Supplementary material

Table S1. Analysis of variance (ANOVA) of the effects of the treatments and their interaction on soil properties, and near saturation water retention model parameters (θ_s, θ_r, α, n), and the HEMC structure stability indices (VDP, MS & SI).

Factors	df	Soil properties												
		pH	EC	Sand	Silt	Clay	Ca	Mg	Na	K	CEC	$CaCO_3$	SOC	CCR
Soil (or W)	2	*	*	*	*	*	*	*	*	*	*	*	*	*
LU	3	*	*	*	*	*	*	*	*	*	*	*	*	*
Soil × LU	6	*	*	*	*	*	*	*	*	*	*	*	*	*
Model	11	12.3	3.8	17856	4612	20900	332.4	6.9	53.5	10.7	1196	173.9	257.1	25.9
Error	36	0.3	0.03	109	93	94	9.6	0.6	1.5	0.2	166	0.5	1.2	0.1
Total	47	12.6	3.8	17965	4647	20994	342.0	7.5	55.0	10.9	13.62	174.4	258.4	26
R^2		0.97	0.99	0.99	0.99	0.99	0.97	0.93	0.97	0.97	0.88	0.99	0.99	0.99
LSD		0.067	0.019	1.23	0.70	1.14	0.36	0.097	0.15	0.055	1.52	0.082	0.13	0.022

		Water retention model parameters and HEMC stability indices						
Factors	df	θ_s	θ_r	α	n	VDP	MS	SI
Soil (or W)	2	*	*	*	*	*	*	*
LU	3	*	*	*	*	*	*	*
Soil × LU	6	*	*	*	*	*	*	*
PAM	2	*	*	*	*	*	*	*
Soil × PAM	4	*	*	*	*	*	*	*
LU × PAM	6	*	*	*	*	*	*	*
Soil×LU×PAM	12	*	*	*	*	*	*	*
Model	35	3.512	0.713	0.0114	319.7	2.628	216.5	0.0339
Error	108	0.014	0.008	0.0004	7.4	0.026	6.3	0.0004
Total	143	3.526	0.721	0.0118	327.1	2.654	222.8	0.0343
R^2		0.99	0.98	0.96	0.98	0.99	0.97	0.98
LSD		0.0079	0.0062	0.0014	0.18	0.011	0.17	0.0014

W: watershed (elevation), LU: land use, PAM: polyacrylamide, VDP: volume of drainable pores, MS: modal suction, SI: structural index, α and n, are the location of the inflection point and the steepness of the water retention curve. θr and θs, are the residual and saturated water content, EC: electrical conductivity (1:2.5), CEC: cation exchange capacity, SOC: soil organic carbon, CCR: the ratio of clay content to CEC (indication of clay mineralogy); *: $p < 0.001$.

Table S2. Pearson pair–wise correlation coefficients for properties of the soils used. Units of the respective properties are as in Table S1. The coefficients higher than 0.5 are significant at $p < 0.01$–0.001.

a) Guder watershed

	pH	EC	Sand	Silt	Clay	Ca	Mg	Na	K	CEC	CaCO3	SOC
pH	1											
EC	0.70	1										
Sand	0.80	0.14	1									
Silt	–0.77	–0.10	–0.97	1								
Clay	–0.66	0.05	–0.93	0.93	1							
Ca	0.66	0.21	0.74	–0.64	–0.83	1						
Mg	–0.56	0.11	–0.80	0.88	0.94	–0.68	1					
Na	–0.29	–0.14	–0.18	0.42	0.16	0.25	0.42	1				
K	–0.39	0.23	–0.69	0.82	0.65	–0.12	0.72	0.68	1			
CEC	0.84	0.88	0.44	–0.43	–0.17	0.18	–0.10	–0.40	–0.22	1		
CaCO3	0.84	0.27	0.93	–0.96	–0.80	0.50	–0.73	–0.48	–0.81	0.63	1	
SOC	0.99	0.71	0.75	–0.76	–0.63	0.60	–0.58	–0.42	–0.41	0.85	0.82	1

b) Abagerima watershed

	pH	EC	Sand	Silt	Clay	Ca	Mg	Na	K	CEC	$CaCO_3$	SOC
pH	1											
EC	0.87	1										
Sand	0.49	0.06	1									
Silt	–0.57	–0.14	–0.96	1								
Clay	0.27	0.39	–0.50	0.37	1							
Ca	0.99	0.90	0.47	–0.55	0.22	1						
Mg	–0.55	–0.23	–0.50	0.73	–0.19	–0.49	1					
Na	0.48	0.72	–0.02	0.15	0.00	0.55	0.45	1				
K	0.88	0.92	0.36	–0.37	0.03	0.92	–0.18	0.79	1			
CEC	0.21	0.62	–0.56	0.62	0.39	0.27	0.57	0.83	0.48	1		
CaCO3	0.56	0.62	0.42	–0.32	–0.44	0.63	0.16	0.83	0.85	0.41	1	
SOC	0.99	0.88	0.49	–0.59	0.19	0.99	–0.55	0.49	0.91	0.21	0.62	1

c) Dibatie watershed

	pH	EC	Sand	Silt	Clay	Ca	Mg	Na	K	CEC	CaCO3	SOC
pH	1											
EC	0.97	1										
Sand	0.65	0.61	1									
Silt	0.88	0.88	0.41	1								
Clay	–0.69	–0.82	–0.55	–0.77	1							
Ca	0.81	0.80	0.16	0.68	–0.39	1						
Mg	0.84	0.81	0.17	0.91	–0.53	0.87	1					
Na	–0.43	–0.49	0.38	–0.54	0.29	–0.80	–0.77	1				
K	0.34	0.29	–0.11	0.71	–0.31	0.23	0.66	–0.40	1			
CEC	0.94	0.88	0.57	0.71	–0.46	0.89	0.79	–0.46	0.15	1		
CaCO3	0.84	0.81	0.54	0.97	–0.75	0.50	0.80	–0.31	0.73	0.64	1	
SOC	0.70	0.72	0.53	0.32	–0.39	0.74	0.41	–0.32	–0.40	0.82	0.31	1

EC: electrical conductivity (1:2.5); CEC: cation exchange capacity, SOC: soil organic carbon