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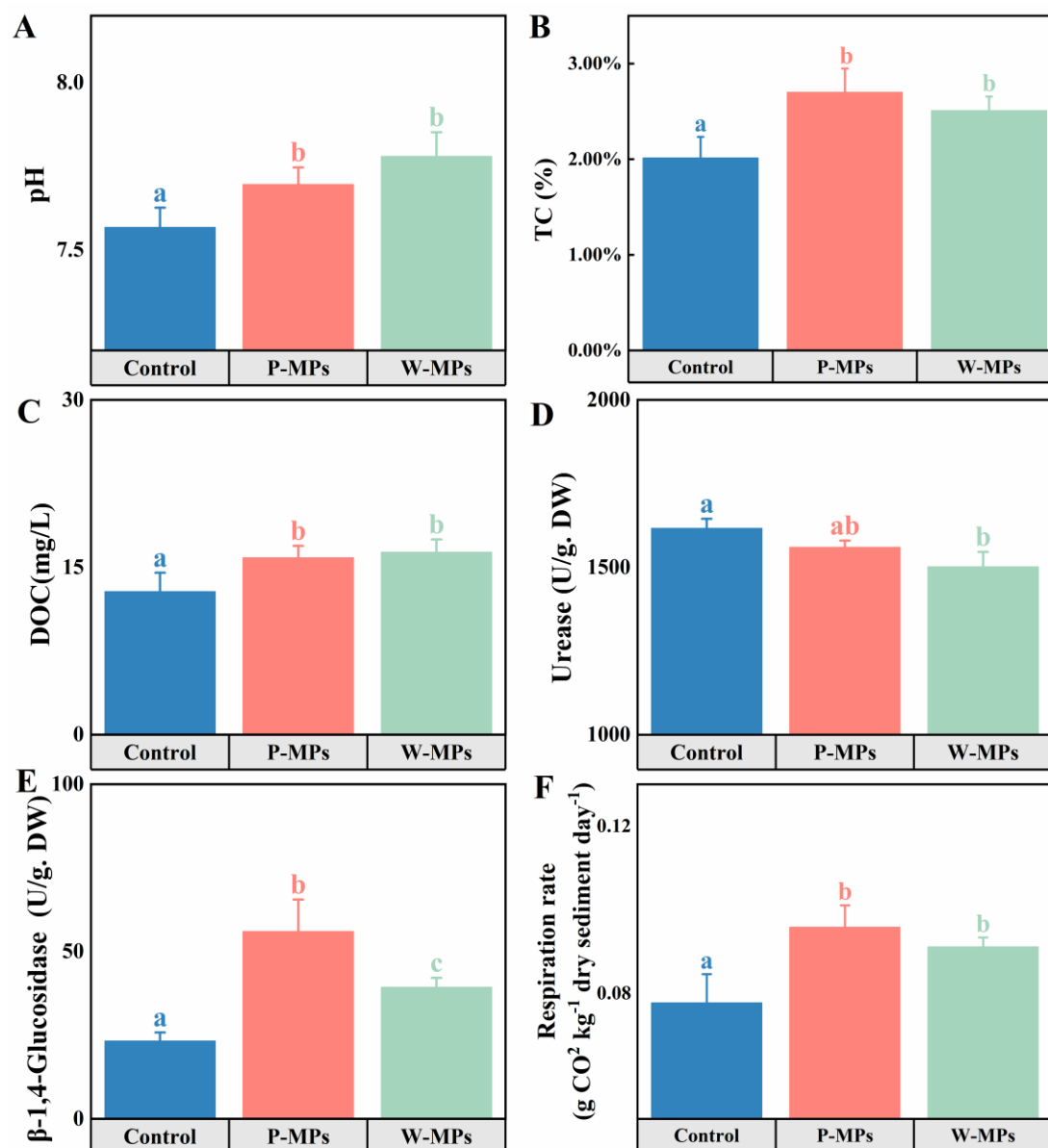


Fig. 1. Alteration of sediment properties after exposure to pristine and weathered PS microplastics. A: pH; B: TC content; C: DOC content; D: urease activity; E: BG activity; F: respiration rate. P-MPs represent pristine microplastics and W-MPs represent weathered microplastics. Data represent mean $\pm$ SD. Different letters indicate significant differences between treatments ($p < 0.05$).

