

Phytoremediation of sediment polluted with organic pollutants

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Phytoremediation

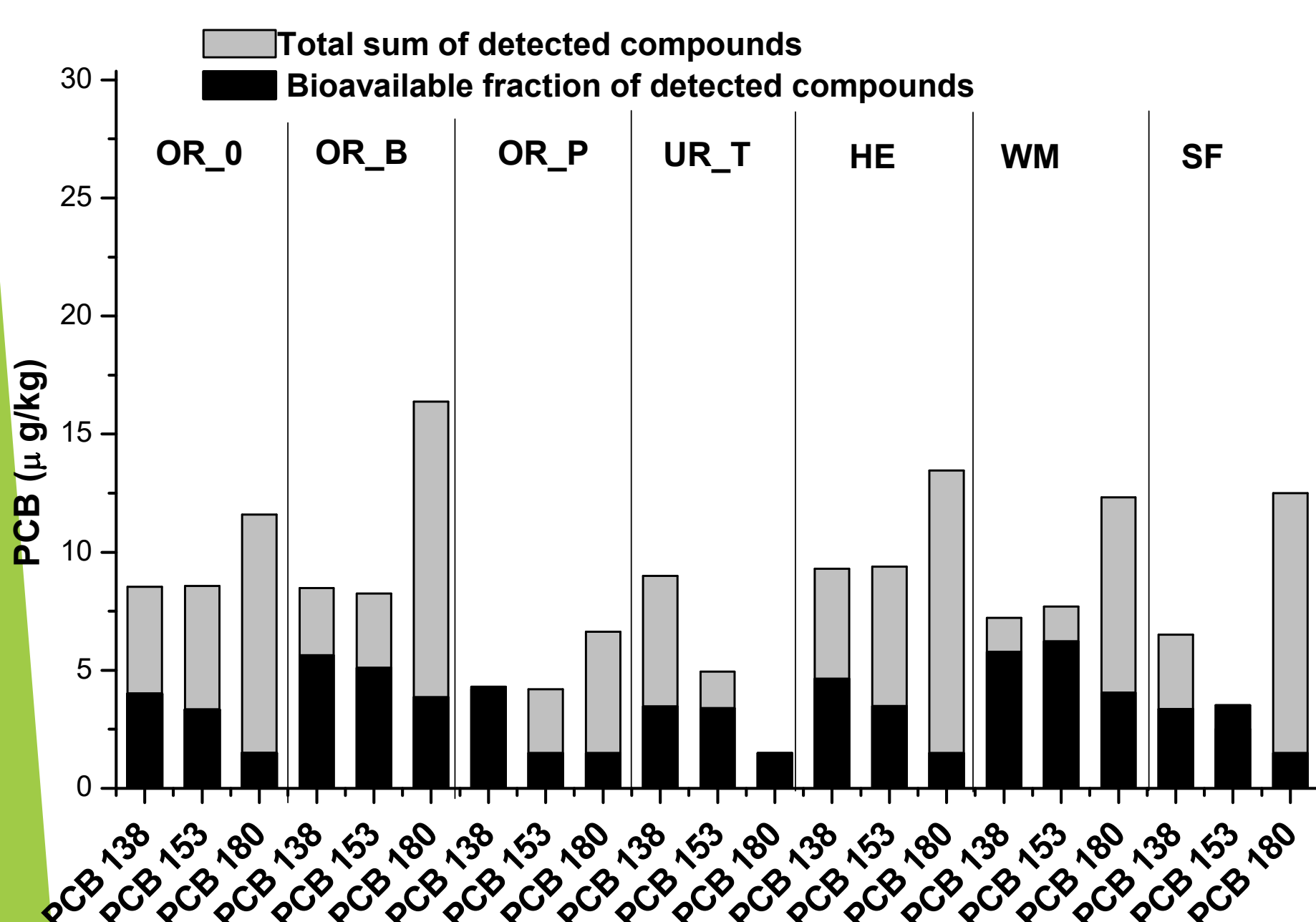
- ✓ The use of plants in reducing pollution, i.e., phytoremediation, is the most acceptable method of decontamination from polluted soils.
- ✓ In this process, plant species are used to remove pollutants or render them harmless by extraction, sequestration, degradation, or detoxication
- ✓ There is a little data on phytoremediation of organic pollutants.
- ✓ The objective of this study was to assess if the energy crops, has potential to be used for phytoextraction of organic pollutants such as PAHs, PCBs and mineral oil from soil from POT trials.
- ✓ The effect of different type of rapeseed (OR) potential to uptake organic pollutants was compared to other energy crops such as sunflower (SF), hemp (HE), white mustard (WM).

