

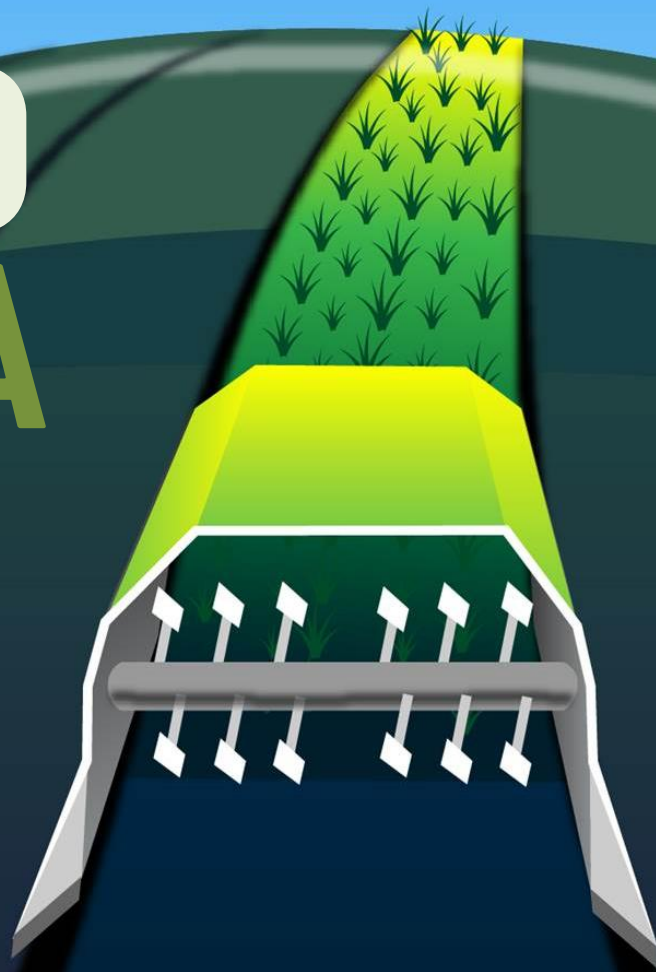
ROBO NOVA

METAGENOMICS AND
ENGINEERING OF
BIOREMEDIATION
PROCESSES

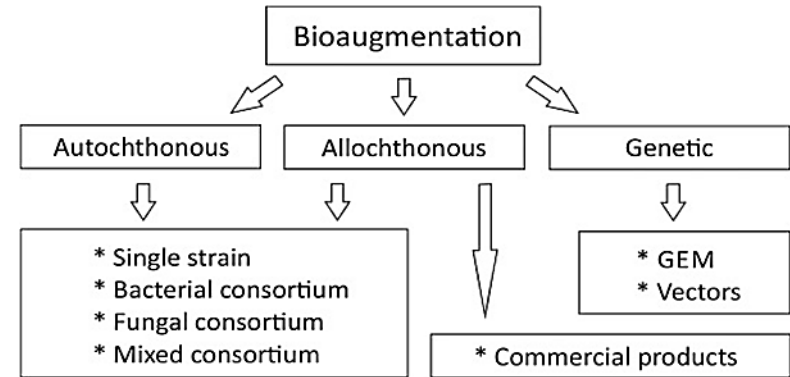
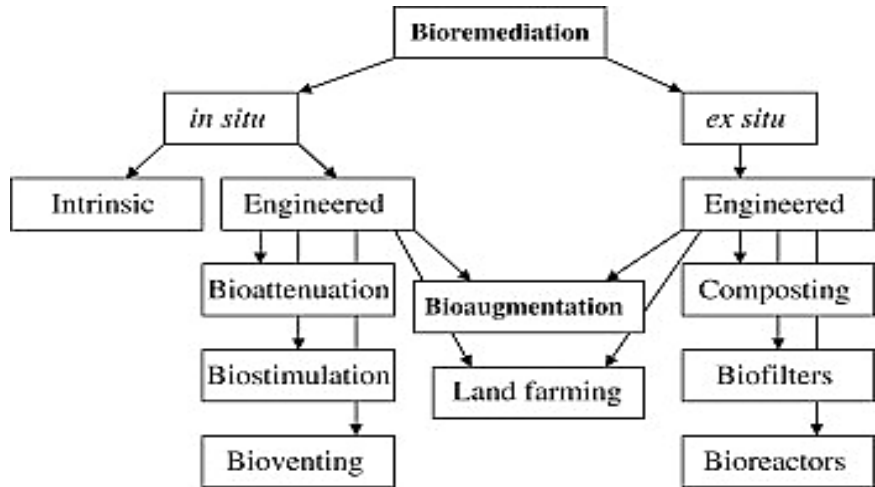
RESIDUE project - workshop

