



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

Restoring Sand to Healthy Soil to Mitigate Urban heat

**Healthy Soils
for
Healthy Cities**

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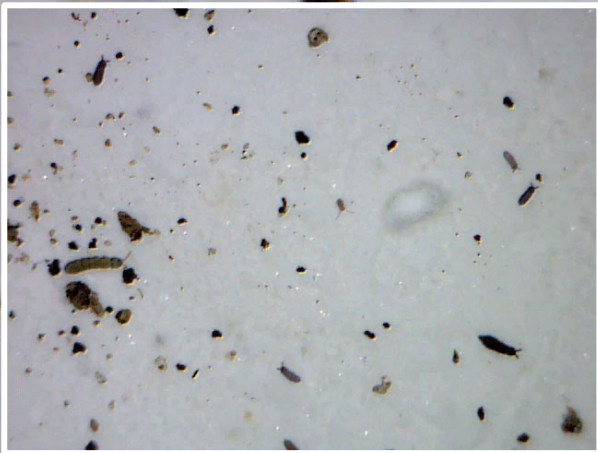
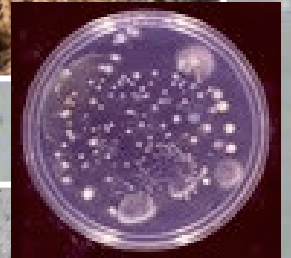
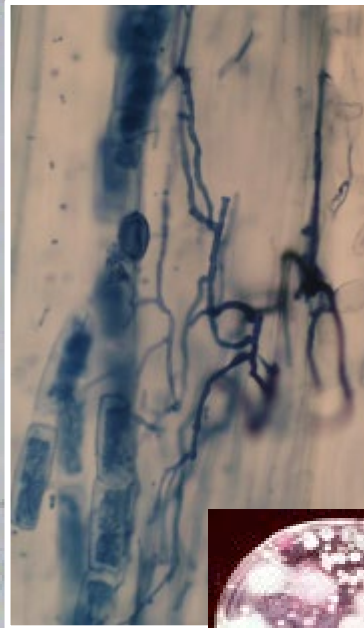
Soil Health

soilhealth APP

Transition Town Vincent's [My Healthy Soils Project](#)

World Soil Day 5 December 2025

Significance of soil biodiversity



nutrient transformations

nutrient cycling

symbiotic / non-symbiotic nitrogen fixation

plant disease / plant disease suppression

arbuscular mycorrhizal function

soil structure (soil aggregation)

