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Antibiotic resistance and organic micropollutants monitoring in municipal full-scale constructed wetlands systems

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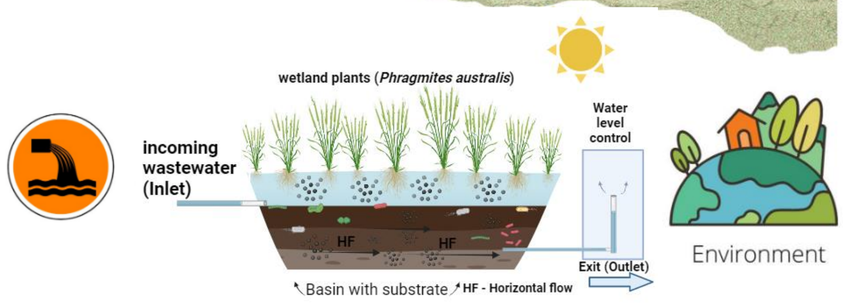
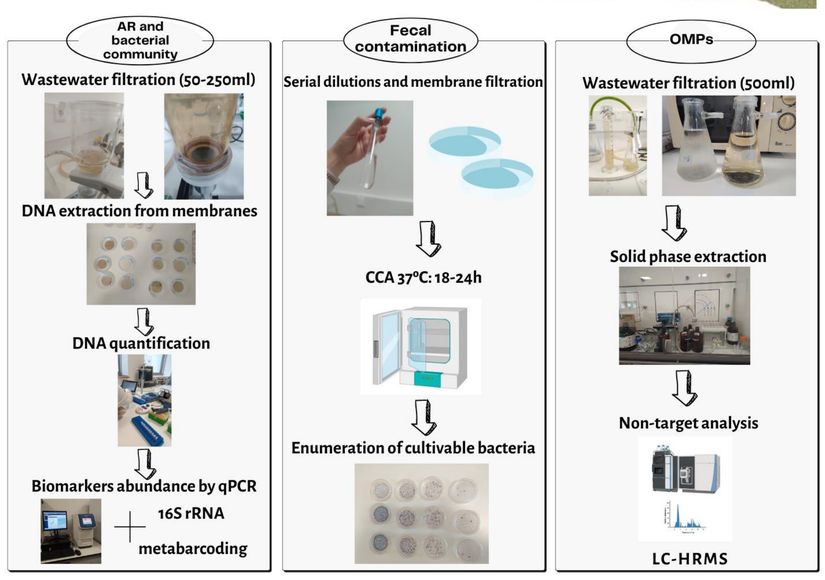
01 OBJECTIVE

Evaluate the response of three constructed wetlands wastewater treatment systems (CWs), working in horizontal subsurface flow with macrophytes (*Phragmites australis*), to achieve:

•the recommended values for standard parameters (e.g. BOD, COD, TSS, N, P);
•reduce the load of fecal contamination, antibiotic resistance (AR), organic micropollutants (OMPs) and variations of the bacterial community composition.