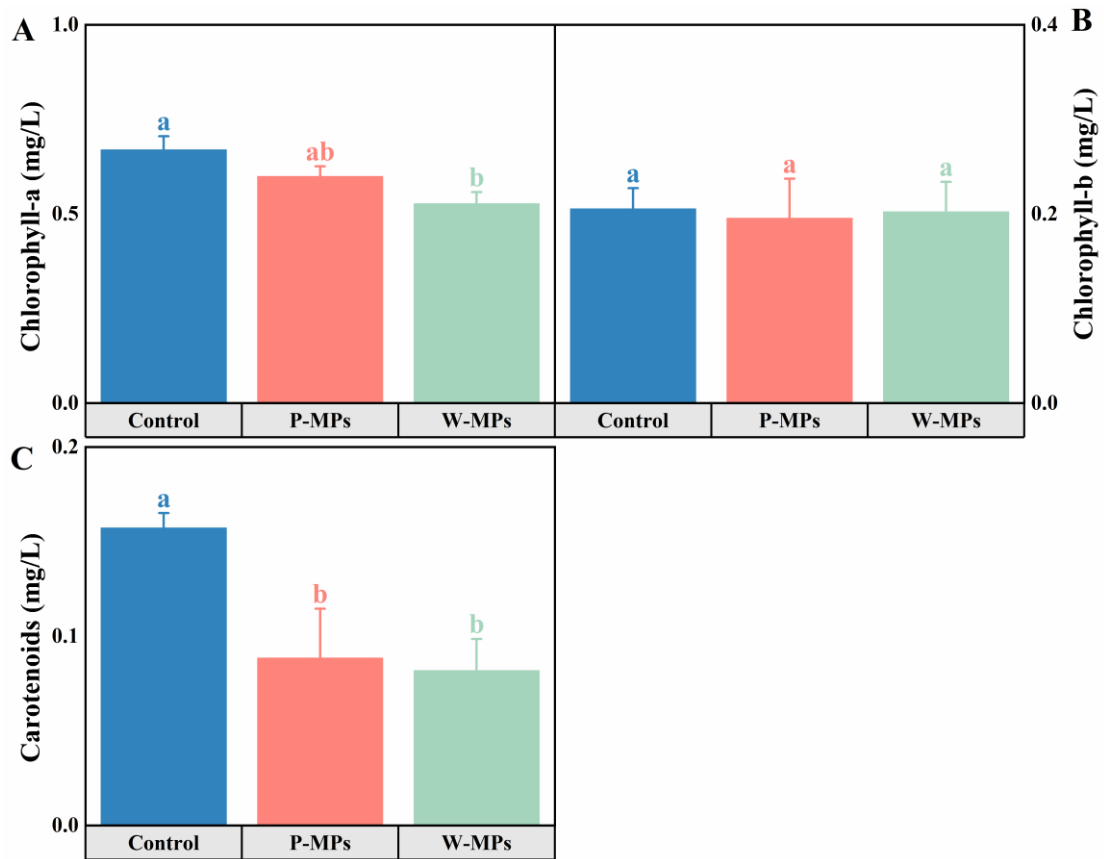


Fig. 2. Chloroplast pigment level in plant leaves after exposure to pristine and weathered PS microplastics. A: Chlorophyll-a; B: Chlorophyll-b; C: carotenoids. P-MPs represent pristine microplastics and W-MPs represent weathered microplastics. Data represent mean $\pm$ SD. Different letters indicate significant differences between treatments ($p < 0.05$).

