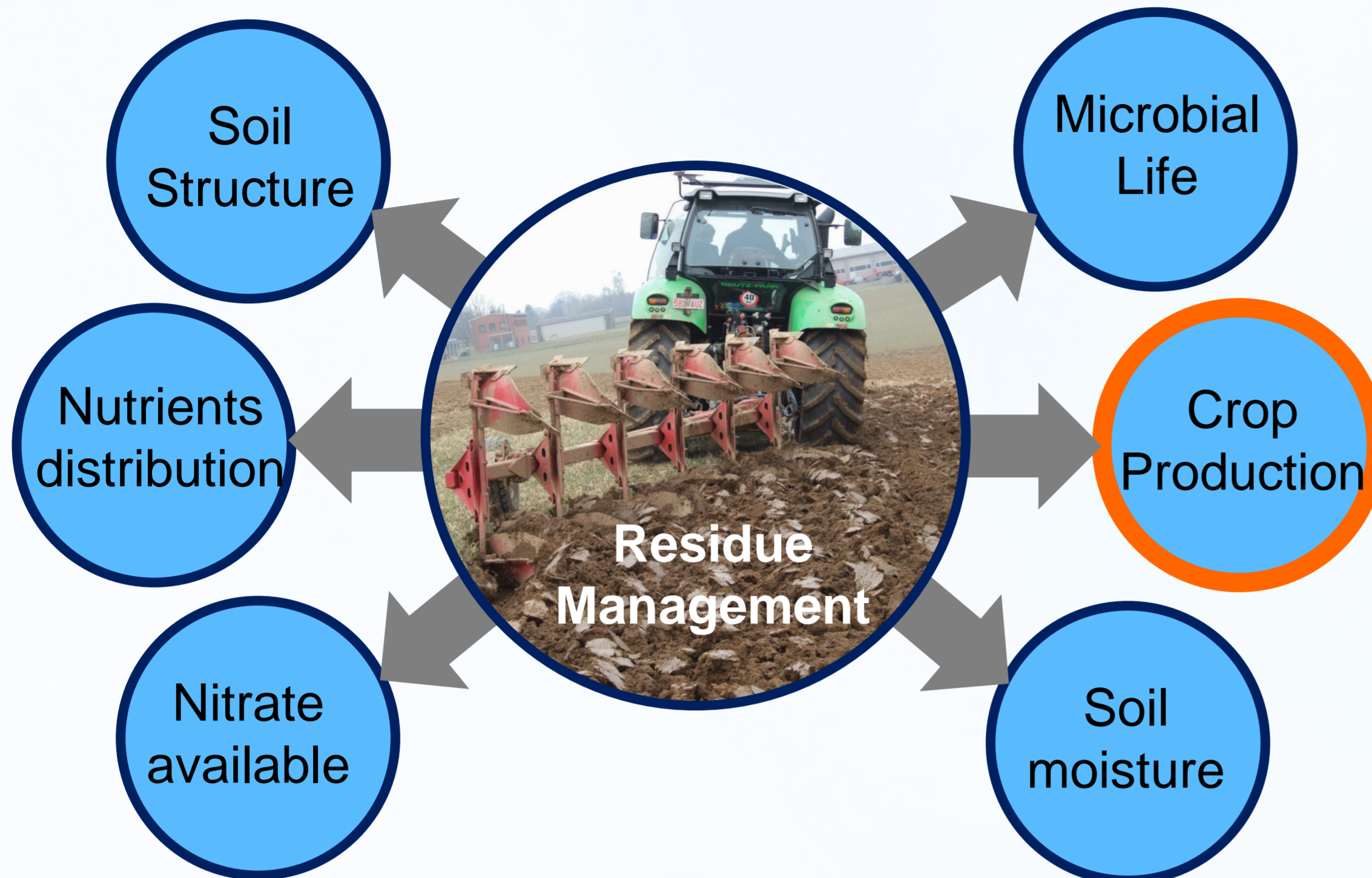


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## CONTEXT



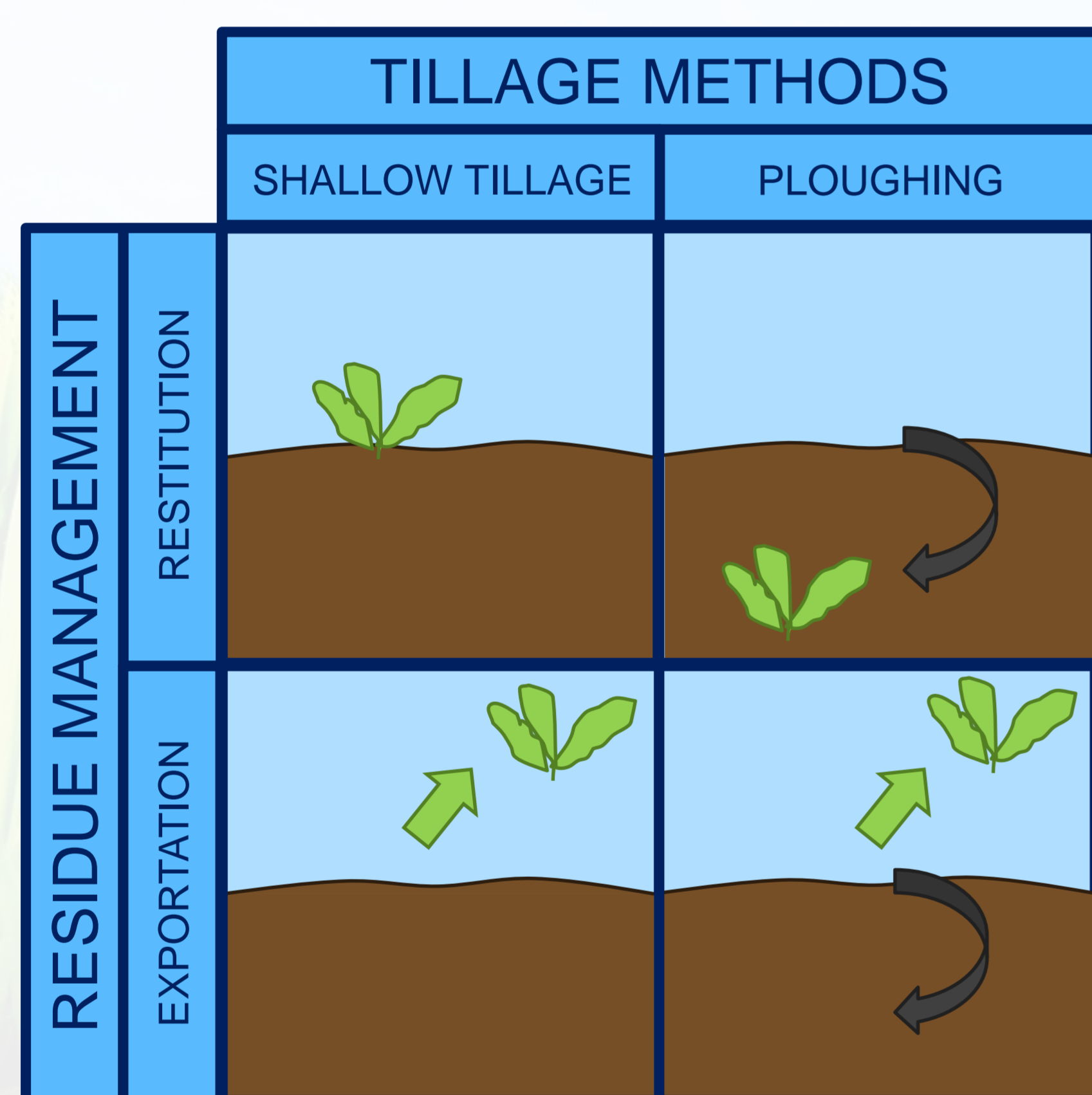
Crop residues and plant covers are two ways to restore organic matter and thus maintain soil fertility. Cover crops are N catch crops reducing nitrate leaching in the soil.

