Table S1: The specific fertilization methods are summarized

Irrigation management	Fertilization treatment	Content
AWD (6404 m^3/hm^2)	CK	No fertilization
	FTF	Organic fertilizer 500 kg，urea 30 kg，calcium superphosphate 50 kg（base fertilizer; Broadcast application
	PMF	Pig manure 146 kg，urea17.3 kg，calcium superphosphate 7.25 kg，KCL 8 kg（K_2SO_4）
	SRF	Slow release fertilizer 3.33 kg，urea 17.3 kg，no calcium superphosphate，KCL 8.4 kg
CI (10966 m^3/hm^2)	CK	No fertilization
	FTF	Organic fertilizer 500 kg，urea 30 kg，calcium superphosphate 50 kg（base fertilizer; Broadcast application
	PMF	Pig manure 146 kg，urea17.3 kg，calcium superphosphate 7.25 kg，KCL 8 kg（K_2SO_4）
	SRF	Slow release fertilizer 3.33 kg，urea 17.3 kg，no calcium superphosphate，KCL 8.4 kg

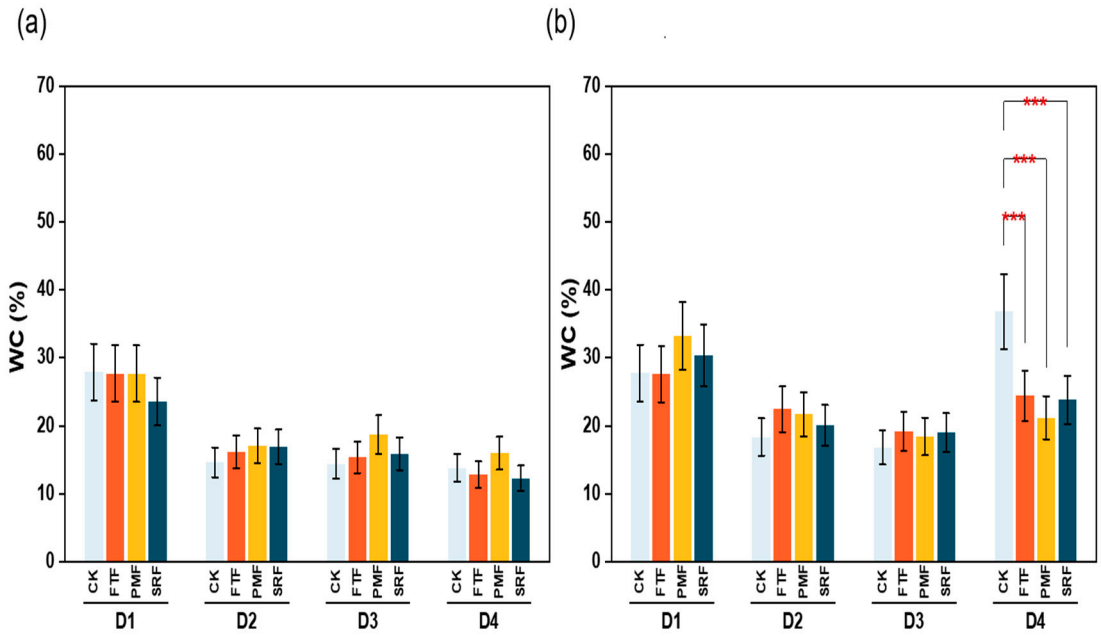


Figure.S1. Changes in soil water content under (a) AWD and (b) CI treatment in different depth.

