



Improving the soil health before native plant reintroduction: a pipeline for the restoration of plant habitats

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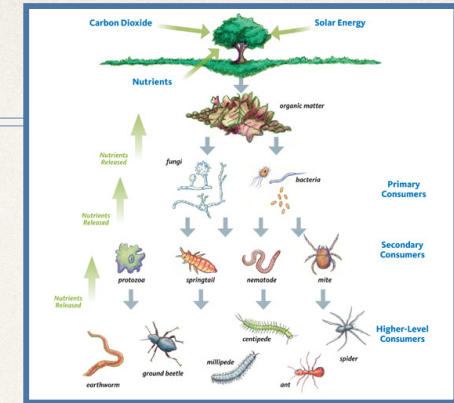
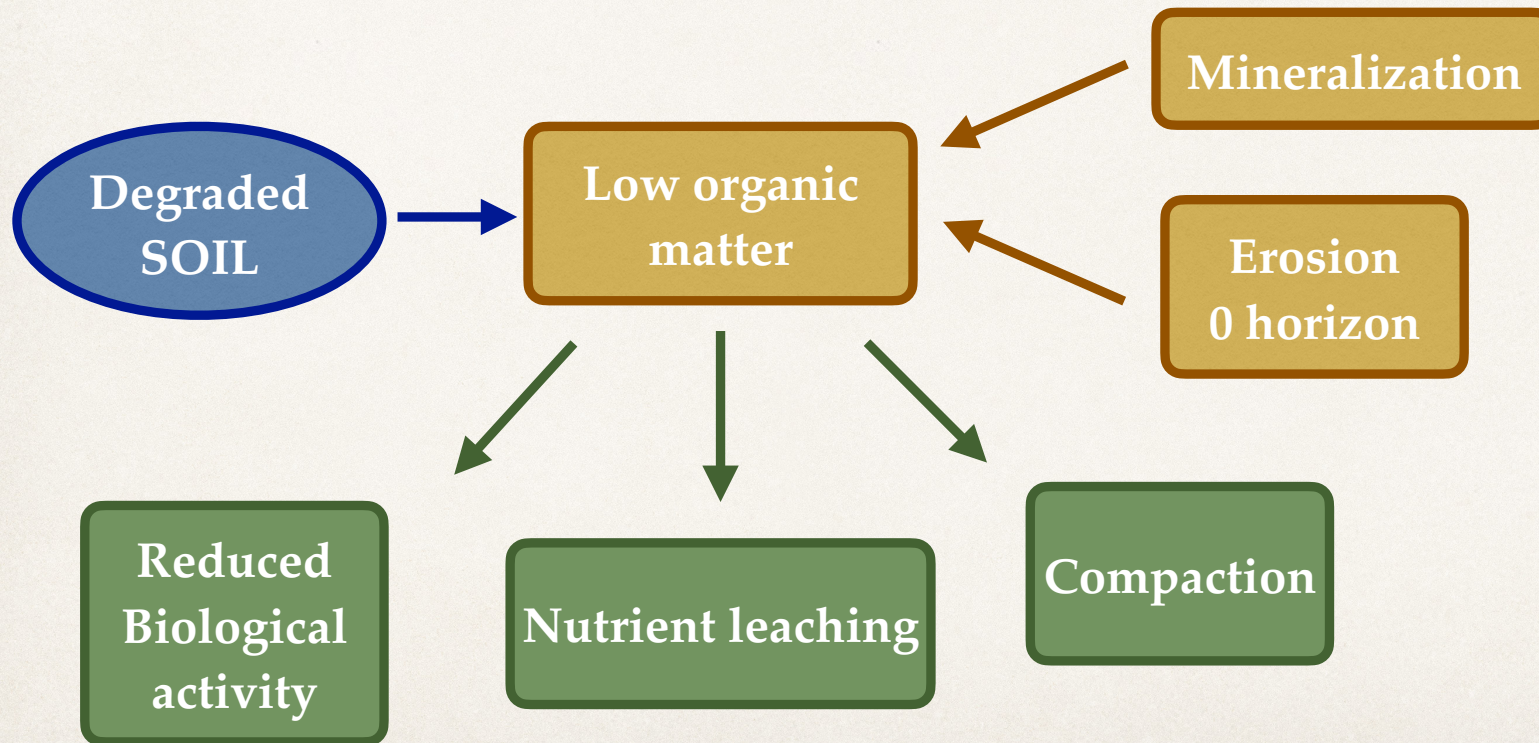
SHARInG-MeD

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Restore Habitats for Plant Conservation

Bad soil conditions are a critical point in **Plant Conservation** and a major cause of **unsuccess**.