The cropping systems has an impact on soil structure, pedofauna, microbial life, soil moisture distribution,... as well as crop production and the dynamic of weed population. These cropping systems are tested in the silty region of Wallonia in Belgium in order to better understand their effect in this context

## OBJECTIVES

- The aim of this project is to study the crop development in relation to soil tillage and organic residue management and to understand its **impact on crop production** but also on the dynamics of weed populations and intensity of fungal diseases occurring on the crops. Various cropping systems with different tillage methods dedicated to bury the residues from the previous crop and/or from the intercropping and to prepare the implantation of following crop are studied.
- A further objective is to define appropriate management of the above-ground biomass. This could help the farmer of the silty region of Wallonia, Belgium.

## CROP RESIDUE MANAGEMENT

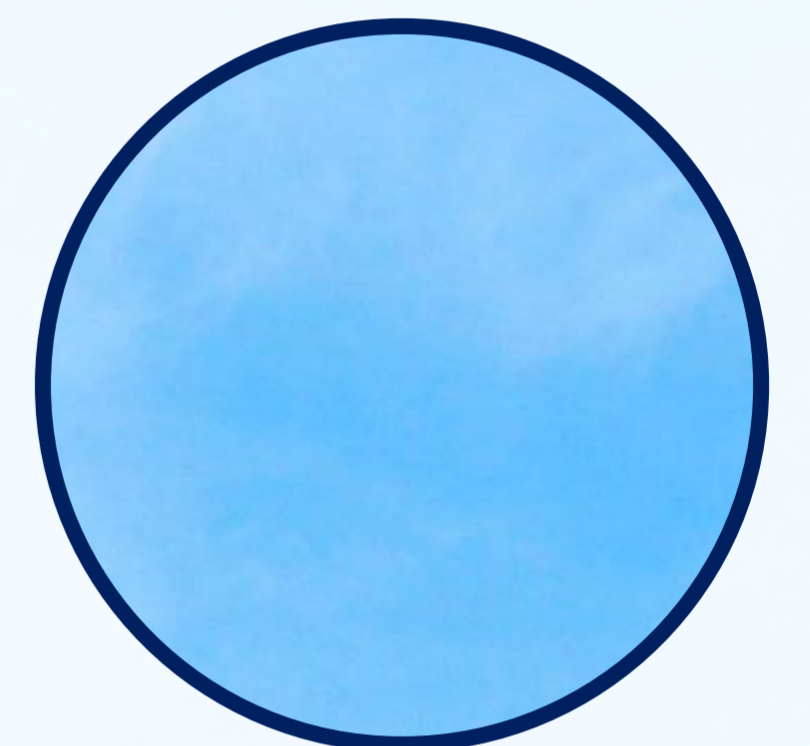


Four modalities are tested in relation to the destiny of crop residues whether they are exported or not and the tillage methods whether the field is ploughed or shallow tilled.

## MEASUREMENTS

### ATMOSPHERE

- Weather station (temperature, air humidity, wind force,...)
- Tractor energy consumption

