

Soil microorganisms under different SICS

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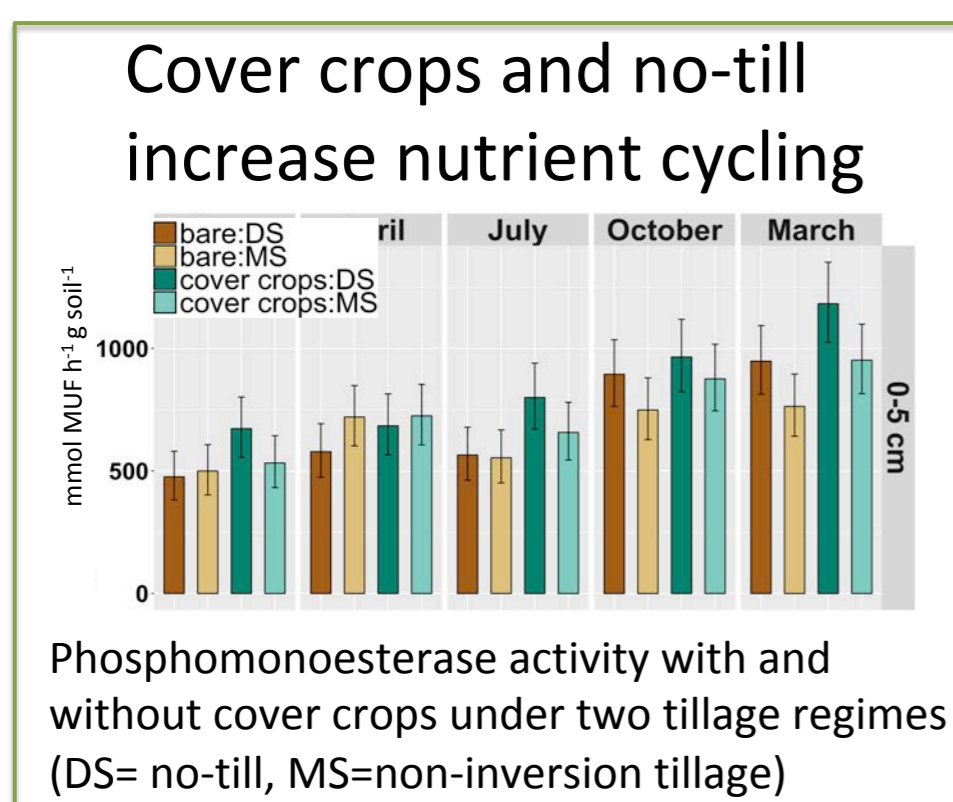
University of Hohenheim, Germany

Available data

Cover crops and tillage

Field & on-site experiments

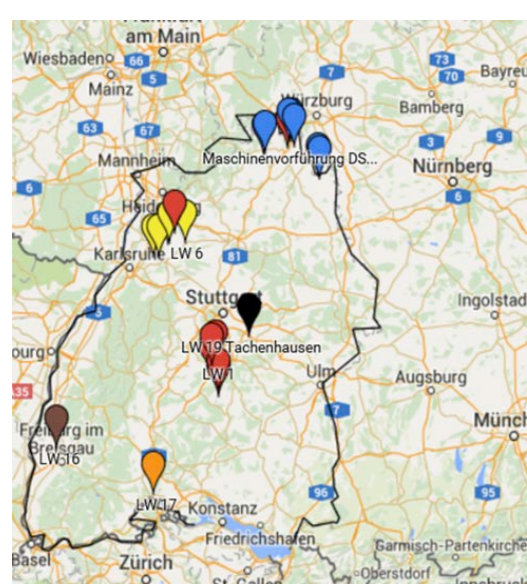
2015-2016: Full dataset (soil biological and agronomical variables)



Additional field experiment:

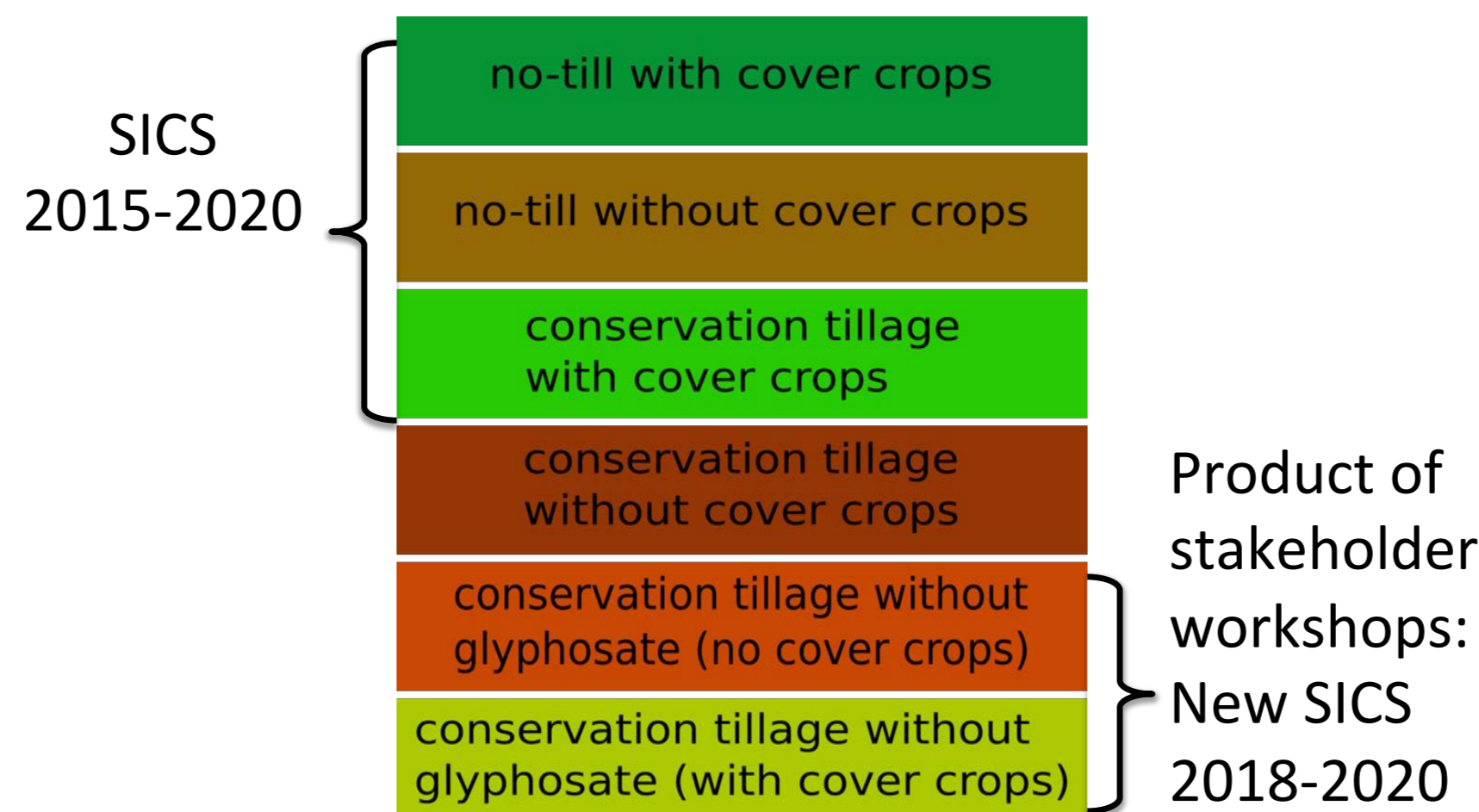
Cover crop effects in the rhizosphere of mustard, phacelia and buckwheat

On-site stakeholder experiments: 18 sites (without replicates): Agronomical and socioeconomical data



Selected SICS

- Conservation tillage
- Cover crops
- Glyphosate-free management



Ongoing experiments

Cover crops and glyphosate

On-site: 5 Stakeholders included 2 different glyphosate-free systems

Additional field experiment:

- Glyphosate (yes/no)
 - Cover crops (yes/no)
- (summer cover crop mixture, a field experiment with winter cover crops will follow in autumn)

| | | | |
|---|---|---|---|
| 2 | 3 | 4 | 1 |
| 1 | 4 | 2 | 3 |
| 3 | 2 | 1 | 4 |
| 2 | 1 | 4 | 3 |

