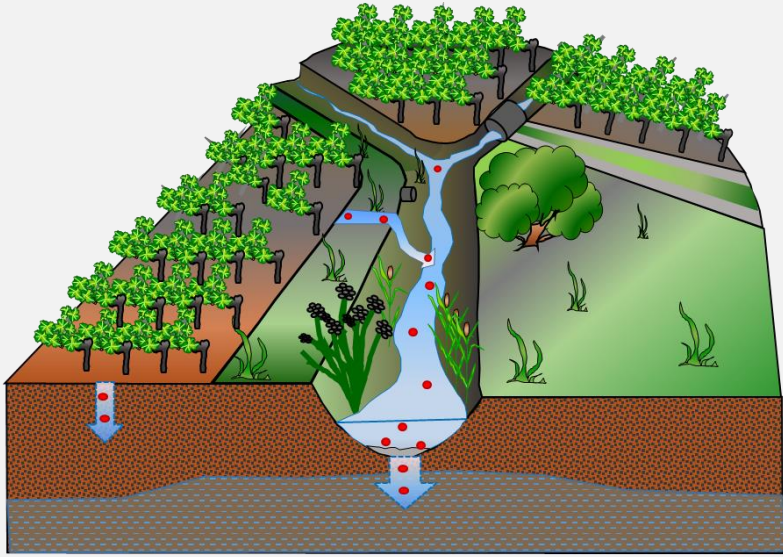


Targeted biochar amendments for agricultural water quality improvement: what is the contribution of pesticide degradation mechanisms?

Context of the research

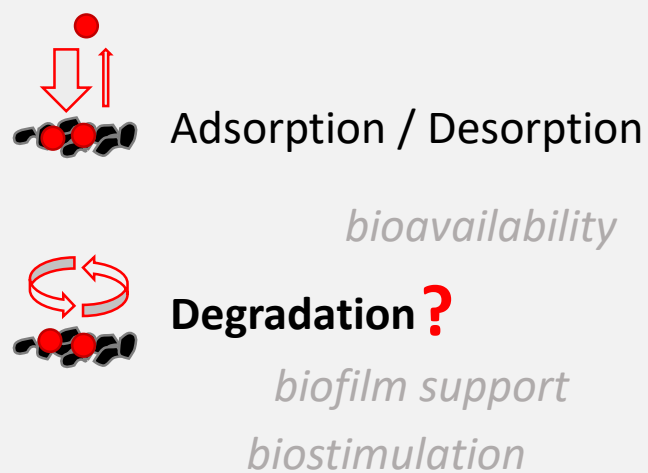
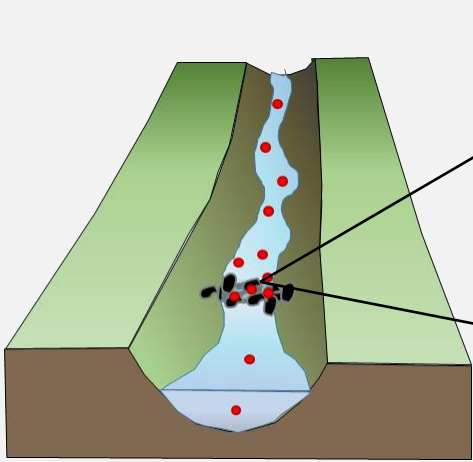


Agricultural activities have generated a globalized contamination of water bodies by pesticides. Improving the quality of agricultural waters is a major challenge. It requires to implement efficient and cost-effective mitigation measures.

In Mediterranean vinecropping areas, agricultural waters are collected and routed by ditch networks. Because they concentrate contaminated water fluxes and connect agricultural plots with water bodies, ditches are key location to implement mitigation measures.

In this project, the mitigation measure tested is the parcimonious and targeted biochar amendment in ditches. Biochars are carbon-rich materials obtained by the pyrolysis of biomasses. These materials are known to be efficient sorbants for a large range of contaminants.

Research questions



The contribution of degradation mechanisms to the global and long term efficiency of biochar amendments remains to be determined. Indeed, high adsorption and low desorption rates, as generally reported for biochars, impacts the bioavailability of pesticides to degrading microorganisms. On the other hand, biochars can stimulate the microbial activity by extra carbon and nutrient inputs. They can also provide support for the development of biofilms.

The aim of this MSc project is to measure the degradation of pesticides in locally-sourced biochars, previously aged in ditches.

Missions

- Contribution to the development of pesticide extraction and analysis methods (HPLC)
- Implementation of microcosms for measuring the degradation of pesticides in biochars and soil/biochar systems

The lab & Mentors

LISAH

Is a research laboratory studying the functioning of complex agricultural landscapes and especially the interactions between crop production and natural resources conservation. The student will be part of the Soil and Water contaminants team,

<https://www.umr-lisah.fr/?q=fr/content/accueillisah>



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