

L'evolució del projecte Europeu de recerca HypoTRAIN (Desembre 2015)

Celebrem la recent incorporació a Naturalea de l'estudiant de doctorat Sheela Paramjothy en el marc del projecte de recerca HypoTRAIN centrat en l'avaluació de l'estat ecològic i químic de les aigües d'escorrentiu superficial que ens ajudarà a millorar estratègies en la restauració i la gestió dels espais fluvials i les zones humides.

A continuació et mostrem un resum dels objectius i els treballs previstos del projecte.

Application of selected macrophytes and the its rhizospheres effect on the degradation of PAHs (polyaromatic hydrocarbons)

The focus of the research is investigating the capacity of selected plant species (*Iris pseudachorus L.*, *Phragmites sp.* and *Scirpus sp.*), by focusing on the rhizospheres of macrophytes, in degrading PAH within the subsurface area in a river system. These species are selected due to its known root system and concurs with the current research of these species in the URL.

The overall results from the research would be expected to give insights on the phytoremediation properties of the macrophytes within the subsurface area, specifically the hyporheic zone and its application in stormwater management.

The initial hypothesis confers the following:

- 1) Root exudates contains phytochemicals that directly repel, inhibit, or or induce the growth microorganisms in the rhizosphere which could directly affect the degradation of PAHs.
- 2) Root exudates would be highly depend of the halophyte species and together with the factors such as root system, structure and micro bacterial activities within this root zone and conditions present at the experimental setups (hydraulic properties, presence of biofilms).
- 3) Bringing forward the experimental approach to the implementation of the macrophytes in green storm water technology (e.g., infiltration ponds) in order to prove the applicability of remediation techniques using macrophytes to reduce hydrocarbon contamination from urban surface runoff.



Methodology & Objectives

1) Investigate the substrates released by the roots of these selected species and subsequently correlate this with the transformation of PAH compounds based on the known properties of these root substrates.

2) Utilising a hydroponic system to grow these plant species in order to harvest the root exudates. The result from the exudates could then lead to further methodology design on factors that may influence the influence of the exudates on the biochemical process within the rhizosphere.

The overall results from the research are expected to provide insights on the phytoremediation properties of the macrophytes within the subsurface zones of streams and rivers, specifically the hyporheic zone, and assess their applications for stormwater management.