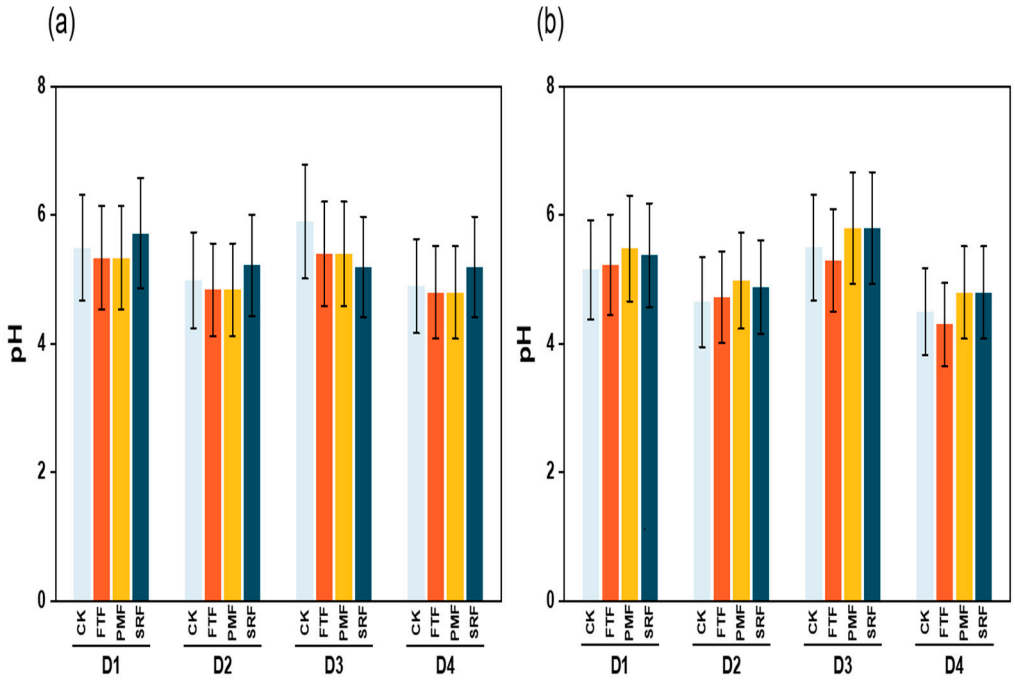


Figure S2. Changes in pH under (a) AWD and (b) CI treatment in different depth.

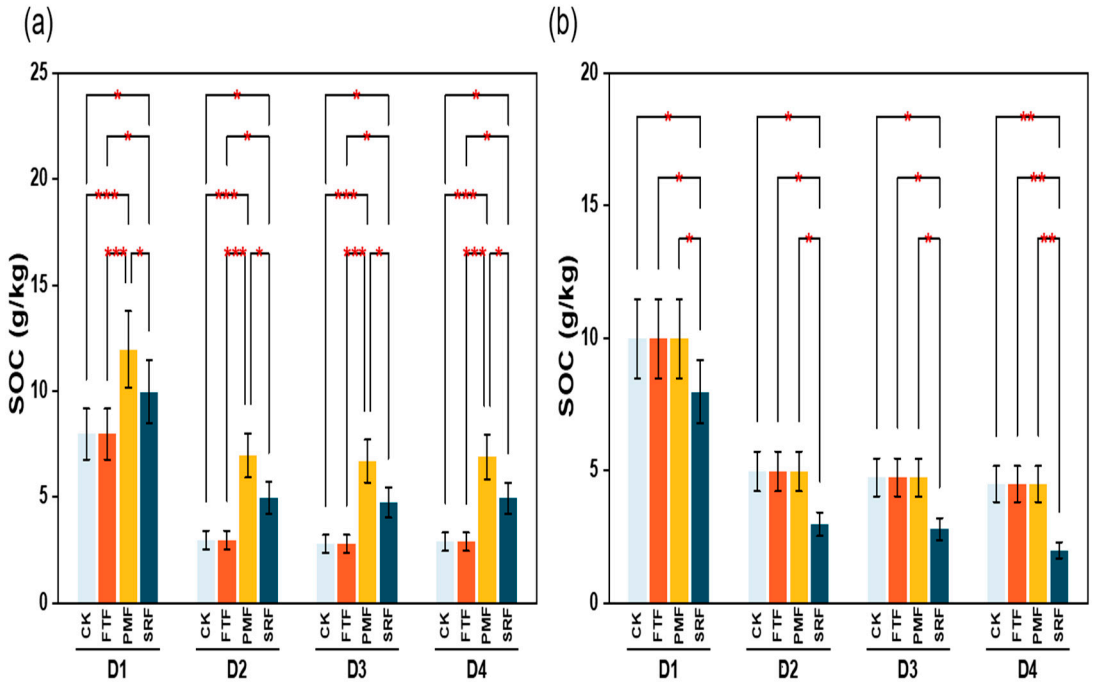


Figure S3. Changes in SOC under (a) AWD and (b) CI treatment in different depth.

