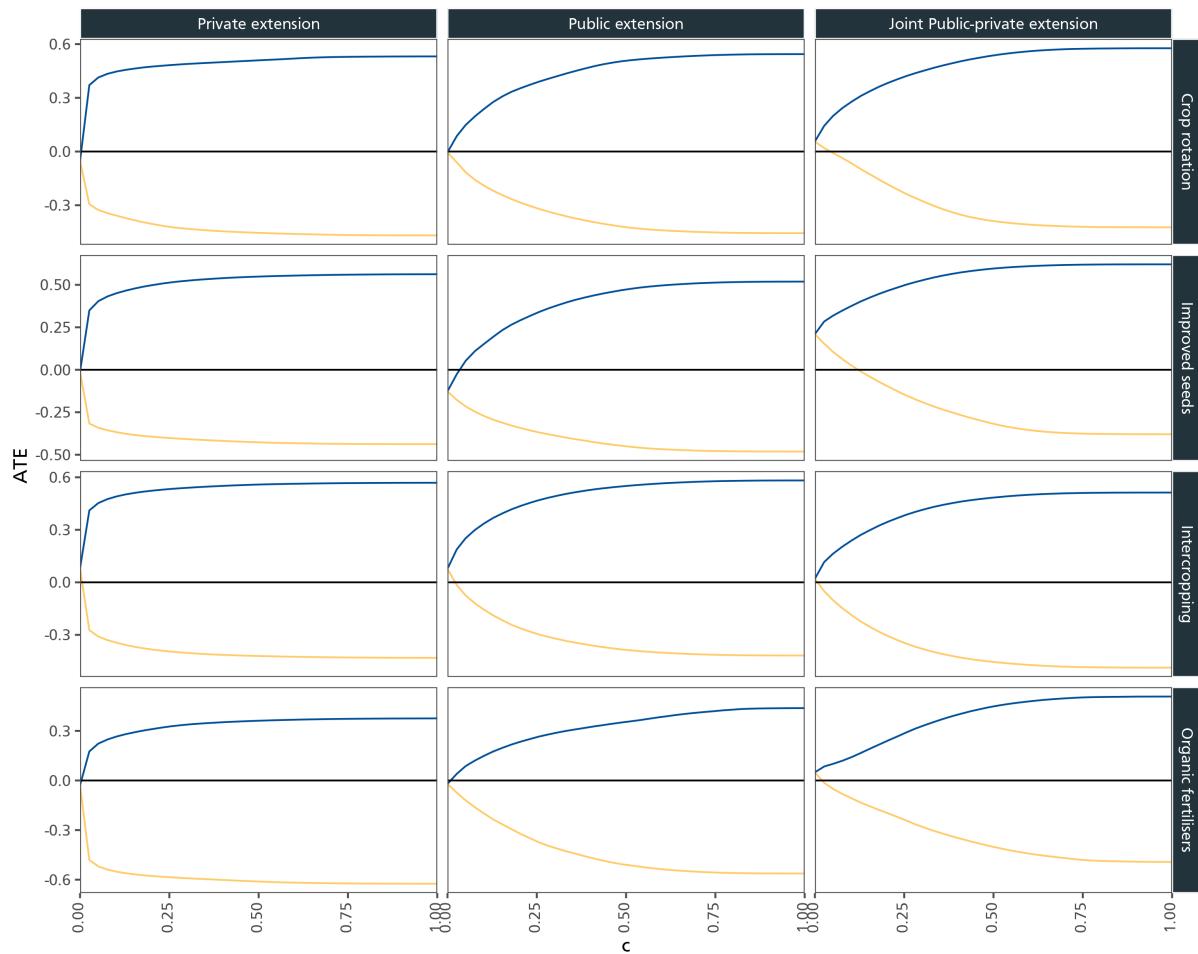


Figure SM5: Treatment effects sensitivity (Bounds on the ATE)

