Microbial Remediation of Non-wetting Soils

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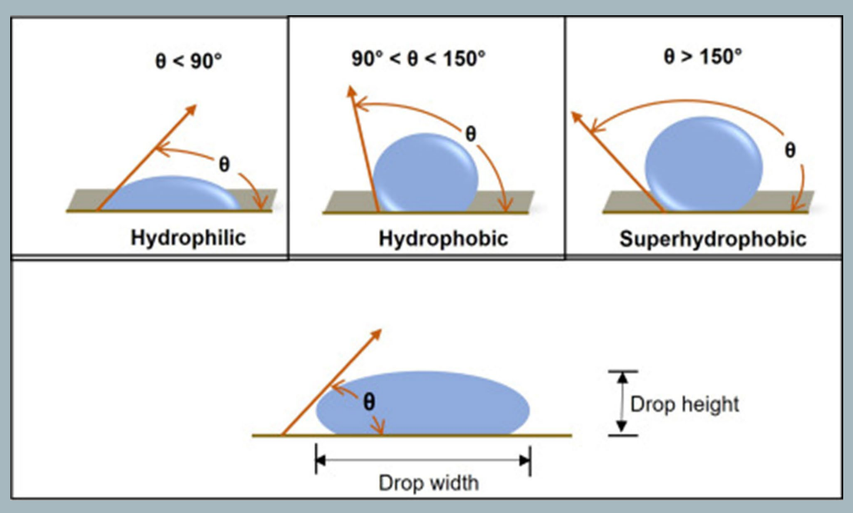
Non-wetting soils

- Non-wetting soils are hydrophobic – they **repel water** due to the presence of waxy, organic coatings.
- In non-wetting soils, water pools up like a bead on the surface instead of penetrating inside the soil.
- The degree of non-wettability can be determined by the contact angle between a water drop and the surface of the soil.



Objectives

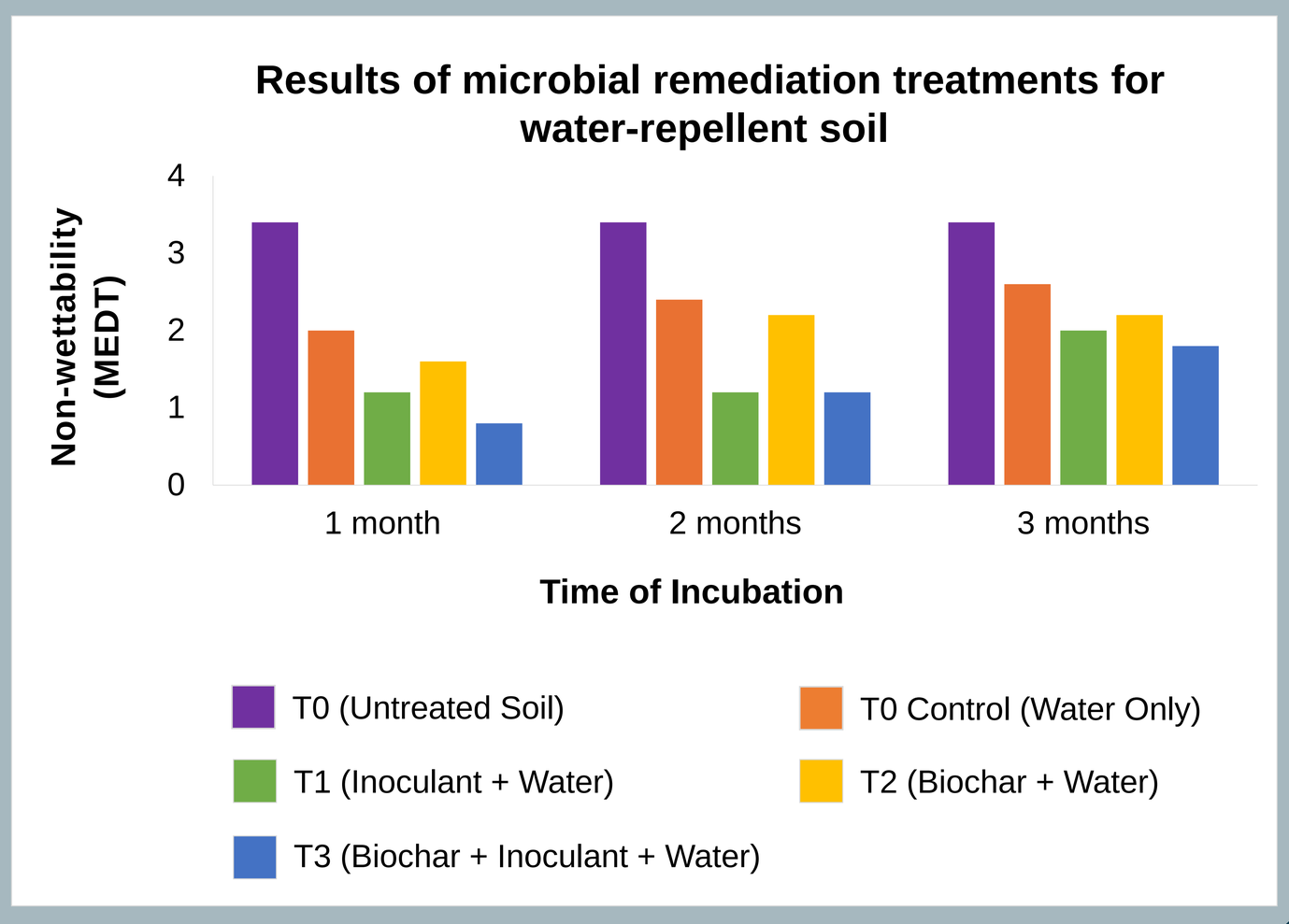
- Isolate and characterise wax-degrading microbes from non-wettings soils.
- Assess the potential of isolated microbes in remediating non-wetting soils along with different amendments like clay and biochar.

Materials and methods

- The bacterial isolates used in this study were cultured in a medium containing glucose, yeast extract, and mineral salts.
- The cultures were incubated for five days at 30 °C with constant agitation.
- After incubation, the bacterial cells were harvested by centrifugation and resuspended in sterile distilled water.

Research findings

- **Seven primary treatments** were designed, each in triplicate, involving different combinations of soil, biochar, clay, and bacterial inoculant.
- Treatments with **microbes alone** and with **biochar reduced the non-wettability** (shown in the adjacent figure).
- Non-wettability was not recorded on T4, T5, T6 and T7 treatments where clay was added alone and in combination.
- These results pave the way to restore non-wetting soils.



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