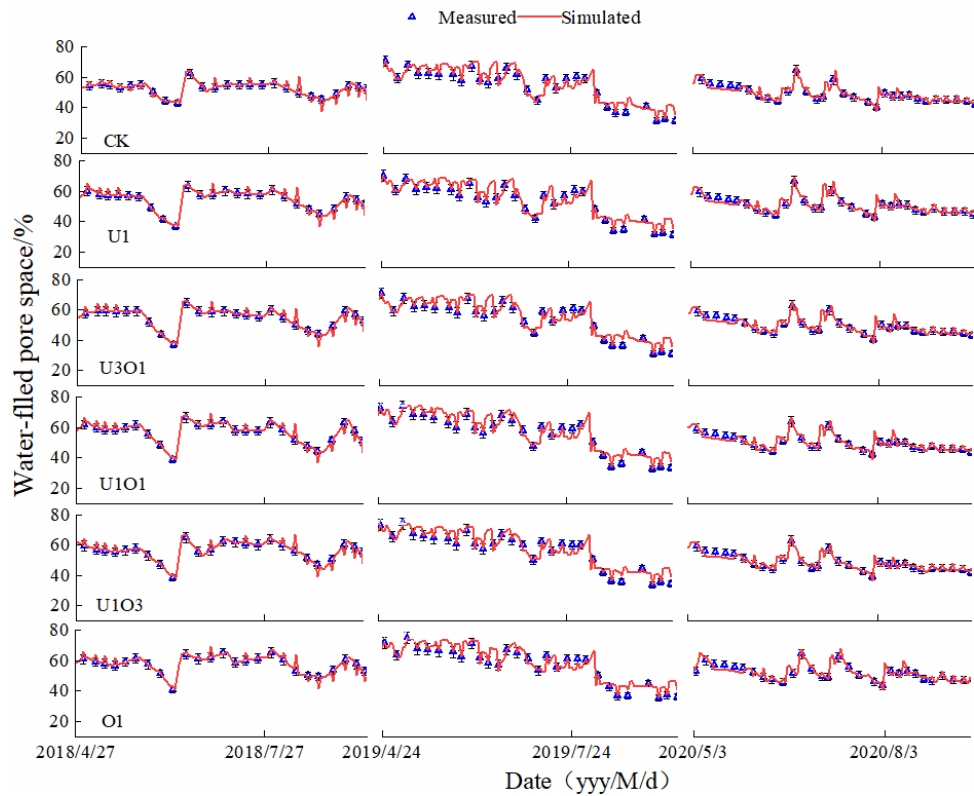


**Figure S1.** The modeled and measured soil temperature under different treatments. Bars are the standard deviation of the measured values.

Table S1 Statistical evaluation of model simulation of soil temperature from different treatments in 2018–2020.

Treatment	Measured value (°C)	MBE (°C)	RMSE (%)	nRMSE (%)	R <sup>2</sup>
Calibration					
U1	26.76±1.31	0.22	3.37	12.88	0.81
Validation					
CK	26.88±1.09	−0.15	3.71	13.07	0.77
U3O1	26.66±1.30	1.30	3.75	12.89	0.79
U1O1	26.54±1.15	1.22	3.46	13.05	0.75
U1O3	26.74±1.18	0.11	3.55	12.99	0.81
O1	26.51±1.29	1.56	3.67	12.81	0.76

Note: measured values, mean ± standard deviation.



**Figure S2.** The modeled and measured soil WFPS under different treatments. Bars are the standard deviation of the measured values.

Table S2 Statistical evaluation of model simulation of WFPS from different treatments in 2018–2020.

Treatment	Measured value (%)	MBE (%)	RMSE (%)	nRMSE (%)	R <sup>2</sup>
Calibration					
U1	55.51±3.21	0.95	4.28	8.32	0.78
Validation					
CK	52.01±4.19	1.12	4.15	8.69	0.79
U3O1	53.16±3.09	1.37	4.83	8.98	0.80
U1O1	53.69±2.84	1.09	4.30	8.44	0.83
U1O3	54.02±4.45	1.01	4.51	8.51	0.84
O1	54.19±3.01	1.56	4.66	8.41	0.84

Note: measured values, mean ± standard deviation.