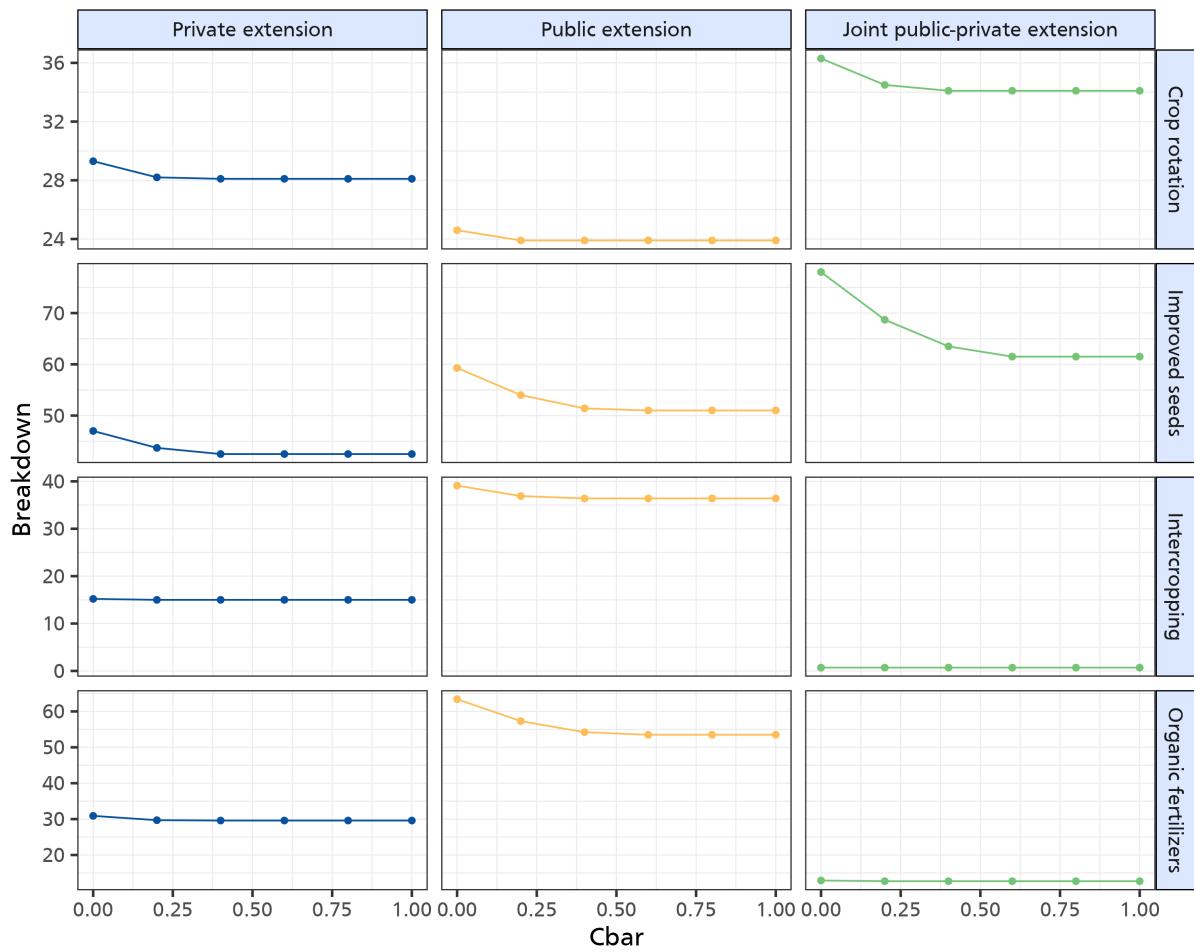


Figure SM6: Regression sensitivity analysis (DMP 2022), breakdown

Private extension

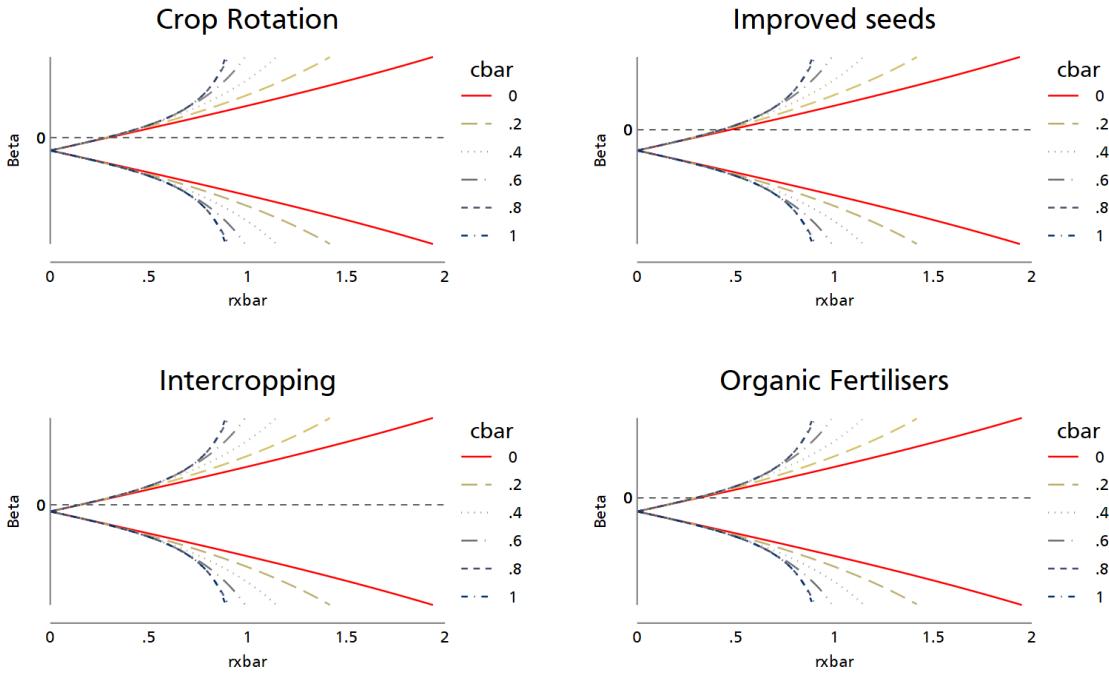


Figure SM7: Selection and coefficient stability following the DMP 2022 (Private extension)

Note: The figure shows the sensitivity analysis conducted following Diegert et al. (2022). It presents the bounds derived from the estimated coefficients in the full model for private extension including all control variables as specified in Diegert et al. (2022). The coefficient values (rxbar) indicate the magnitude of selection on unobservables relative to observables that would be required to nullify the results of the study. Different line patterns within the figure