Regenerative Agriculture:

Maintaining a living root

Practical Guide

Regenerative Agriculture is a set of farm management principles which put soil health at the centre of agriculture practise. Putting soil health at the centre of farming practices has many benefits including ecosystem services such as water filtration, nutrient cycling and increased biodiversity.

The concept of regenerative agriculture often involves reduced inputs and increased management to tailor inputs and operations to the soil's requirement.

This Practical Guide looks at the first principle of regenerative farming: Maintaining a living root

Living roots in the soil are vital for feeding the organisms at the base of the soil food web. Plant and soil biology have a very close relationship, which is centred around plant roots and root exudates. They are the host of organic substances excreted by plants. These exudates provide an energy source for soil biology in the rhizosphere as well as sending out signals to specific microorganisms.

Benefits

- Having living roots means there is a plant above ground, which protects the soil from erosion and provides potential for grazing and weed control for the following crop.
- Helps to reduce leaching of nutrients through the winter. Growing cover crops through the winter absorbs residual nutrients (nitrogen in particular) and holds them before making them available for the next crop as the catch crop decomposes.
- Root exudates: provides much of the energy for the base of the food web, considered very important for the maintenance of soil health.
- Living roots play a key role in soil infiltration, reducing run off and the biology which they support can boost soil aggregation through the excretion of polysaccharides (substance which acts like glue to hold soil together)

Five Principles of Regenerative Agriculture:

1. **Maintaining a living root**
2. Minimising soil disturbance
3. Maximising crop diversity
4. Keeping soil covered
5. Integrating livestock

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www.planet4farmers.co.uk

www.gov.scot/Publications/2017/06/9986

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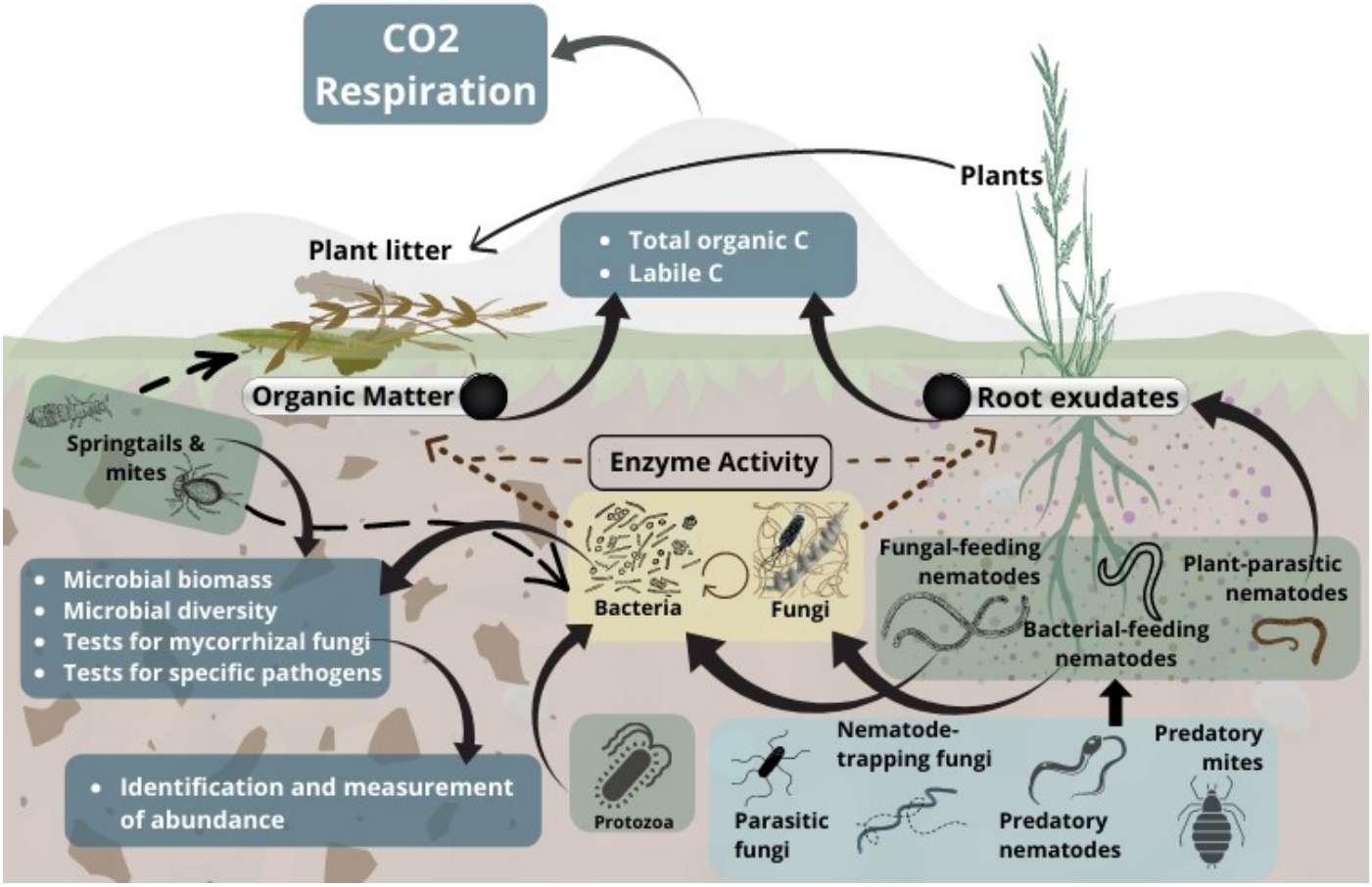
A healthy soil food web



A soil food web refers to the complex relationship between the diverse groups of fauna and flora that is found in soil. A healthy soil food web can contribute towards:

- Decomposition of organic matter
- Nutrient cycling
- Retention of nutrients
- Bioturbation (the movement of gases and water into and through the soil
- Disease suppression
- Toxin decomposition

Scottish cropping systems

In Scottish cropping systems there can be bare ground for large proportions of the year. This can lead to a decline in soil carbon over time as the soil's biology has to look for alternative energy sources.

Winter crops can be one solution to maintaining roots in the soil, however it is not the only solution.

Cover crops, catch crops, weedy stubbles and perennial crops can all help to feed the all important soil biology. They can also provide a break in an arable rotation whilst maintaining roots in the soil. Catch crops can also be sown and used as part of the Ecological Focus Area (EFA) requirements.

As the window for establishing cover crops in Scotland is limited and clashes with the main harvest farmers in the Soil Regenerative Agriculture Group have found that broadcasting cover crops into a standing crop two weeks pre-harvest gets the job done in a quieter spell and allows for much increased growth of the cover crop before winter.

Key Points

- Helps with soil infiltration
- Reduces nutrient leaching
- Cover crops can allow the integration of livestock through grazing

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