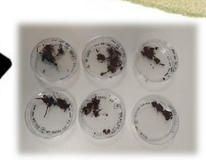
02 METHODOLOGY

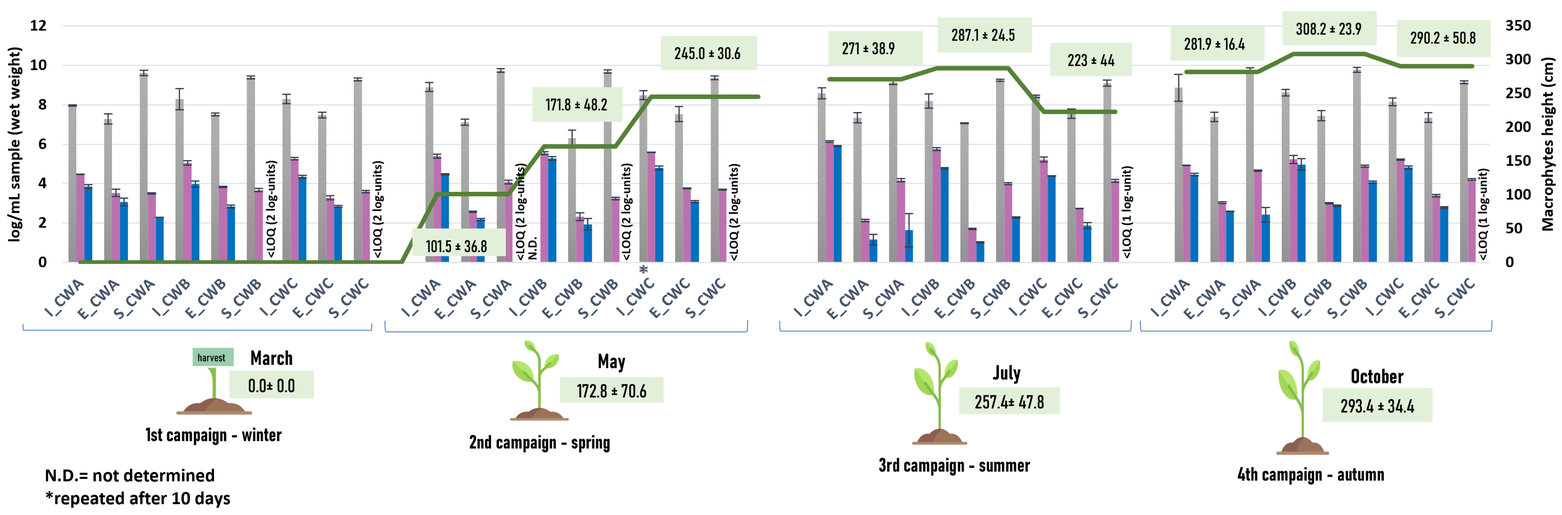


04 CONCLUSIONS

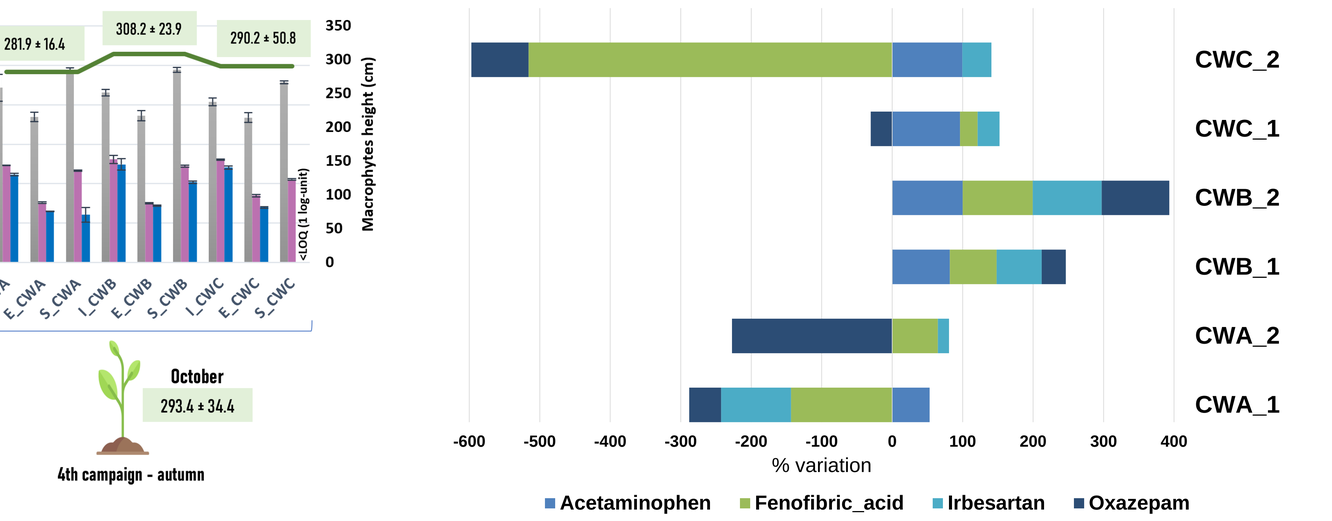
•The macrophytes growth stage along the year and climate conditions, such as the temperature, influence treatment efficacy (> in Summer).
•CWs can be a good treatment alternative to treat domestic wastewater in small populations without affecting the natural landscape.