represent different assumptions of endogeneity between the included controls and the omitted variables (cbar). In particular, the dotted line represents the most stringent scenario, assuming full endogeneity. For example, the point of intersection at 0.28 from crop rotation implies that the baseline results are statistically significant and different from zero, provided that the selection on the unobservables does not exceed 28% of the selection on the observables. The intersection points for improved seed, intercropping and organic fertilizer are 0.42, 0.15, 0.295 respectively.

Public extension

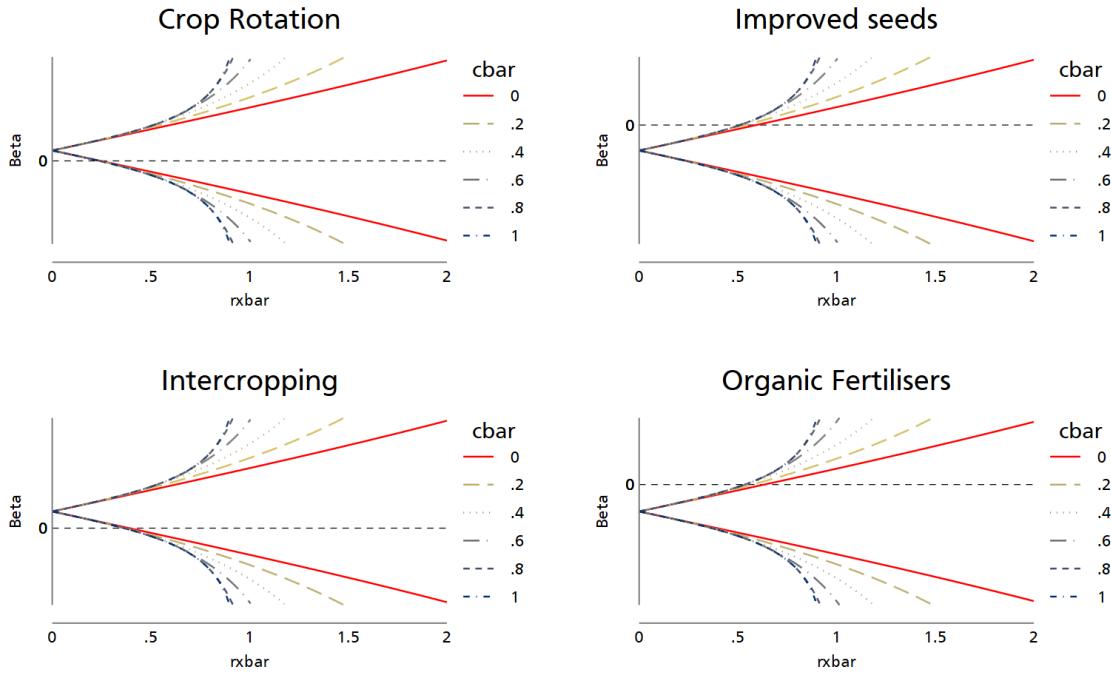


Figure SM8: Selection and coefficient stability following the DMP 2022 (Public extension)