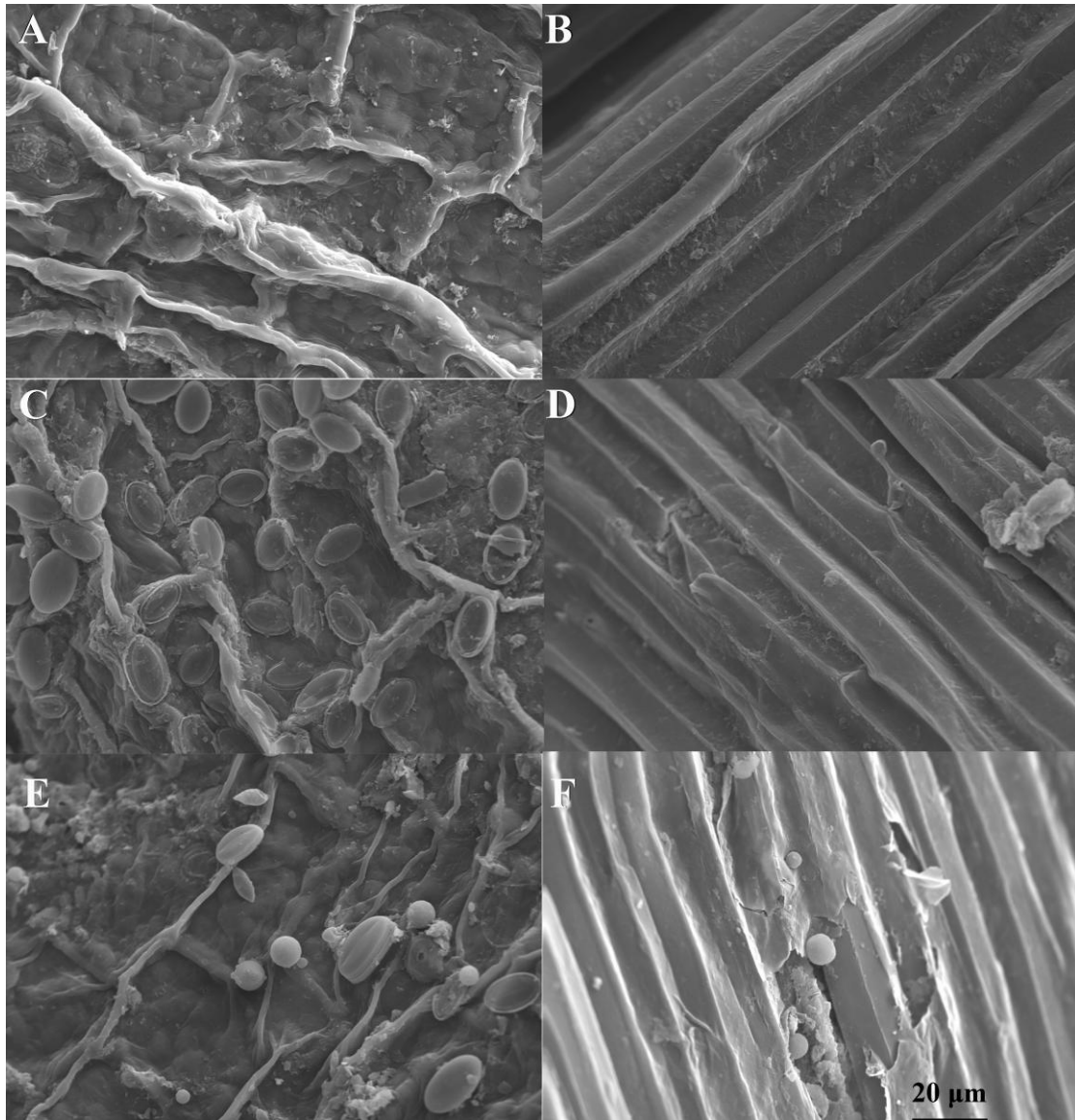


Fig. 3. SEM images of plant leaves and roots after exposure of pristine and aged microplastics. A: leaves of the control group; B: roots of the control group; C: leaves of the pristine PS microplastic group; D: roots of the pristine PS microplastic group; E: leaves of the weathered PS microplastic group; F: roots of the weathered PS microplastic group.