03 RESULTS

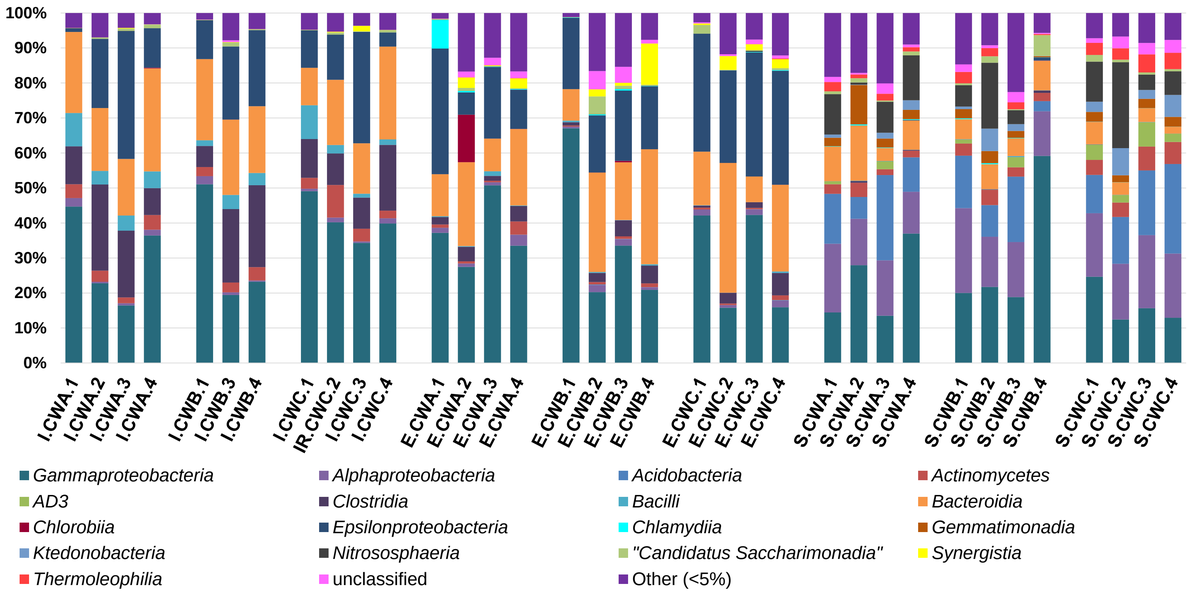




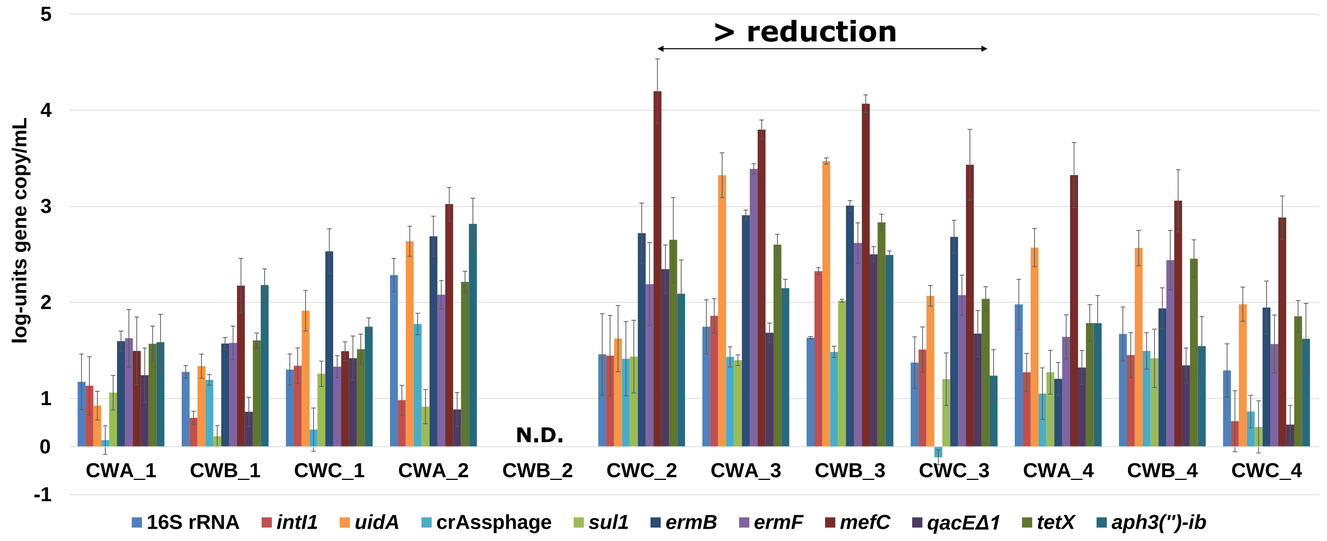
Total coliforms and *Escherichia coli* colony forming units per volume of sample (log CFU/mL or wet weight); the bacterial load through 16S rRNA gene quantification by qPCR (log gene copy/mL or wet weight), in influent, effluent and sediment samples and macrophytes height (cm) across the four campaigns.



Variation of chemical compounds (%) identified in all the samples across 1st and 2nd campaigns, winter and spring, respectively, by (LC-HRMS), for the three CWs (A,B,C).



Class relative abundance (%) for the influent (I), effluent (E), and sediments (S) samples for the three CWs (A, B, and C) in the different seasons (1-winter, 2-spring, 3-summer, and 4-autumm).



16S rRNA gene and AR reduced values (log-units/mL) between influent (I) and effluent (E) samples across the four different campaigns (1-winter, 2-spring, 3-summer and 4-autumn).
N.D. – not determined

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