

Supplementary materials

Inoculated Seed Endophytes Modify the Poplar Responses to Trace Elements in Polluted Soil

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Figure S1. SEM image of *Methylobacterium sp.* CP3 culture and relative EDX spectra of three selected zones (1,2 and 3). Sample was taken after two days of growing in a 0.8 mM Cd containing medium. Acceleration voltage 12.5 kV and magnification 20.000 x. Spectrum of spot 1 is not reported as Cd was not detected.

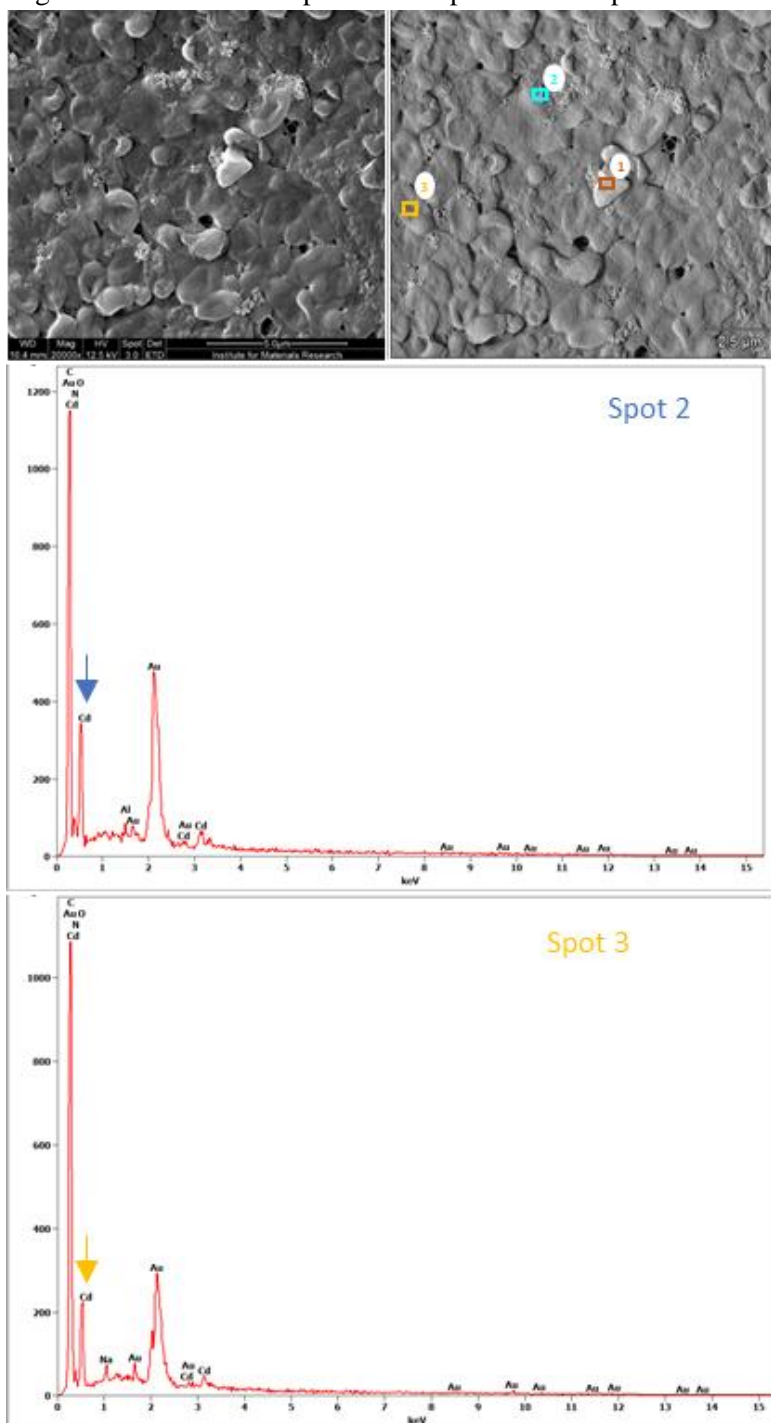
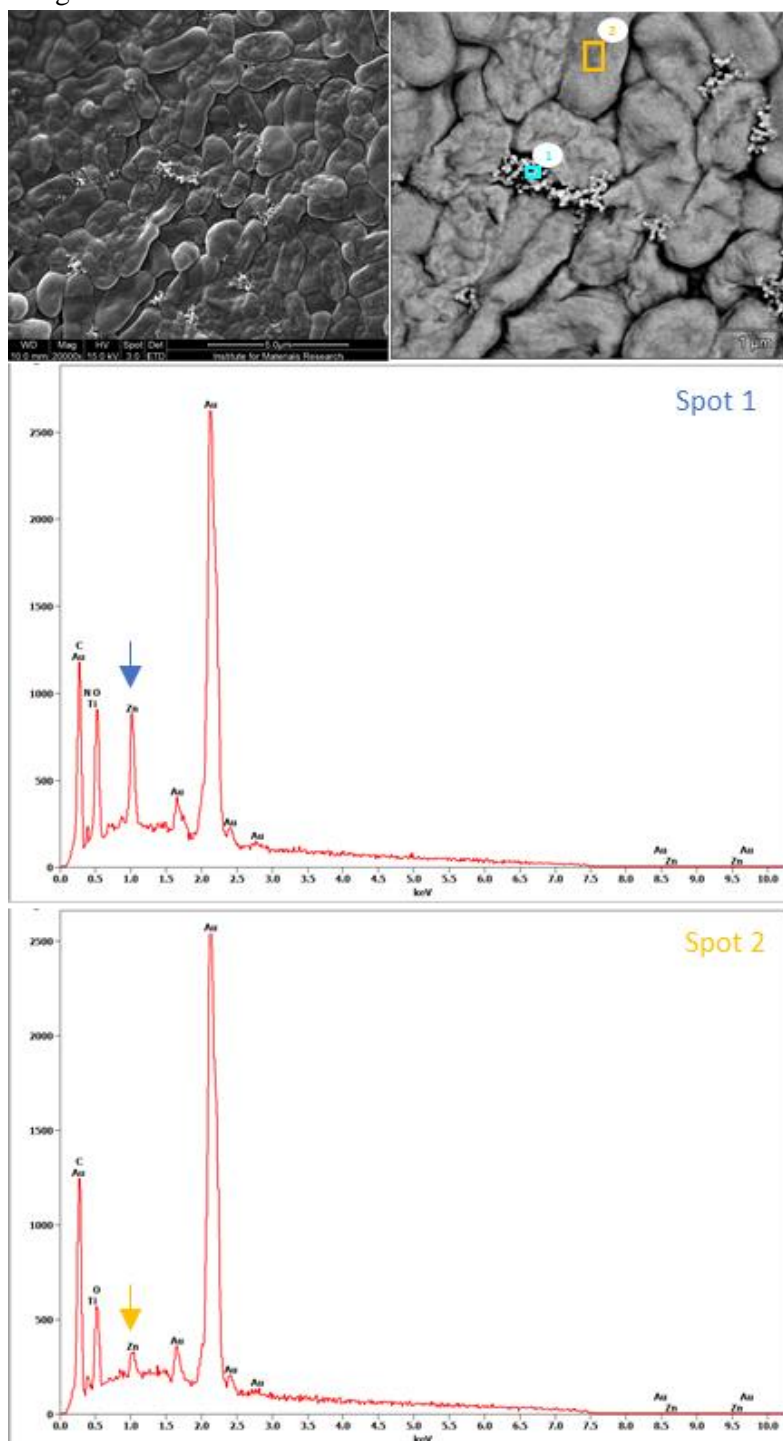