Design of POT experiments



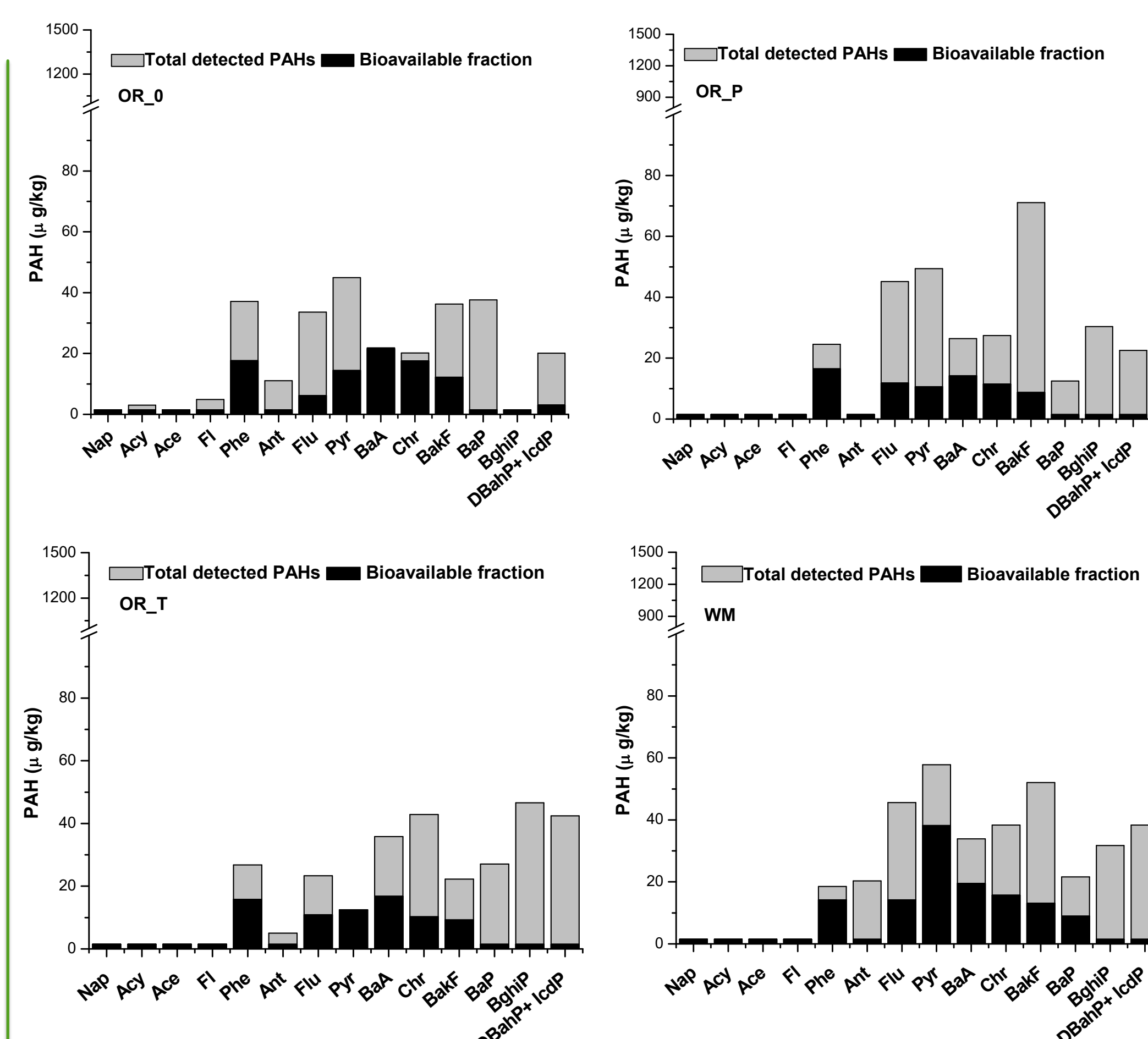
Results and discussion

Total and bioavailable fraction of PCBs at the end of the experiments



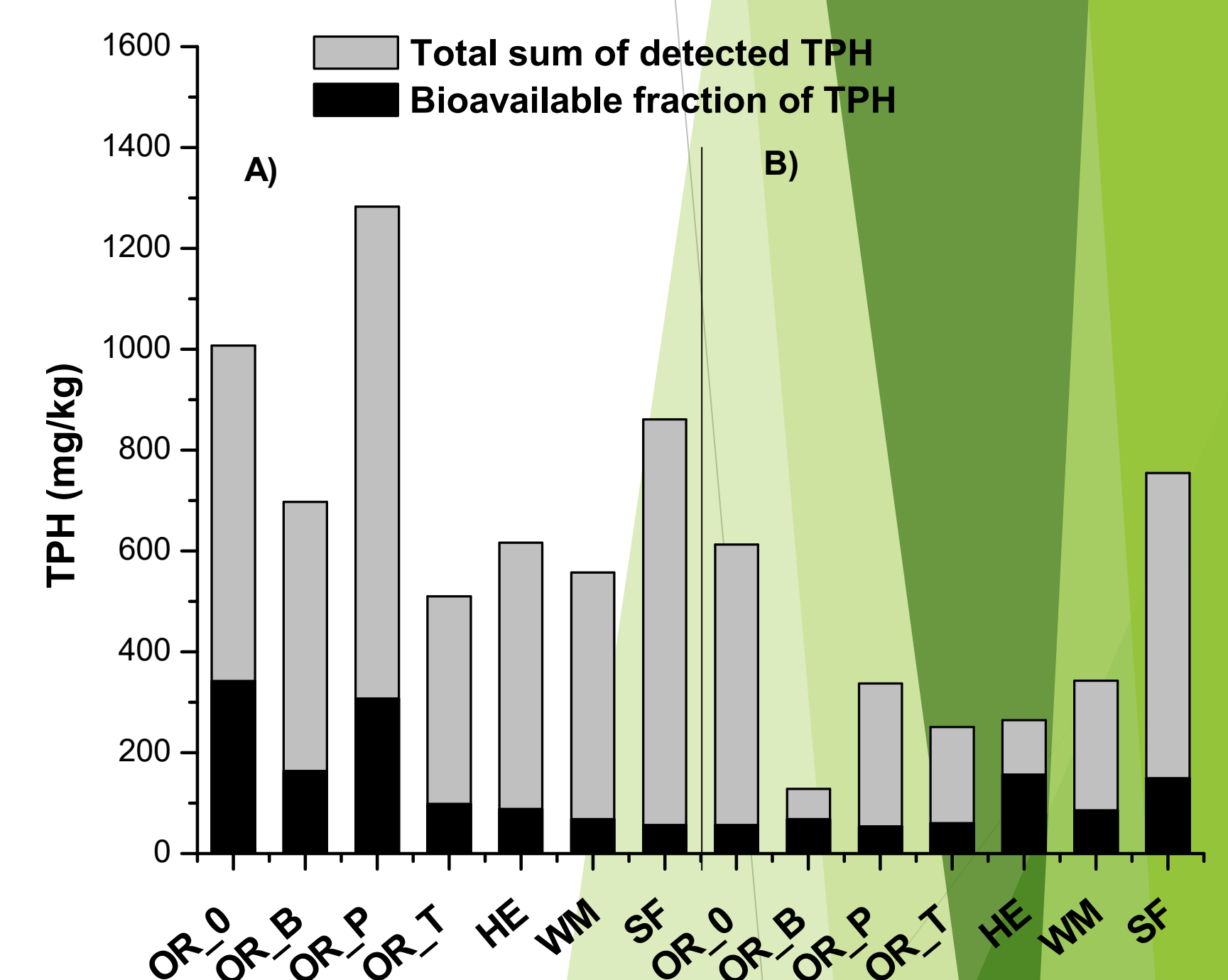
The highest concentration of PCBs was detected at the beginning of the experiments (37-70 µg/kg), while its concentration decreased by a factor of around two over the course of the experiment (ranged from 15 to 33 µg/kg).

Total and bioavailable fraction of PAHs at the end of the experiments



The bioavailable fractions increased in the following order OR_0 < OR_P < OR_T < HE < SF < OR_B < WM, whereby the greatest bioavailable fraction was obtained for WM and was about 124 µg/kg.

Total and bioavailable fraction of TPH at the A) start and B) end of the experiments



The median value of 337 mg/kg obtained at the end of the experiment was lower than the median value of 667 mg/kg obtained at the start, indicating a decrease of detected concentration

Conclusion

- ✓ The content of organic pollutants (PAHs, PCBs, TPH) decreased during the course of the experiments.
- ✓ Bioavailable fraction of PCBs and mineral oil is lower compared to started concentration.
- ✓ Further research should be focused on testing different plants which could have higher accumulation potential, but could be same or higher biomass producer as rapeseed.

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