Note: The figure shows the sensitivity analysis conducted following Diegert et al. (2022). It presents the bounds derived from the estimated coefficients in the full model for public extension including all control variables as specified in Diegert et al. (2022). The coefficient values ($rxbar$) indicate the magnitude of selection on unobservables relative to observables that would be required to nullify the results of the study. Different line patterns within the figure represent different assumptions of endogeneity between the included controls and the omitted variables ($cbar$). In particular, the dotted line represents the most stringent scenario, assuming full endogeneity. For example, the point of intersection at 0.239 from crop rotation implies that the baseline results are statistically significant and different from zero, provided that the selection on the unobservables does not exceed 23.9% of the selection on the observables. The intersection point for improved seed, intercropping and organic fertilizer are 0.51, 0.364, 0.535 respectively.

Joint Public-private extension

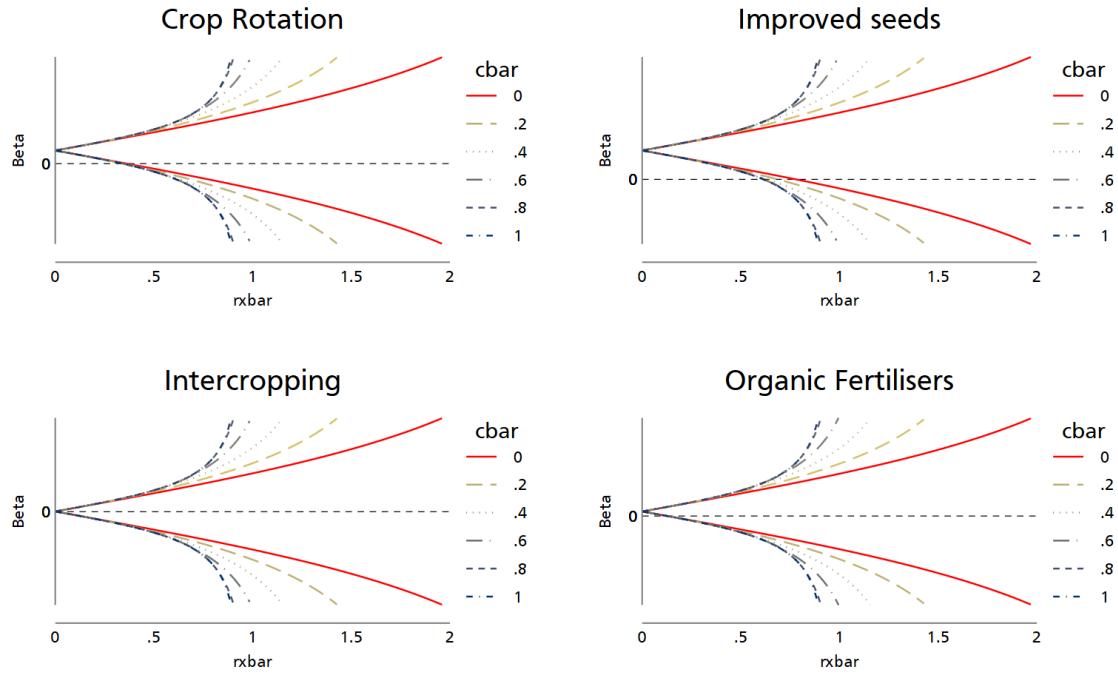


Figure SM9: Selection and coefficient stability following the DMP 2022 (Joint Public-private extension)

Note: The figure shows the sensitivity analysis conducted following Diegert et al. (2022). It presents the bounds derived from the estimated coefficients in the full model for joint private-public extension including all control variables as specified in Diegert et al. (2022). The coefficient values (rxbar) indicate the magnitude of selection on unobservables relative to observables that would be required to nullify the results of the study. Different line patterns within the figure represent different assumptions of endogeneity between the included controls and the omitted variables (cbar). In particular, the dotted line represents the most stringent scenario, assuming full endogeneity. For example, the point of intersection at 0.341 from crop rotation implies that the baseline results are statistically significant and different from zero, provided that the selection on the unobservables does not exceed 34.1% of the selection on the observables. The intersection point for improved seed, intercropping and organic fertilizer are 0.61, 0.07, 0.127 respectively.

