Variability of soil microbial respiration under different vegetation succession stages in Jiuduansha wetland

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ABSTRACT

The soil microbial respiration (SMR) and physicochemical characteristics of Jiuduansha wetland at the Yangtze Estuary were analyzed in order to clarify the variability of SMR under different vegetation succession stages and its influencing factors. The results indicated that SMR of different vegetation succession stages are significantly various ($P < 0.05$). The SMR of the *Spartina alterniflora* (*S. alterniflora*) zone ($0.43\ \mathrm{mgCO_2 \cdot g^{-1} \cdot 24\,h^{-1}}$) was the highest. These findings implied that *S. alterniflora* could enhance the SMR. Based on both the SMR and input of organic matter from plant decay, the *Phragmites australis* (*P. australis*) community likely possesses a higher organic carbon accumulation capability. Considering both SMR and input of organic matter from decayed plant biomass of wetland with different vegetation type, the *P. australis* community, in theory, has higher organic carbon accumulation capability. Path analysis shows that the main bio-factors influencing on SMR include bacterial diversity and soil microbial biomass (SMB). Soil moisture, inorganic N (IN), salinity and available P (AP) in soil also have significant effects on the mentioned biological factors.

Keywords: Path analysis; Carbon sink; Vegetation type; Salt marsh wetland

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