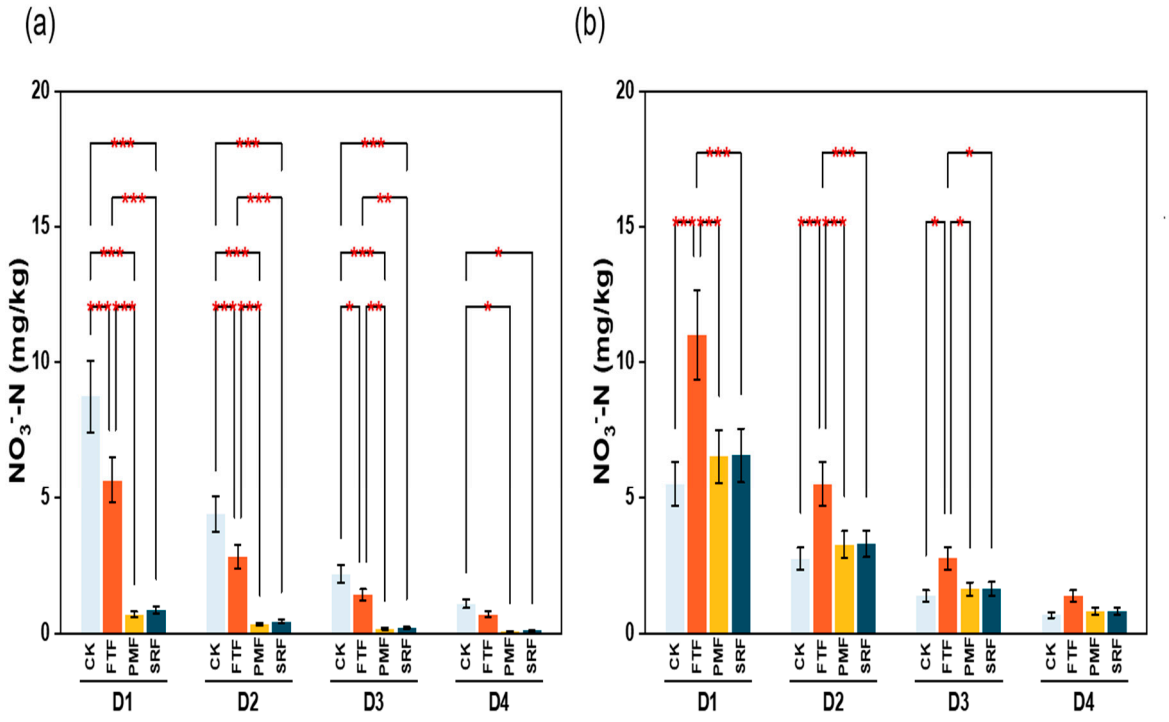


Figure S4. Changes in NO3--N under (a) AWD and (b) CI treatment in different depth.

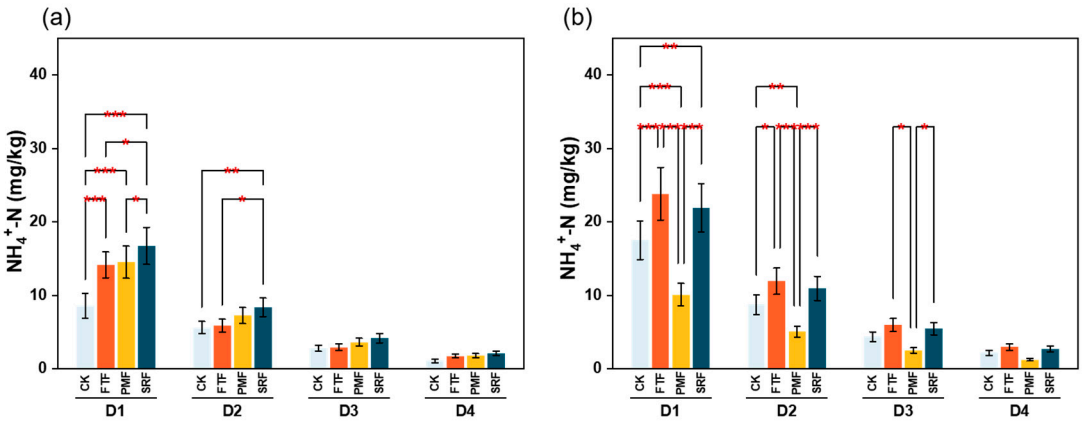


Figure S5. Changes in NH4+-N under (a) AWD and (b) CI treatment in different depth.

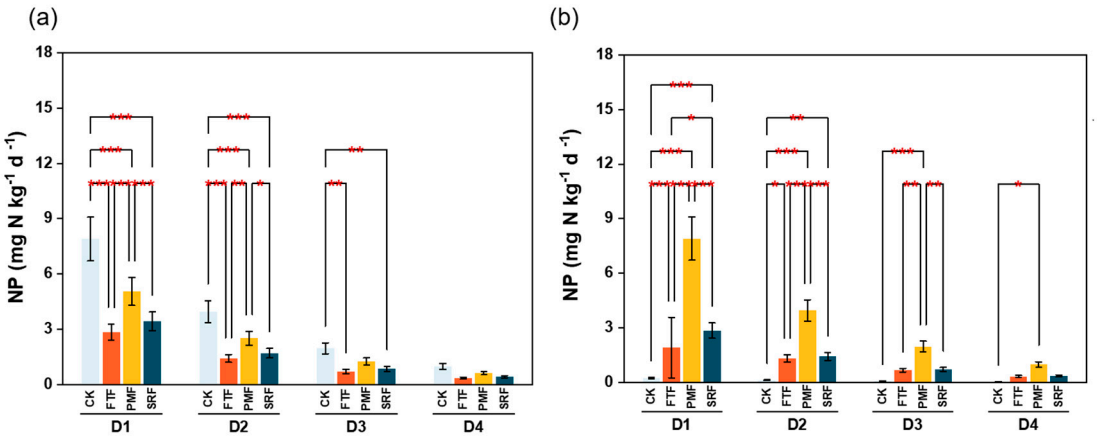


Figure S6. Changes in NP under (a) AWD and (b) CI treatment in different depth.