

Table S1. Quadratic regression orthogonal design and experimental results.

Code	Z ₁	Z ₂	Z ₃	Z ₄	Z ₁ '	Z ₂ '	Z ₃ '	Z ₄ '	M _F	A _I	0–10cm M _C	10–20cm M _C	20–30cm M _C	30–40cm M _C
1	1	1	1	1	0.333	0.333	0.333	0.333	300	4670.63	28.03	26.85	26.62	22.56
2	1	1	1	-1	0.333	0.333	0.333	0.333	330	4340.74	30.39	29.15	28.18	24.05
3	1	1	-1	1	0.333	0.333	0.333	0.333	420	4114.66	28.94	28.53	25.58	23.24
4	1	1	-1	-1	0.333	0.333	0.333	0.333	310	4205.09	28.82	27.84	27.01	25.3
5	1	-1	1	1	0.333	0.333	0.333	0.333	370	5425.92	31.05	30.9	29.95	26.33
6	1	-1	1	-1	0.333	0.333	0.333	0.333	380	5064.19	32.15	31.05	29.85	26.88
7	1	-1	-1	1	0.333	0.333	0.333	0.333	140	6130.2	33.86	32.29	31.93	28.71
8	1	-1	-1	-1	0.333	0.333	0.333	0.333	200	6465.89	33.79	32.92	30.12	27.01
9	-1	1	1	1	0.333	0.333	0.333	0.333	680	5290.27	31.62	31.26	28.45	25.77
10	-1	1	1	-1	0.333	0.333	0.333	0.333	700	5351.77	31.25	30.64	28.89	25.55
11	-1	1	-1	1	0.333	0.333	0.333	0.333	700	5154.62	31.85	30.5	28.85	25.99
12	-1	1	-1	-1	0.333	0.333	0.333	0.333	664	5109.41	31.09	30.21	28.76	25.98
13	-1	-1	1	1	0.333	0.333	0.333	0.333	520	5425.92	36.26	34.92	33.63	30.56
14	-1	-1	1	-1	0.333	0.333	0.333	0.333	520	5878.08	35.58	35.04	32.61	29.11
15	-1	-1	-1	1	0.333	0.333	0.333	0.333	360	7234.56	36.73	35.9	33.71	30.84
16	-1	-1	-1	-1	0.333	0.333	0.333	0.333	400	7151.91	35.54	34.7	32.56	29.39
17	-2	0	0	0	3.333	-0.667	-0.667	-0.667	720	5471.14	33.6	33.32	31.12	27.9
18	2	0	0	0	3.333	-0.667	-0.667	-0.667	160	5109.41	29.48	29.35	28.03	25.22
19	0	-2	0	0	-0.667	3.333	-0.667	-0.667	140	7958.02	35.41	35.2	34.27	29.49
20	0	2	0	0	-0.667	3.333	-0.667	-0.667	560	4114.66	30.13	26.83	25.84	24.63
21	0	0	-2	0	-0.667	-0.667	3.333	3.333	390	5411.2	31.31	31.30	30.75	26.52
22	0	0	2	0	-0.667	-0.667	3.333	3.333	680	4673.76	27.95	26.12	24.01	22.02
23	0	0	0	-2	-0.667	-0.667	-0.667	-0.667	390	5425.92	32.39	31.28	30.11	27.51
24	0	0	0	2	-0.667	-0.667	-0.667	-0.667	375	5245.06	32.49	30.55	29.33	26.4
25	0	0	0	0	-0.667	-0.667	-0.667	-0.667	390	5516.35	31.87	31.69	29.76	26.14
26	0	0	0	0	-0.667	-0.667	-0.667	-0.667	485	5546.38	31.98	30.58	29.75	26.19

27	0	0	0	0	-0.667	-0.667	-0.667	-0.667	485	5697.22	31.92	30.74	30.15	25.97
28	0	0	0	0	-0.667	-0.667	-0.667	-0.667	420	5516.35	31.47	31.02	29.81	26.18
29	0	0	0	0	-0.667	-0.667	-0.667	-0.667	440	5425.92	31.68	31.18	29.3	25.83
30	0	0	0	0	-0.667	-0.667	-0.667	-0.667	420	5558.94	31.94	31.80	29.66	26.15
31	0	0	0	0	-0.667	-0.667	-0.667	-0.667	450	5561.57	31.92	31.02	29.8	26.1
32	0	0	0	0	-0.667	-0.667	-0.667	-0.667	420	5561.57	31.92	31.02	29.8	26.1
33	0	0	0	0	-0.667	-0.667	-0.667	-0.667	475	5561.57	31.92	31.02	29.8	26.1
34	0	0	0	0	-0.667	-0.667	-0.667	-0.667	420	5561.57	31.92	31.02	29.8	26.1
35	0	0	0	0	-0.667	-0.667	-0.667	-0.667	435	5561.57	31.92	31.02	29.8	26.1
36	0	0	0	0	-0.667	-0.667	-0.667	-0.667	455	5561.57	31.92	31.02	29.8	26.1

M_F, A_I, and M_C represents mean migration time of wetting front, accumulative infiltration and moisture content, respectively.