

**Figure S1.** Field experiment testing rice yields and critical nitrogen loss from flooded paddy fields under various nitrogen fertilization rates with or without iron amendment.

**Figure S2.** Leachate collection device to collect  $\text{NO}_3^-$  leaching samples in each field plot.

**Figure S3.** Ammonia concentration in field surface water under various nitrogen fertilization rates with or without iron amendment in 2019 (a) and 2020 (b). 100%N is the conventional N fertilization rate ( $315 \text{ kg N hm}^{-2} \text{ season}^{-1}$ ) for rice in the lower Yangtze River Delta. Fe was applied at  $5000 \text{ kg hm}^{-2}$  of iron powder (>99% purity) started the beginning of the field experiment.

**Figure S4.** PH of field surface water under various nitrogen fertilization rates with or without iron amendment in 2019 (a) and 2020 (b). 100%N is the conventional N fertilization rate ( $315 \text{ kg N hm}^{-2} \text{ season}^{-1}$ ) for rice in the lower Yangtze River Delta. Fe was applied at  $5000 \text{ kg hm}^{-2}$  of iron powder (>99% purity) started the beginning of the field experiment.

**Figure S5.** Soil moisture and temperature in the experimental field in 2019 (a) and 2020 (b).

**Figure S1**



Figure S2

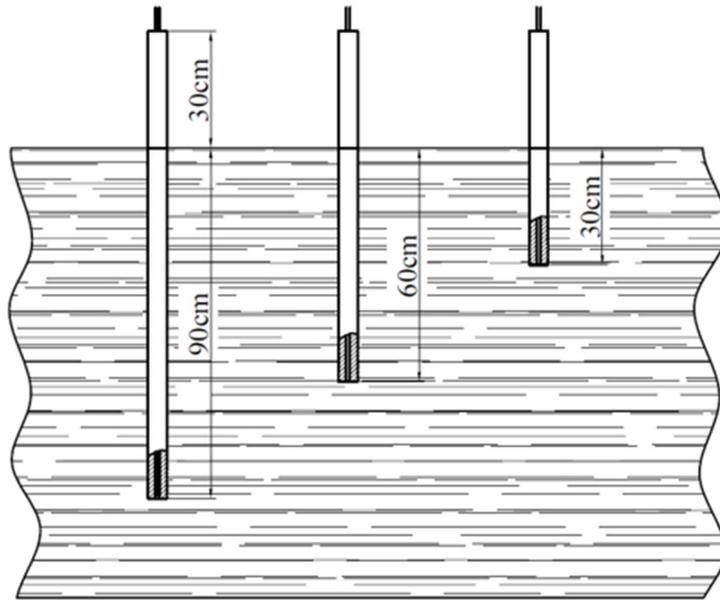


Figure S3

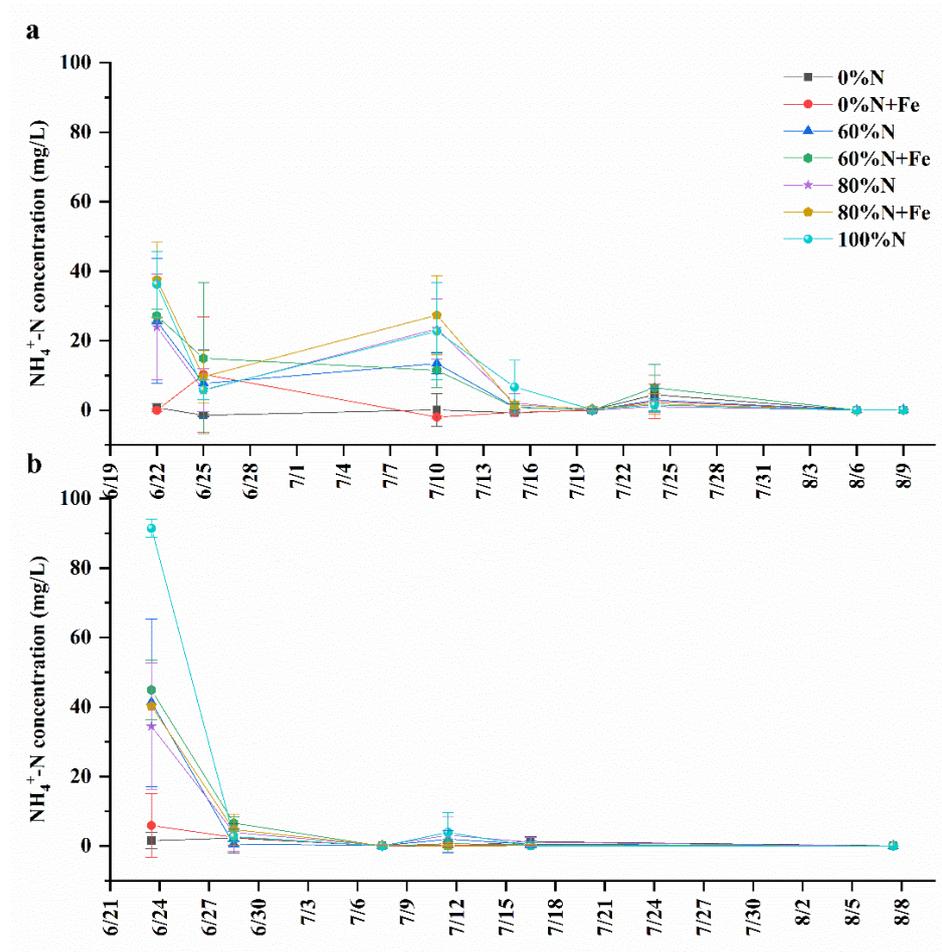


Figure S4

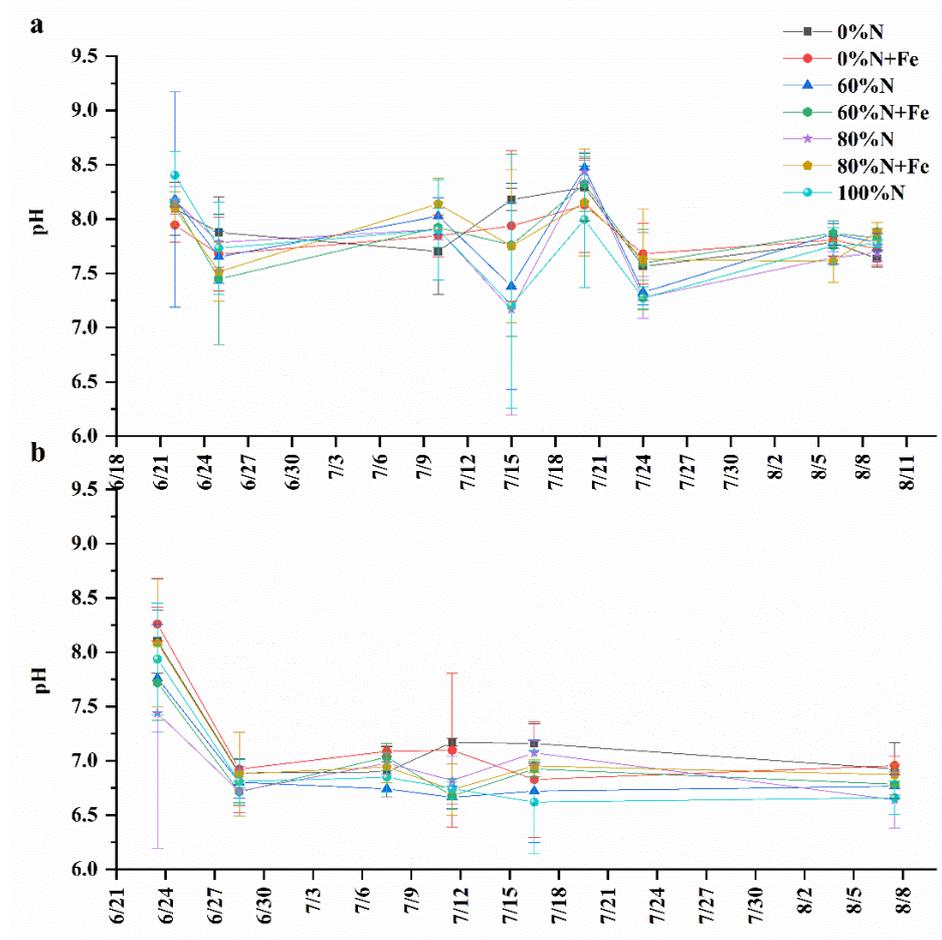


Figure S5