Figure S2. SEM image of *Methylobacterium* sp. CP3 culture and relative EDX spectra of three selected zones (1,2 and 3). Sample was taken after two days of growing in a 1 mM Zn containing medium. Acceleration voltage 12.5 kV and magnification 20.000 x.



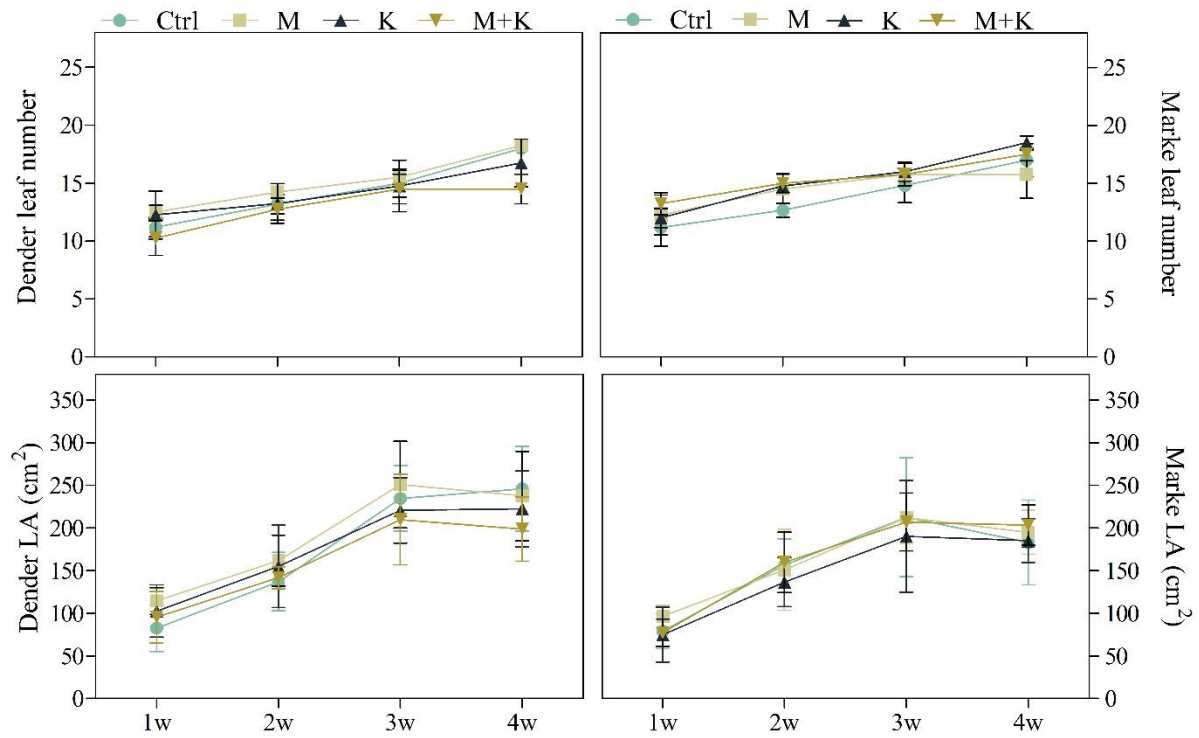


Figure S3. Number of leaves and leaf area (LA) in *Populus* ‘Dender and *Populus* ‘Marke’ cultivars detected during the 4-weeks inoculation experiment. Ctrl (control): non inoculated cuttings; M: *Methylobacterium* sp. CP3 inoculation; K: *Kineococcus endophyticus* CP19 inoculation; M+K: *Methylobacterium* sp. CP3 and *Kineococcus endophyticus* CP19 inoculation.

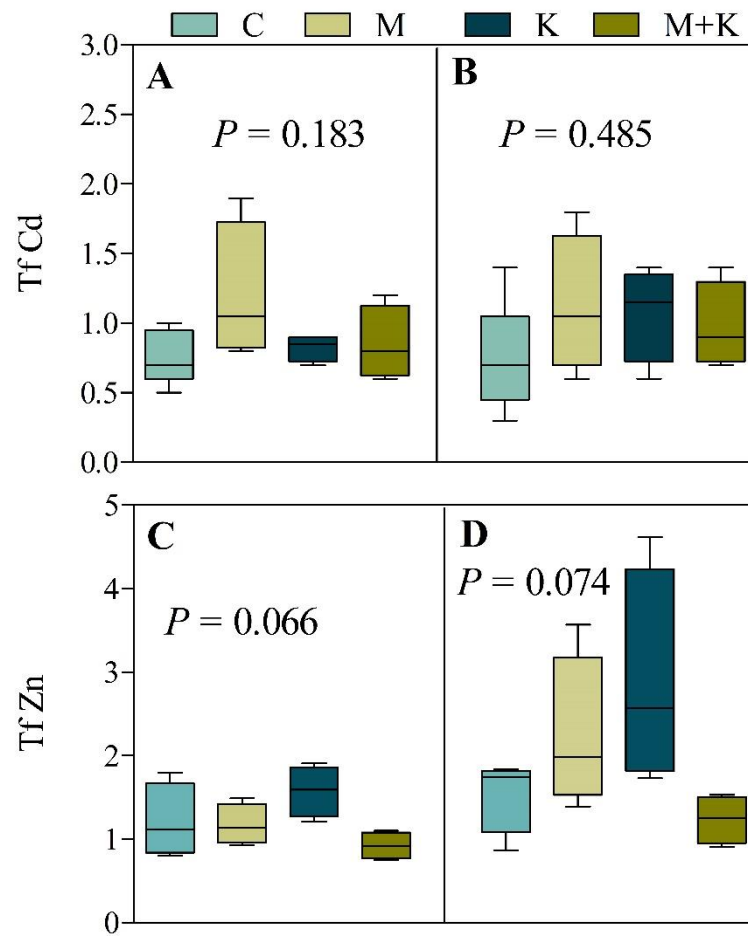


Figure S4. Translocation factors (T_f) for Cd and Zn calculated for cuttings of the *Populus* cultivars 'Dender' (A, C) and 'Marke' (B, D) after 6 weeks of growth in trace elements polluted soil. Ctrl (control): non-inoculated cuttings; M: *Methylobacterium* sp. CP3 inoculation; K: *Kineococcus endophyticus* CP19 inoculation; M+K: *Methylobacterium* sp. CP3 and *Kineococcus endophyticus* CP19 inoculation. Statistical significance was determined with one-way ANOVA followed by Tukey's Multiple Comparison Test ($P \leq 0.05$).