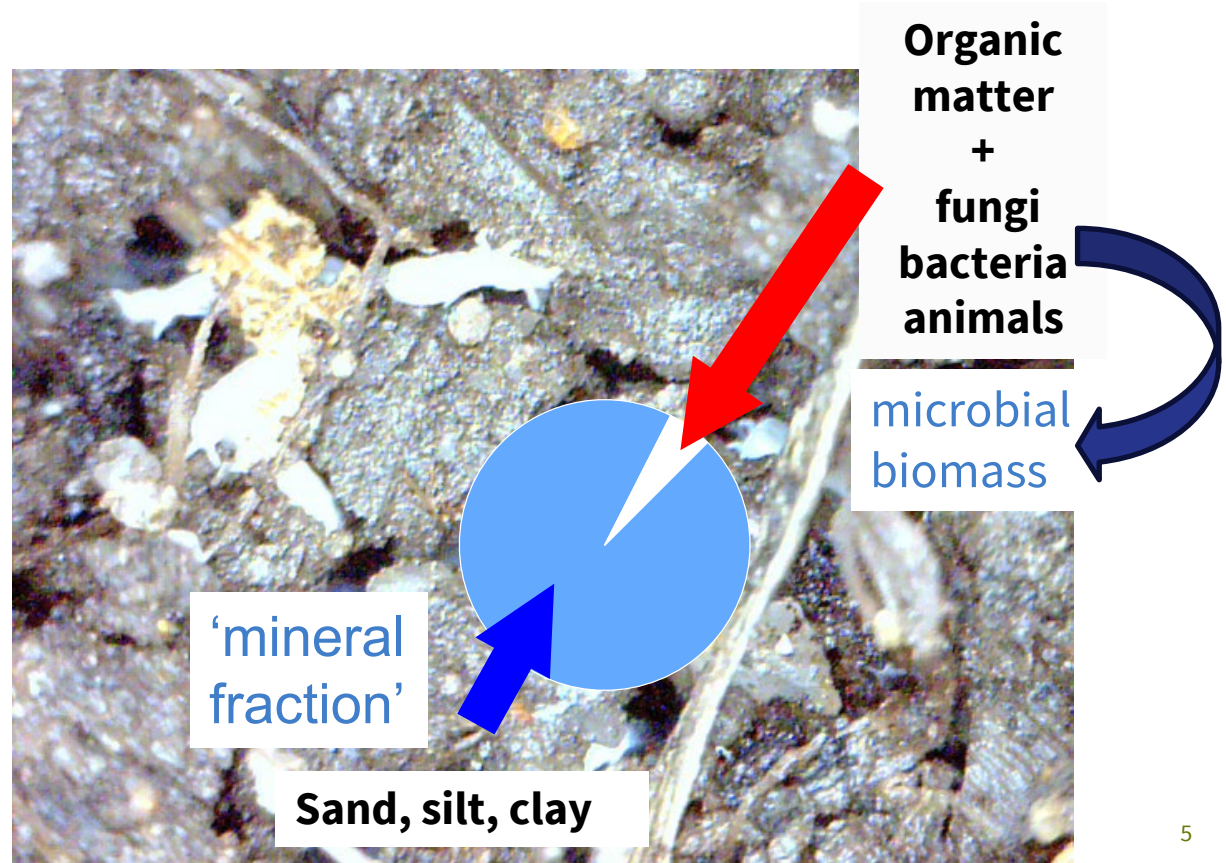
water repellence / infiltration

Building healthy sandy soil



- Communities of soil organisms provide the backbone of healthy soils, even in sandy soil
- Structural complexity of organic resources in soil creates habitat heterogeneity

Importance of plant biodiversity



Importance of soil amendments

Soil amendments

Fertilisers

Lime

Humates / biochar etc

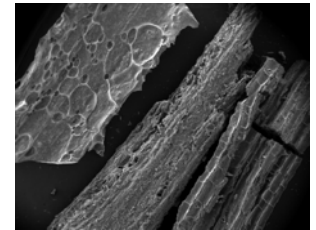
Manures / composts

Compost teas / biological extracts

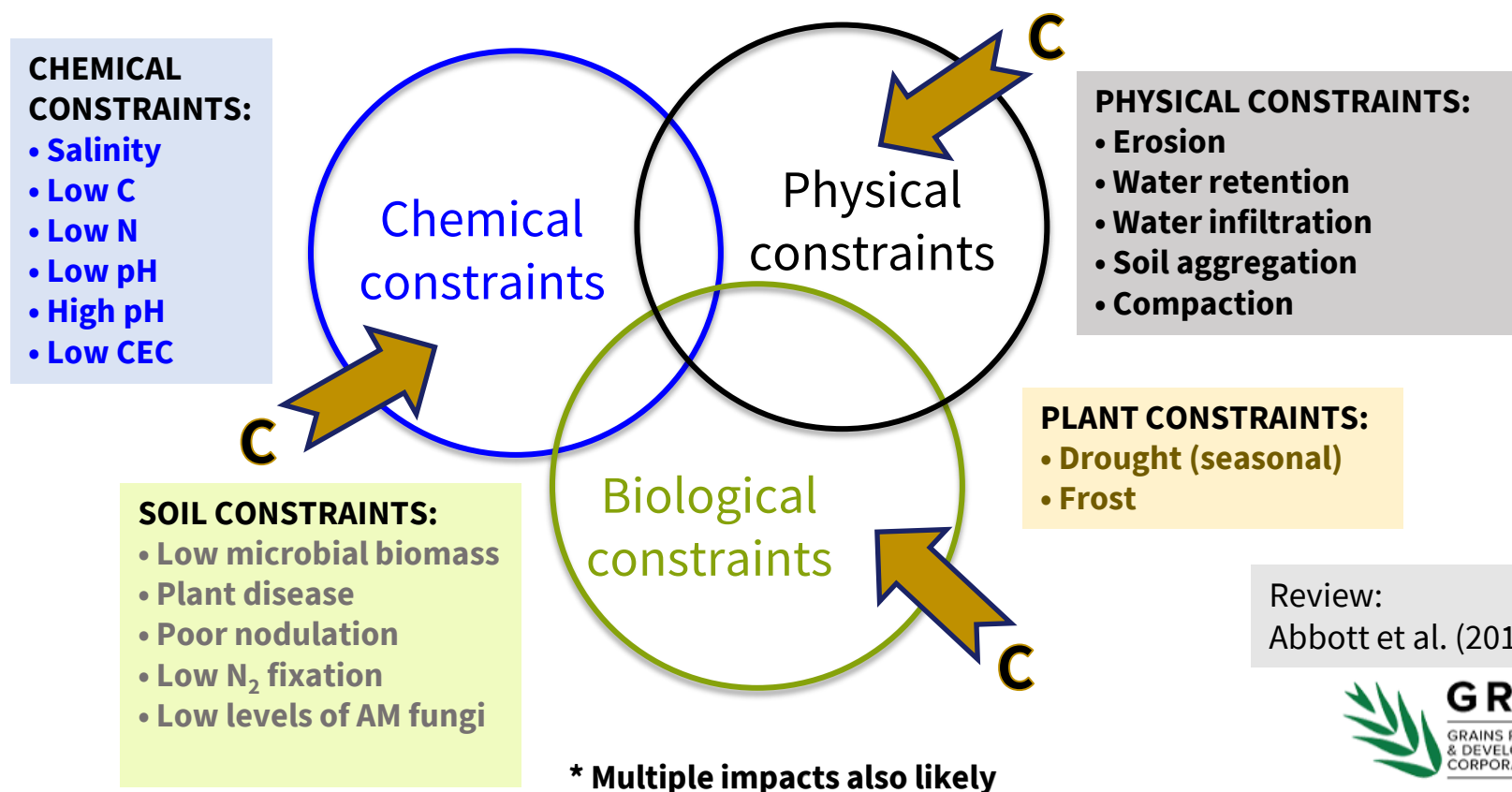
Microbial inoculants

Impacts on soil constraints

Impacts on soil biological processes



Impacts of biological amendments on soil constraints



UWA Farm Ridgefield

Building ecosystems and biodiversity



Introduction of mixed tree plantations improves soil conditions
and supports soil biological processes

