Supplementary Tables:

Table S1: Type II ANOVA showing χ2, degree of freedom, and p-values from mixed effects model results fit using treatments as fixed effect predictors for (a) soil temperature, (b) daily temperature range, (c) volumetric water content, (d) volumetric water content, (e, f) soil organic matter, (g, h) microbial biomass carbon, (i, j) soil respiration, (k) above ground biomass, (l) below ground biomass, and (m) seed cotton yield. The bolded and italicized values are significant at $P < 0.05$. R2m: Marginal r-square value; R2c: Conditional r-squared value.

(a)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	1.48	1	0.22	0.23/0.32
Residue	17.18	1	***< 0.001***	
Irrigation	18.51	1	***< 0.001***	
OTC: Residue	0.58	1	0.44	
OTC: Irrigation	0.03	1	0.87	
Residue: Irrigation	0.34	1	0.56	
OTC: Residue: Irrigation	0.03	1	0.85	

(b)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	7.05	1	***0.007***	0.20/0.66
Residue	80.15	1	***< 0.001***	
Irrigation	1.83	1	0.18	
OTC: Residue	1.91	1	0.17	
OTC: Irrigation	0.23	1	0.63	
Residue: Irrigation	0.03	1	0.86	
OTC: Residue: Irrigation	0.35	1	0.55	

(c)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	2.65	1	0.10	0.08/0.71
Residue	8.56	1	***0.003***	
Irrigation	3.49	1	0.06	
OTC: Residue	5.69	1	***0.017***	
OTC: Irrigation	5.52	1	***0.019***	
Residue: Irrigation	0.47	1	0.49	
OTC: Residue: Irrigation	4.96	1	***0.026***	

(d)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	498.31	1	***< 0.001***	0.42/0.95
Residue	3.59	1	0.058	
Irrigation	12.64	1	***< 0.001***	
OTC: Residue	0.28	1	0.59	
OTC: Irrigation	11.09	1	***< 0.001***	
Residue: Irrigation	3.29	1	0.069	
OTC: Residue: Irrigation	1.69	1	0.19	

(e)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	0.96	1	0.33	0.44/0.70
Residue	2.19	1	0.14	
Irrigation	8.04	1	***0.005***	
OTC: Residue	0.22	1	0.64	
OTC: Irrigation	0.44	1	0.50	
Residue: Irrigation	0.18	1	0.68	
OTC: Residue: Irrigation	0.41	1	0.52	

(f)

Continuous fixed effect predictors	χ^2	Df	P	R^2m/R^2c
Volumetric water content	0.77	1	0.38	0.05/0.69
Temperature	4.03	1	**0.045**	

(g)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	1.07	1	0.30	0.36/0.39
Residue	10.73	1	***0.001***	
Irrigation	4.74	1	***0.029***	
OTC: Residue	7.37	1	***0.006***	
OTC: Irrigation	0.66	1	0.42	
Residue: Irrigation	0.14	1	0.71	
OTC: Residue: Irrigation	0.86	1	0.35	

(h)

Continuous fixed effect predictors	χ^2	Df	P	R^2m/R^2c
Organic matter	10.24	1	***0.001***	0.35/0.35
Temperature	0.13	1	0.72	
pH	0.02	1	0.90	
NO_3^-	7.42	1	***0.006***	
P	0.002	1	0.99	
Volumetric water	0.006	1	0.93	

(i)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	4.86	1	***0.03***	0.05/0.06
Residue	72.84	1	***< 0.001***	
Irrigation	1.52	1	0.21	
OTC: Residue	2.94	1	0.08	
OTC: Irrigation	5.64	1	***0.02***	
Residue: Irrigation	1.20	1	0.27	
OTC: Residue: Irrigation	0.02	1	0.88	

(j)

Continuous fixed effect predictors	χ^2	Df	P	R^2m/R^2c
Volumetric water content	2.42	1	0.12	0.01/0.026
Temperature	1.22	1	0.27	
Organic matter	0.22	1	0.64	
pH	22.33	1	***< 0.001***	

(k)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	1.50	1	0.21	0.66/0.81
Residue	0.29	1	0.58	
Irrigation	22.62	1	***< 0.001***	
OTC: Residue	0.12	1	0.73	
OTC: Irrigation	0.52	1	0.47	
Residue: Irrigation	0.31	1	0.58	
OTC: Residue: Irrigation	1.29	1	0.25	

(l)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	1.15	1	0.28	0.42/0.61
Residue	3.69	1	***0.05***	
Irrigation	9.02	1	***0.002***	
OTC: Residue	0.72	1	0.39	
OTC: Irrigation	1.03	1	0.30	
Residue: Irrigation	0.92	1	0.24	
OTC: Residue: Irrigation	0.001	1	0.99	

(m)

Categorical fixed effect predictors	χ^2	Df	P	R^2m/R^2c
OTC	0.05	1	0.83	0.38/0.55
Residue	4.84	1	***0.03***	
Irrigation	6.87	1	***0.008***	
OTC: Residue	0.63	1	0.43	
OTC: Irrigation	3.00	1	0.08	
Residue: Irrigation	0.07	1	0.79	
OTC: Residue: Irrigation	3.56	1	0.06	