Tuesday 26 April 2022

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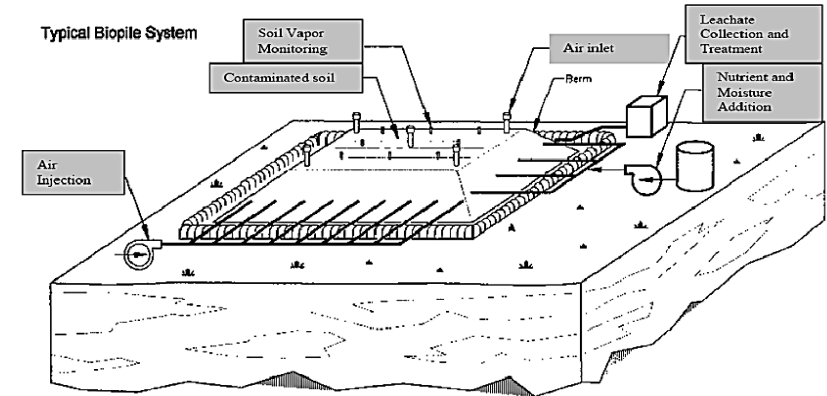


- Ability of microorganisms (fungi and bacteria) to degrade, partially or completely, organic contaminants → **Biological processes for the remediation of contaminated environmental matrices**



- Potentially **greater environmental and economical sustainability** of biotechnological approaches compared to physio-chemical technologies.
- The use of biodegradation is already a **common practice** for treatment of environmental matrices contaminated by **organic substances** (landfarming, biopile, composting)
- Current *best practices* are often insufficient to achieve the objectives of decontamination within a certain **timeframe**. **Site-specific strategies** are needed.

- **Soil physicochemical properties;**
- **Contamination chemical properties;**
- **Microbiological growth parameters;**
- **Local climate**



Air filter

Injection port

Soil turner

Fermenter



Bioremediation optimization study

Soil pre-treatment

Biostimulation

Bioaugmentation

Soil
characterizat
ion

Addition of
bulking
agent

Optimization
of NPK ratio
and pH

Aeration by
tilling

CPN ratio

Water irrigation
strategy

Temperature

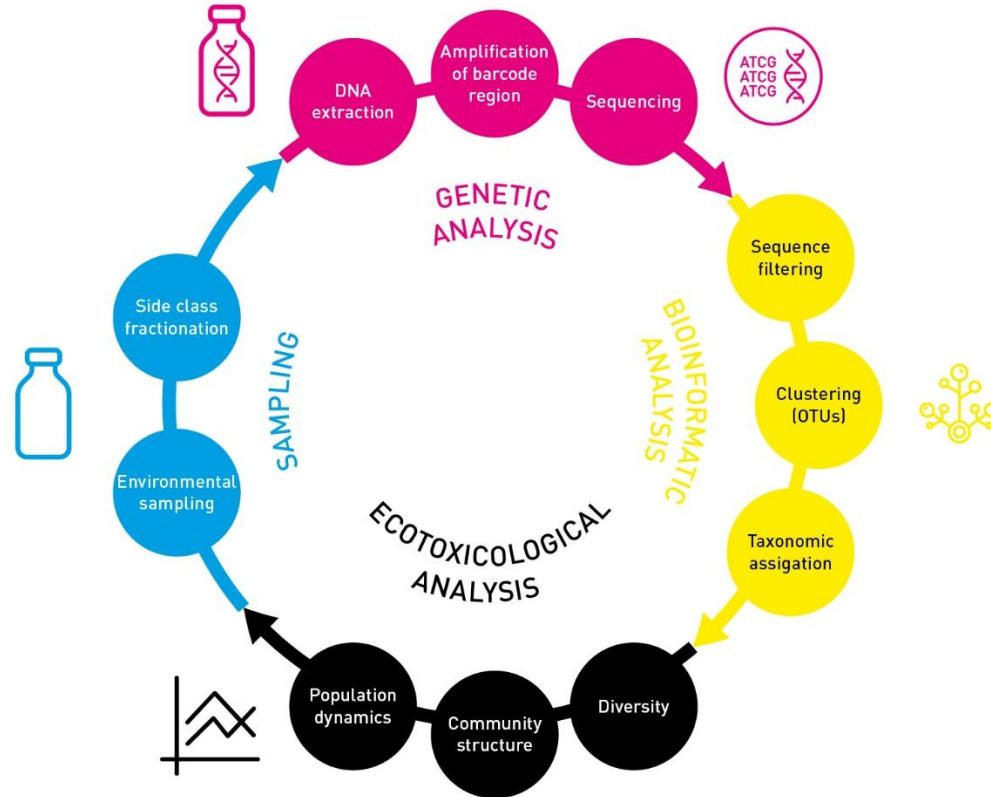
Hyperactive and
concentrated native
culture



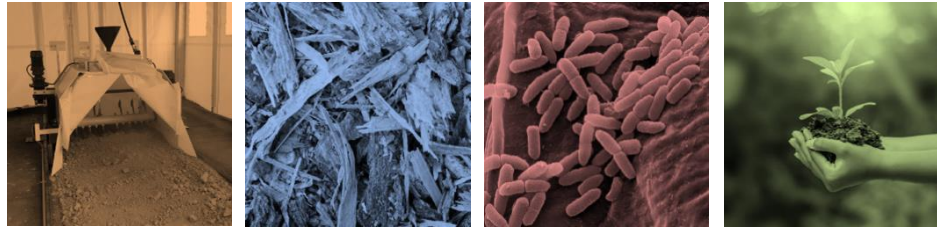
The use of the RoboNova plant allows to define important key-parameters to proceed with the design of a full-scale plant:

- Machinery
- Treatment formulation
- Degradation kinetics and expected duration
- Energy, environmental impact and emissions
- Monitoring plan

Microbiome characterization and treatment test cycles



Thank YOU



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