Farm demonstration to fast-track restoration of soil condition using **permeable biomass barriers**

Demonstration site funded by the National Landcare Program: Smart Farms
- an Australian Government initiative



Intensive regenerative practices **establishing permeable biomass walls and trenches**



Trees previously planted by Greening Australia
as part of Australian Government 20 Million
Tree programme

Farm demonstration to fast-track restoration of soil condition using permeable biomass barriers



Examples of biological amendments used –

Straw

Compost

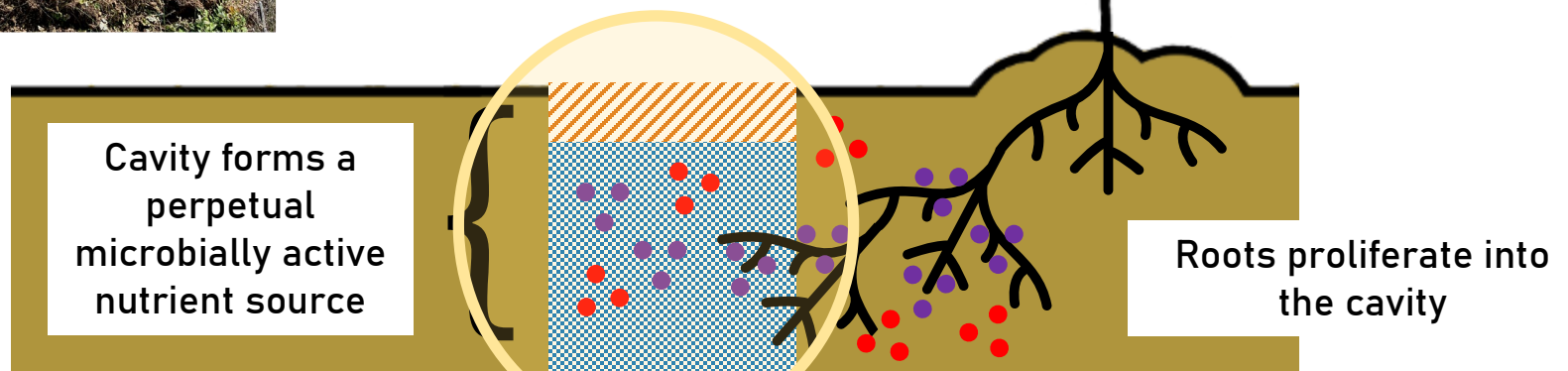
Biochar

Worm juice

Wood Vinegar



Diverse soil
biological
community
established



Articles of interest (free)

- (1) Soil health – Building healthy sandy soils in agricultural landscapes
<https://www.openaccessgovernment.org/article/building-healthy-sandy-soils-in-agricultural-landscapes/183530/>
- (2) A soil health initiative for revegetation and orchards
<https://www.openaccessgovernment.org/wp-content/uploads/2025/06/openaccessgovernment.org-A-soil-health-initiative-for-revegetation-and-orchards.pdf>
- (3) Soil health - Soil health characteristics
<https://www.openaccessgovernment.org/article/soil-health-characteristics/171406/>
- (4) Soil health – A role for arbuscular mycorrhizas
<https://www.openaccessgovernment.org/article/soil-health-a-role-for-arbuscular-mycorrhizas/174967/>
- (5) Soil health - Soil biodiversity is essential for building environmental resilience
<https://www.openaccessgovernment.org/article/soil-biodiversity-is-essential-for-building-environmental-resilience/178798/>
- (6) Soil health – The importance of earthworms for soil health <https://www.openaccessgovernment.org/article/the-importance-of-earthworms-for-soil-health/186646/>
- (7) Soil health - Soil biological amendments for soil health <https://www.openaccessgovernment.org/article/soil-biological-amendments-for-soil-health/190435/>
- (8) Soil health: assessing and monitoring using soil biology
<https://www.openaccessgovernment.org/article/soil-health-assessing-and-monitoring-using-soil-biology/199603/>

Principles of soil health: Sustaining profitable agricultural production

<https://www.openaccessgovernment.org/ebook/principles-of-soil-health-sustaining-profitable-agricultural-production/175939/>

Unveiling healthy soil: Why is soil biology key to soil health?

<https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=8591ec85-7731-4088-8e51-9812ef0622bb>

Soil Structure: The foundation of healthy soil

<https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=8e4aa1e6-10aa-400c-bca8-f2f32f5933b3>