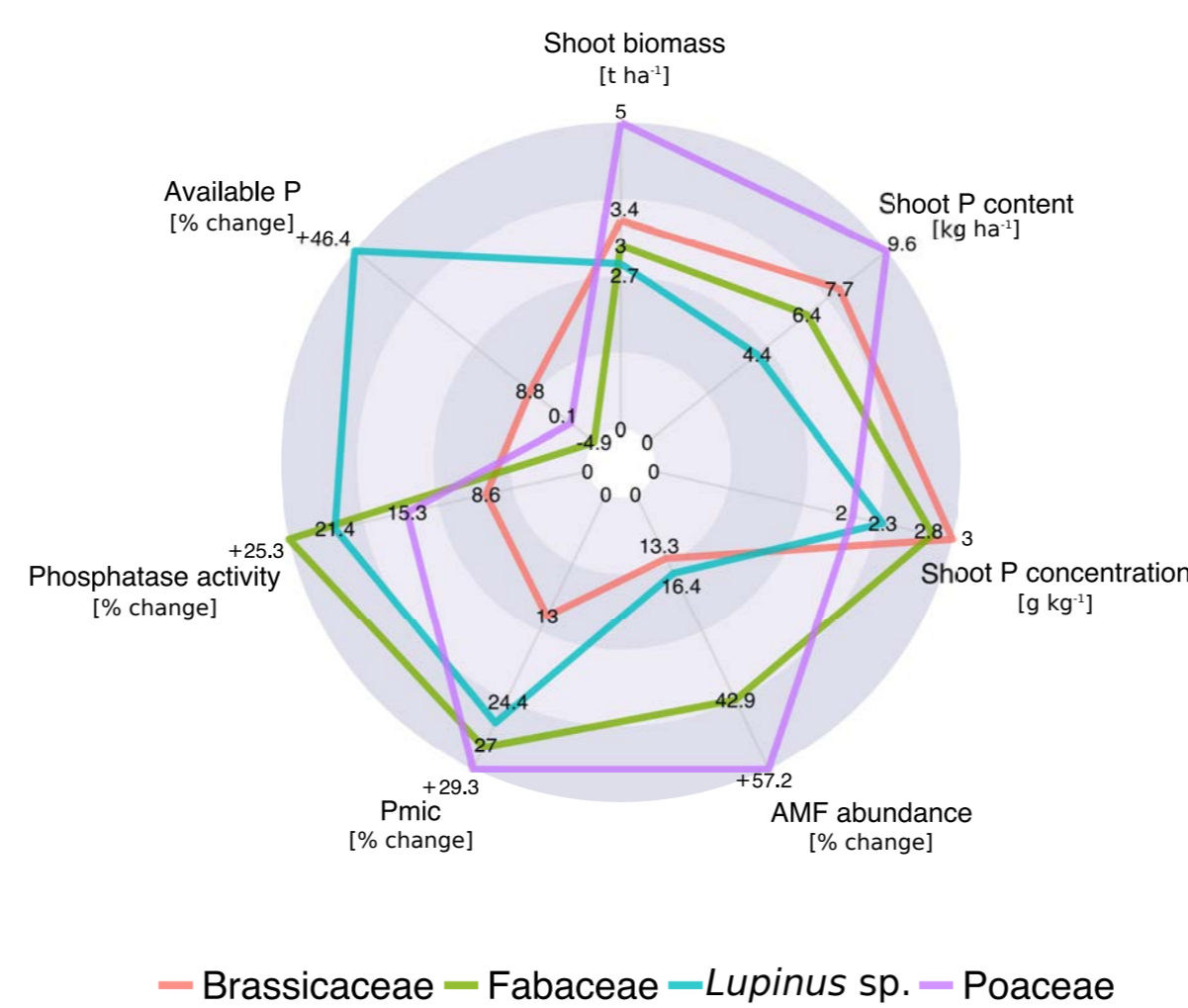
Treatments:

- 1: with cover crops, no glyphosate
- 2: with cover crops, with glyphosate
- 3: bare fallow, no glyphosate (hand weeding)
- 4: bare fallow, with glyphosate

Analyses:

Soil microbial community structure: PLFA/NLFA, 16S-qPCR (focus on mycorrhiza)
Soil microbial activity: Functional genes, enzymatic activity (phosphorus mineralization)

Meta-analysis



Cover crops have distinct P-acquisition strategies, leading to differences in biomass properties and effects on soil microorganisms

WP2

Review: "Soil improving cropping systems for loss of soil biodiversity"

Meta-analysis: "Hidden miners: soil-plant-microbe interactions for phosphorus mobilization with cover crops"

WP3

Stakeholder panel:
1) Topic of interest glyphosate!
→ Field experiment about glyphosate x cover crop interaction
2) Increase visibility of farmers using SICS

WP4

On-farm sites: sociocultural/ socioeconomical data

Field experiments: indicators of crop and soil quality

WP5

Results of Long-term and ongoing experiments

WP7

Interviews (including the vice-minister of agriculture of Baden-Württemberg)

WP8

Elaboration of signs at study sites to inform about tested SICS?