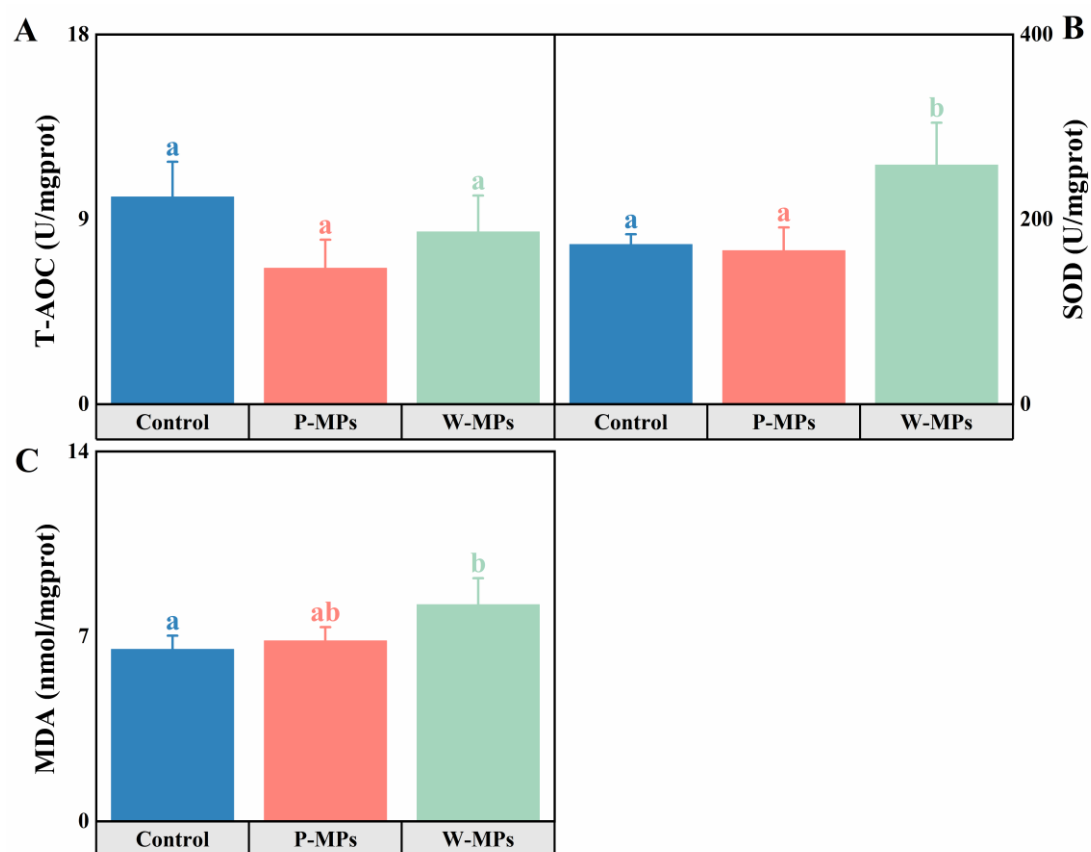


Fig. 4. Oxidative stress in plant leaves after exposure to pristine and weathered PS microplastics. A: T-AOC level; B: SOD activity; C: MDA content. P-MPs represent pristine microplastics and W-MPs represent weathered microplastics. Data represent mean $\pm$ SD. Different letters indicate significant differences between treatments ($p < 0.05$).