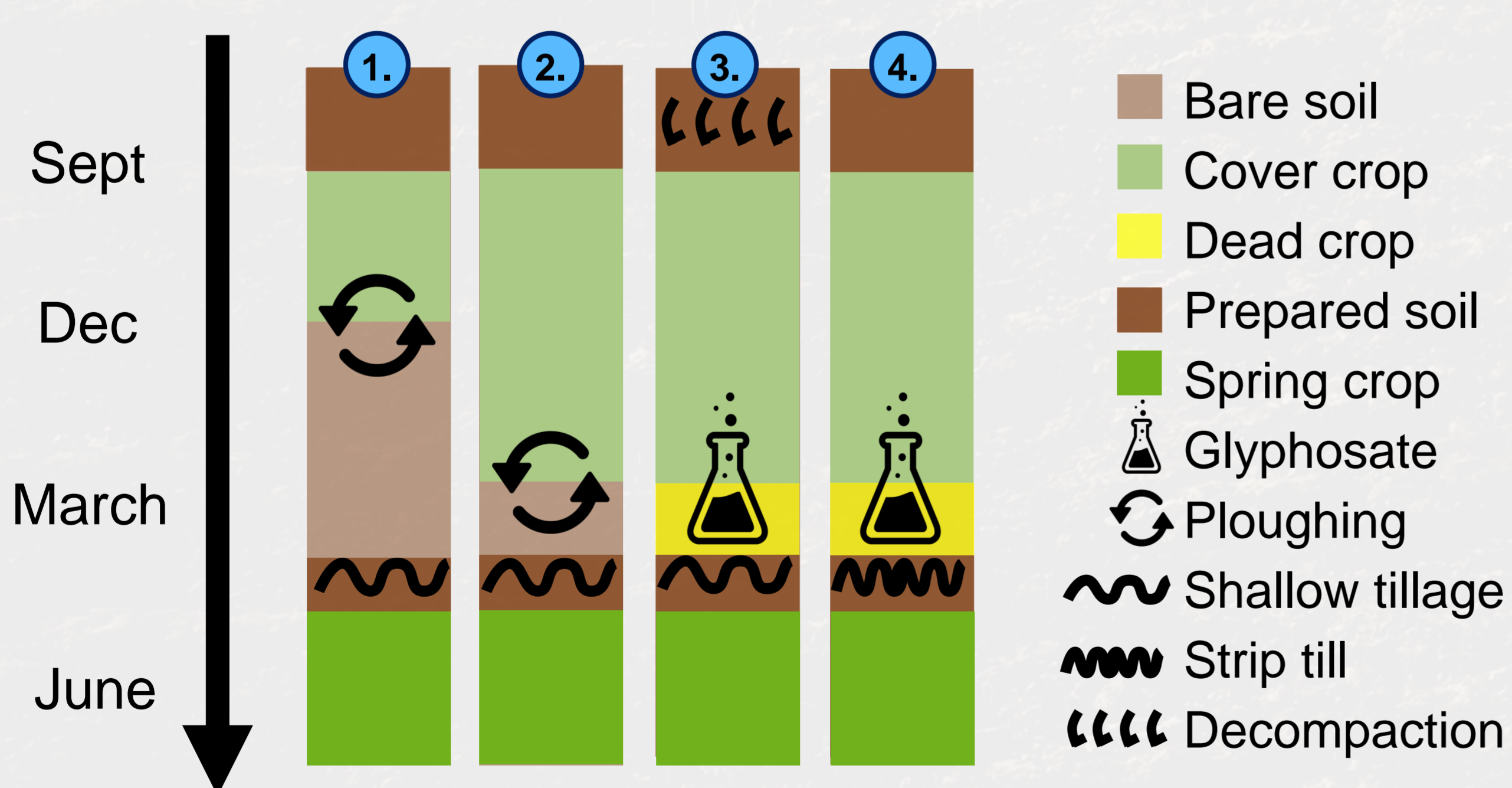


### PLANTS

- Number of emerged plants
- Biomass produced in different organs
- Developmental stages (BBCH scale)
- Leaf Area Index
- Evolution of weed population
- Yields Components
- Quality of the harvested products
- Presence of deficiencies, fungal diseases or pests
- Nitrogen uptake by the plant



## COVER CROP MANAGEMENT



Cover crops provide a significant amount of organic matter and a competition to weed. Four types of tillage are used to manage organic matter produced and implement the spring crop :

1. Conventional tillage (25 cm depth) to destroy the cover crop just after the authorized date in december in Wallonia,
2. Conventional tillage (25 cm depth) to destroy the rest of the cover crop after winter
3. A decompaction before the implementation of the cover crop and a shallow tillage (10 cm depth) to prepare the seedbed,
4. A strip till, where only the sowing line is loosened.

### SOIL

- Soil structure
- Root growth
- Water content (5, 20 and 50 cm depth)
- Nutrients
- Nitrogen content
- pH
- Earthworms
- Microbial Life
- Decomposition of crop residues

