

SoildiverAgro project

Adoption of new management practices to increase crop production and quality



THE WHAT AND WHY

Improving soil quality with cover crops

Growing of cover crops (or catch crops) undersown or sown after the main crop harvest is beneficial agricultural practice to improve physical, chemical and biological properties of soil. Cover crops are used for instance to prevent nutrient leaching, to retain water holding capacity, to protect soil from erosion, to control weeds and plant pathogens. Cover crops may increase carbon (C) and nitrogen (N) inputs from plant residues and root exudates. N content of leguminous cover crops, fixing N symbiotically from atmosphere, is often over 3 %, while N-% of grasses, taking N almost solely from soil, is near one. N-% of cruciferous cover crops is in between. Although C/N of legumes is low compared to grasses, they are important for increasing carbon sink via positive impact on soil microbes. How cover crops interact with soil microbial community is however still

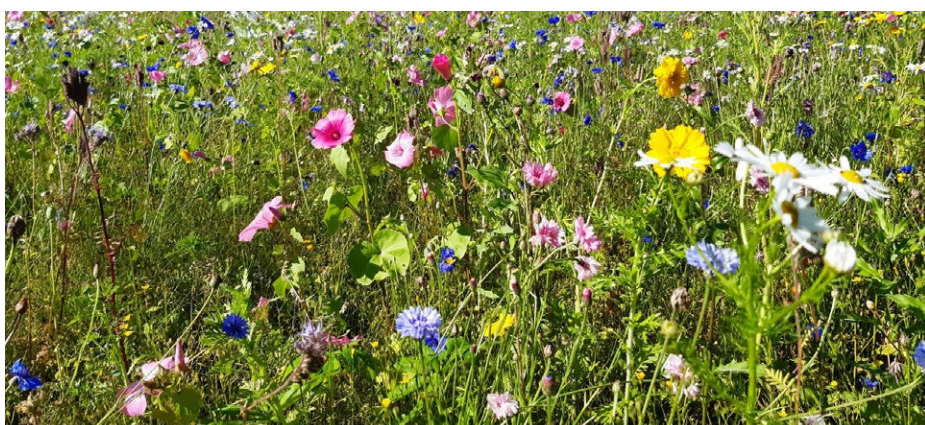
poorly known. Variable sources of organic matter provided by cover crops assumable stimulate microbial activity in soil. A few studies suggest that cover crops would enhance the soil microbial community by increasing mycorrhizal fungal abundance, phosphorus in microbial biomass or enzyme activity. In addition, specific cover crops are suggested to increase specific microbial groups, especially arbuscular mycorrhizal fungi. Whether cover crops induce changes in function community composition of soil microbes needs further investigations. Cover crops could be part of the solution for more sustainable agriculture in the future challenged by climate warming induced changes and carbon loss from arable soils. While waiting for increasing knowledge from studies, farmers can count on well-known positive effects of versatile use of cover crops on soil fertility.



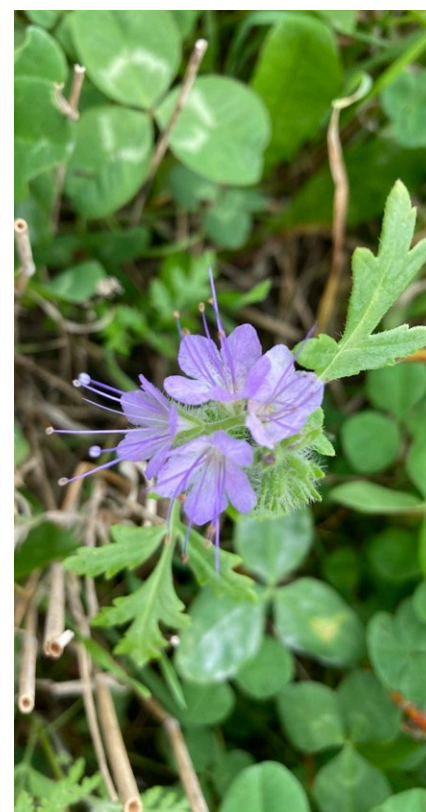
1. Covercrop rye



2. White clover



3. Flowers



4. Phacelia covercrop

KEYWORDS

Cover crops, soil fertility, nutrient leaching, carbon sequestration

AUTHORSHIP

Krista Peltoniemi, Natural Resources Institute Finland (Luke), Helsinki, Finland

Hannu Känkänen, Natural Resources Institute Finland (Luke), Jokioinen, Finland



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817819

This factsheet is produced as part of the SoildiverAgro project. Although the author has worked on the best information available, neither the author nor the EU shall in any event be liable for any loss, damage or injury incurred directly or indirectly in relation to the project.