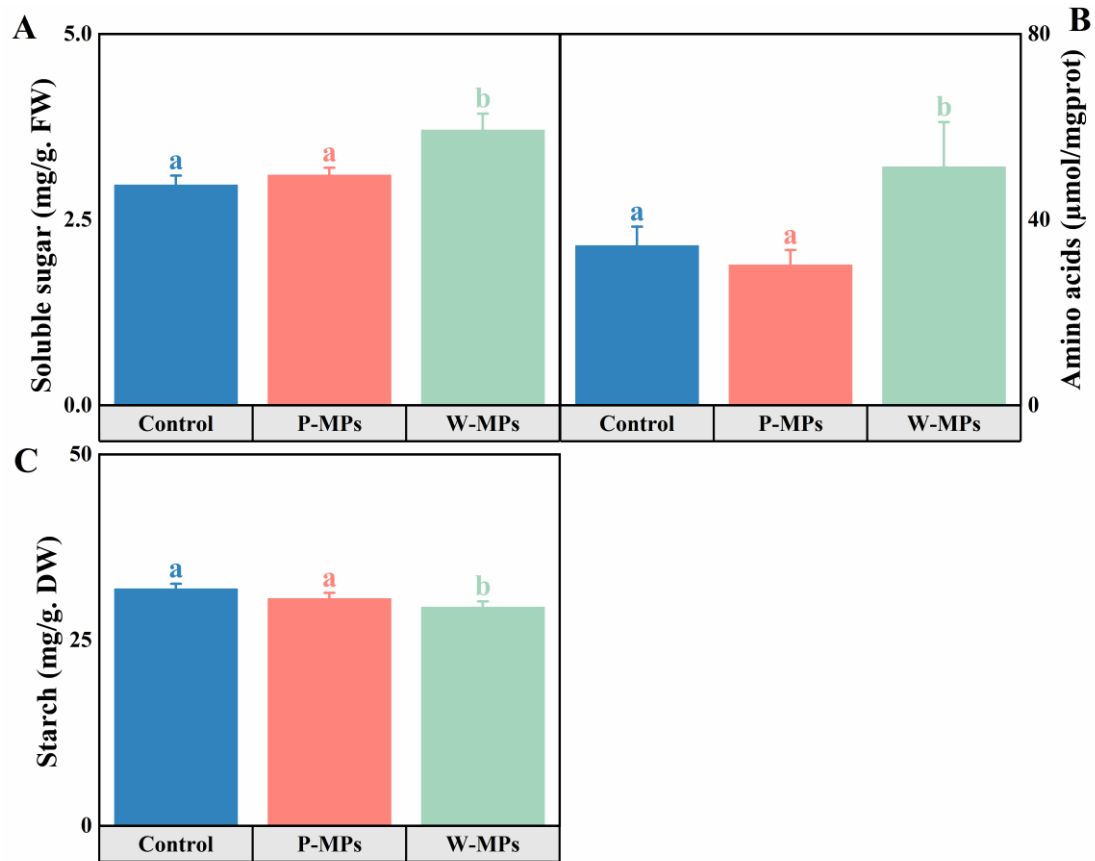


Fig. 5. Nutrient content in plant leaves after exposure to pristine and weathered PS microplastics. A: soluble sugar; B: free amino acids; C: starch. P-MPs represent pristine microplastics and W-MPs represent weathered microplastics. Data represent mean $\pm$ SD. Different letters indicate significant differences between treatments ($p < 0.05$).