Table SM9: Hausman Taylor estimation

Variables	Crop rotation	Improved seeds	Intercropping	Organic fertilisers
Private extension	0.040 (0.025)	0.077*** (0.028)	0.165*** (0.039)	-0.048 (0.036)
Public extension	0.014 (0.022)	0.025 (0.021)	0.174*** (0.022)	-0.012 (0.016)
Joint Public-private extension	0.127*** (0.019)	0.177*** (0.021)	0.157*** (0.022)	0.035** (0.016)
Age of household head (years)	-0.001** (0.000)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.000)
Household size (number of persons)	0.002 (0.001)	-0.002* (0.001)	0.006*** (0.001)	-0.005*** (0.001)
Distance to the nearest urban market (km)	0.002*** (0.000)	-0.002*** (0.001)	-0.001* (0.001)	0.002*** (0.001)
Distance the nearest village market (km)	-0.010*** (0.002)	0.005*** (0.001)	-0.006*** (0.002)	-0.003** (0.001)
Cooperative membership (dummy)	0.040** (0.016)	0.030* (0.016)	0.014 (0.021)	0.030** (0.013)
Labor cost (USD/ha)	0.000 (0.000)	0.001*** (0.000)	-0.000 (0.000)	0.001*** (0.000)
Groundnut area (ha)	0.036*** (0.005)	0.019*** (0.005)	0.017*** (0.006)	0.045*** (0.005)
Off-farm income (dummy)	0.011 (0.022)	0.047* (0.027)	0.002 (0.029)	-0.062*** (0.021)
Dependency ratio	-0.001 (0.005)	-0.002 (0.005)	0.016*** (0.006)	0.017*** (0.004)
Clay soil (dummy)	0.033 (0.021)	-0.012 (0.020)	0.020 (0.025)	0.006 (0.018)
Sandy-clay soil (dummy)	0.023 (0.016)	-0.010 (0.016)	0.023 (0.020)	0.033** (0.015)
Silty soil (dummy)	0.035* (0.020)	0.002 (0.020)	0.022 (0.025)	0.012 (0.018)
Sex of household head (dummy, male=1)	0.027 (0.025)	0.077*** (0.023)	-0.056* (0.031)	-0.006 (0.022)
Education level (Number of years)	-0.001 (0.002)	0.003** (0.002)	-0.003 (0.002)	-0.001 (0.001)
Constant	-0.025 (0.051)	0.422*** (0.050)	0.293*** (0.071)	0.842*** (0.039)
Observations	8,604	8,604	8,604	8,604
Number of id	2,868	2,868	2,868	2,868
Additional controls	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table SM10: Attrition bias check

Variables	Overall	Ghana	Mali	Nigeria
Sex of household head	0.0597 (0.159)	0.0348 (0.234)	0.133 (0.339)	0.191 (0.433)
Age of household head (years)	0.00488 (0.00397)	-0.00385 (0.00996)	0.00724 (0.00618)	0.00255 (0.00687)
Number of years at school without repetition	-0.00311 (0.00997)	-0.0114 (0.0241)	-0.00182 (0.0272)	0.0124 (0.0131)
Number of years in groundnut production as independent household head	-0.00214 (0.00423)	0.00415 (0.0114)	-0.00854 (0.00673)	0.00380 (0.00713)
Number of people in the household	0.000260 (0.00438)	0.0112 (0.0190)	-0.00362 (0.00625)	-0.00254 (0.0120)
dependency ratio	-0.0879 (0.0286)	-0.0422 (0.0732)	0.0500 (0.0579)	-0.0526 (0.0398)
Have you or other members of your household received cash credit for groundnut d	0.266 (0.165)	0.352 (0.600)	0.337 (0.226)	0.0955 (0.294)
Have you or other members of your household received credit in kind for groundn	-0.117 (0.146)		0.173 (0.237)	-0.0908 (0.204)
Log household distance to urban market	0.0412 (0.0393)	0.0655 (0.160)	0.115* (0.0626)	-0.0110 (0.0589)
off-farm income	-0.148 (0.128)		0.391 (0.347)	-0.0495 (0.149)
Constant	-1.850*** (0.249)	-1.497*** (0.576)	-2.194*** (0.462)	-1.988*** (0.551)
Observations	3,040	517	900	1,600

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1