Soils are “living organisms”

Restoring
SOIL HEALTH
1st step of
Plant Conservation

Ecological Perspective

A **strategy** to improve the **success** of **Plant Conservation**

❖ is **sustaining** and **enhancing** the **Ecological Succession**



❖ rather than skipping to the endpoint of **transplanting target species**

Feasibility Study

Context:

Habitat: plain mixed forest, with sclerophyllous and deciduous species

Soil: sandy with poor organic horizon

Biogeographic region: Tyrrhenian

Issues:

- ❖ poor soil fertility
- ❖ herbivory

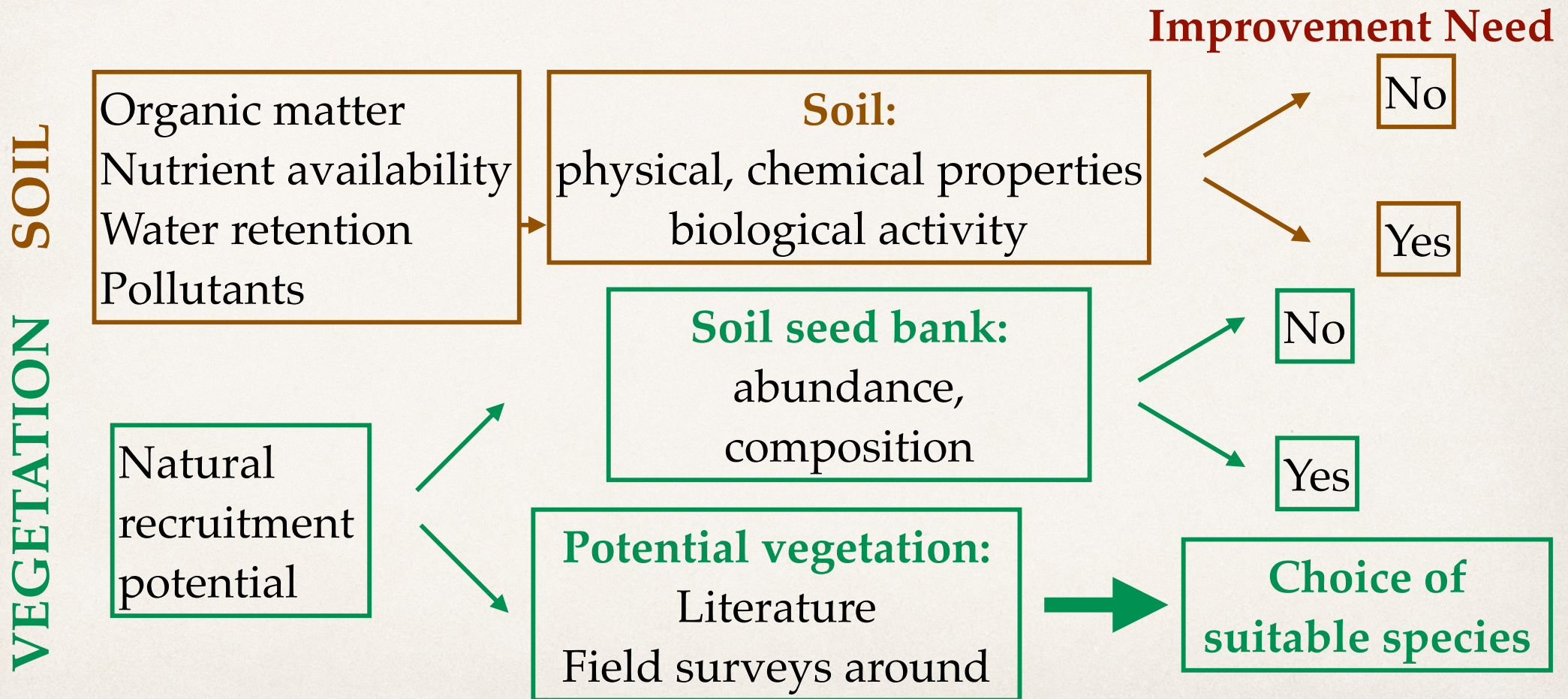
Previous intervention:

Transplanting **native trees** in **bare soil** **sheltered** or **fenced**

- ❖ trees suffered severe summer **drought**



Plan for Stepwise Ecological Restoration



1st Step - Restoring SOIL HEALTH

In **natural ecosystems**, interventions pose **special challenges**, because of the need to:

- ❖ limit **soil disturbance**
- ❖ **avoid** the **inputs** of potential **competitors** of native species.

For **soil improvement**:

- ❖ **livestock manure** is not to recommend as it may contain **foreign seeds**.

Better options are:

- ❖ **litter** and composted **plant debris** from around vegetation ,
- ❖ inert products like **biochar**.



soil porosity
water retention



2nd Step - Supporting VEGETATION Cover

Whether the **SEED BANK** is:

- ❖ **not sufficient** for recruiting a ground-cover vegetation
- ❖ contains undesired seeds of **ruderal** and **alien species**

ARTIFICIAL SEEDING could be performed with:

- ❖ **seeds collected** from **around vegetation**,
- ❖ **commercial mixtures** of annual species, which
must be cut or overthrown before seed production!

PREFERENCE: structural (**grasses**) and functional (**legumes**) taxa,

LAST STEP: transplanting **native trees** and **shrubs**.



Concluding remarks

- ❖ **Soil health** is a critical issue for **Nature Restoration** and not only for crop production (**EU Soil Strategy 2030**);
- ❖ **Collaboration** with **agronomists** and **soil scientists** helps improving the **success** of plant **conservation** actions;
- ❖ **Natural sites** should also be mapped for defining **soil health indicators**;
- ❖ The PRIMA **SHARInG-MeD** project aims harmonizing existing and new data of **Mediterranean soils**.



A photograph of a sandy, eroded area, possibly a dune or a cleared patch of land. The ground is light brown sand, heavily littered with dry pine needles and small twigs. Sparse green vegetation, including small shrubs and grasses, is scattered across the landscape, particularly along the edges of the sandy area. The lighting suggests a bright, sunny day.

Thanks for your attention

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