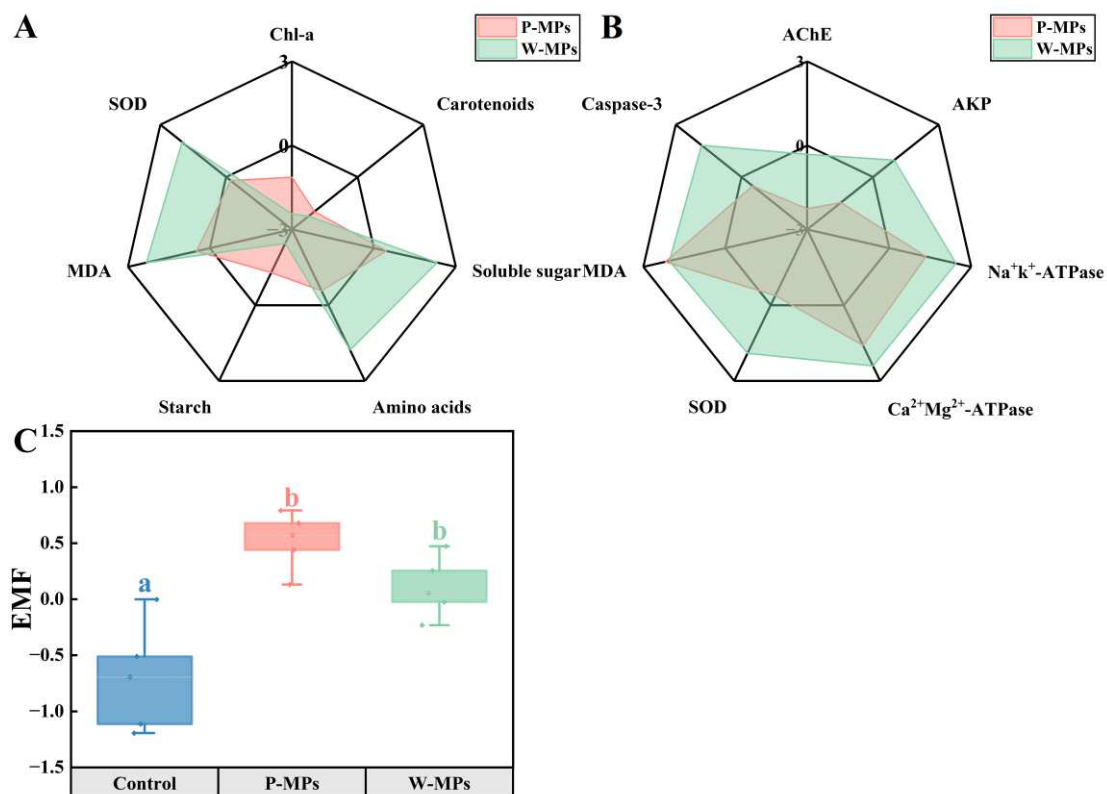


Fig. 6. IBR analysis and EMF of freshwater-sediment microcosm after exposure to pristine and weathered PS microplastics. A: IBR analysis of plant *V. spiralis*; B: IBR analysis of snail *L. stagnalis*; C: EMF of freshwater-sediment microcosm. P-MPs represent pristine microplastics and W-MPs represent weathered microplastics.

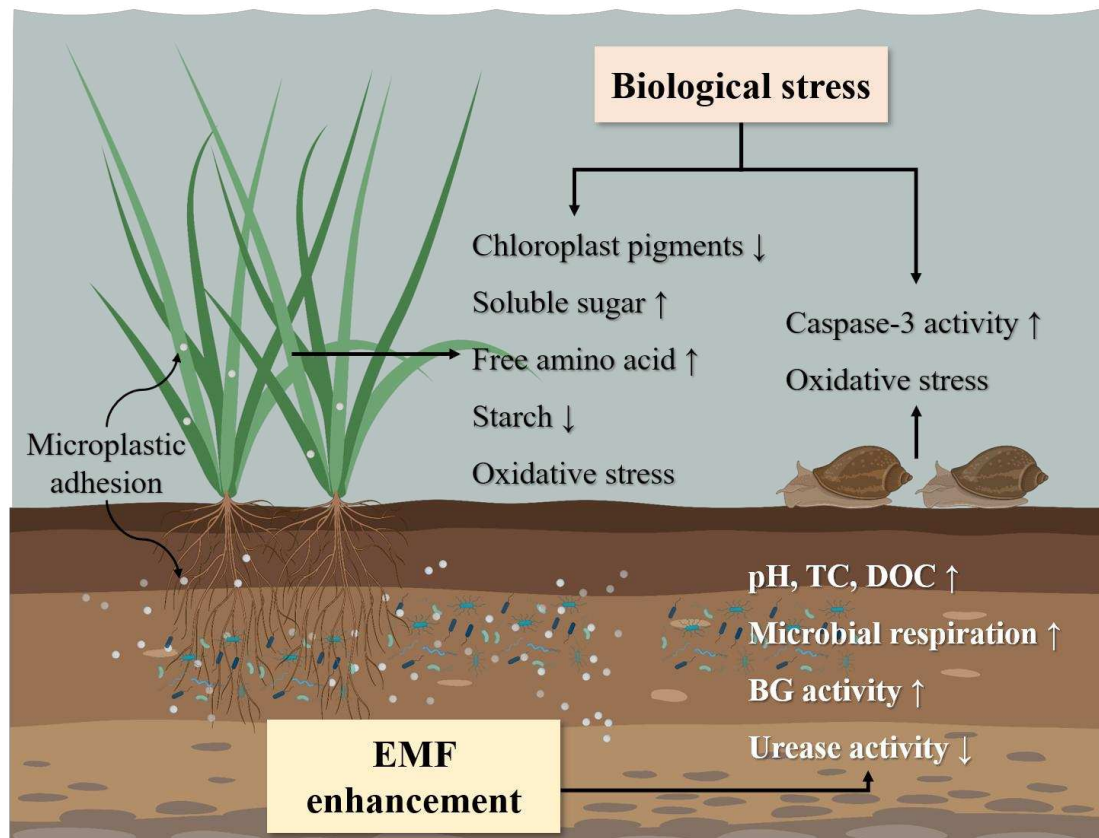


Fig. 7. Overall effects of PS microplastics on freshwater-sediment microcosm.