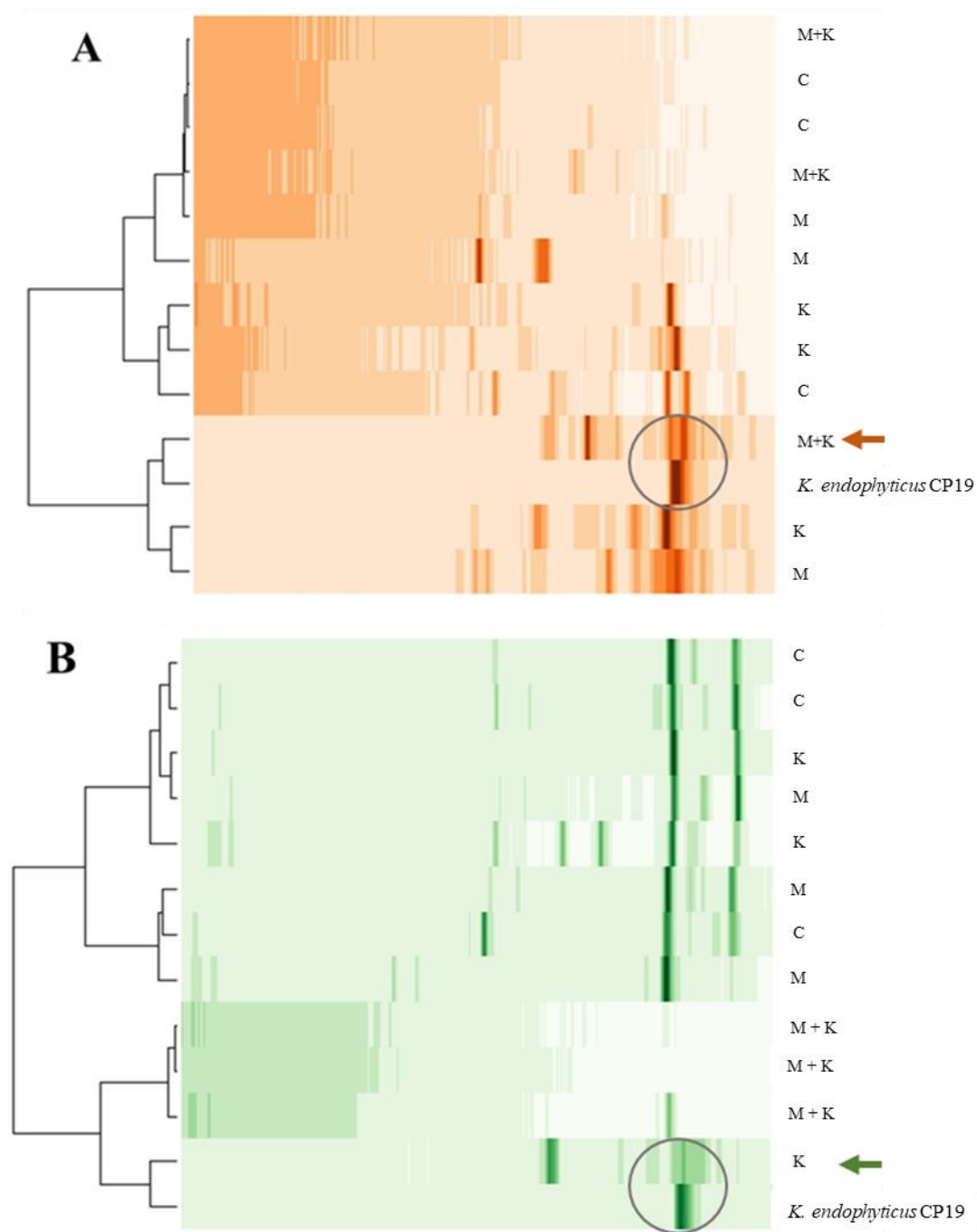


Figure S5. Heatmaps derived by ARISA analysis for *Populus* 'Marke' roots (A) and 'Dender leaves (B). C: non-inoculated cuttings; M: *Methylobacterium* sp. CP3 inoculation; K: *Kineococcus endophyticus* CP19 inoculation; MK: *Methylobacterium* sp. CP3 and *Kineococcus endophyticus* CP19 inoculation. Numbers refer to replicates. *K. endophyticus* CP19 = *Kineococcus endophyticus* pure line. A complete linkage algorithm was used to perform a Pearson correlation from ARISA values