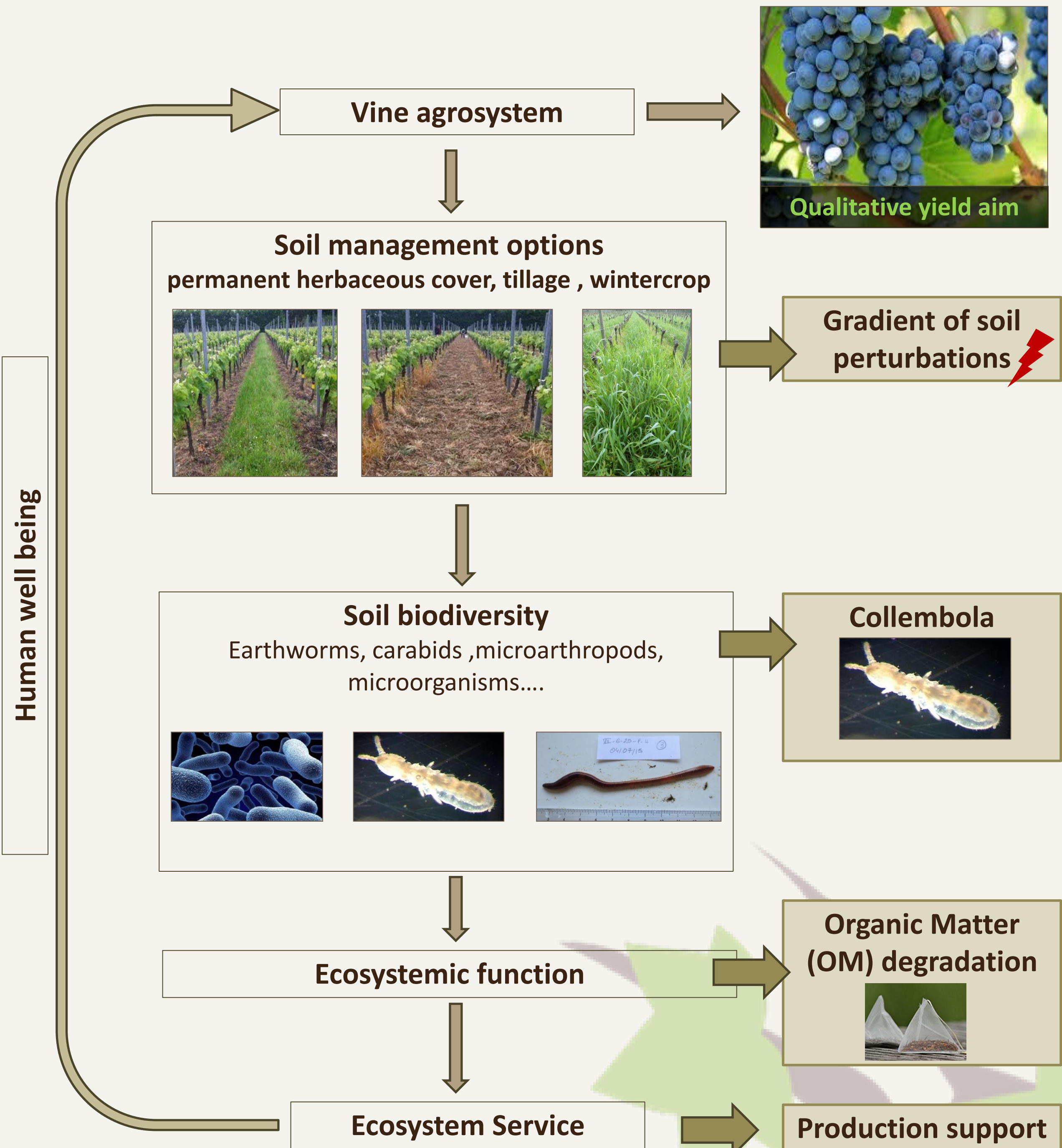


? What relationships between soil collembola populations and OM degradation according to the soil management strategy? ?

PromESSinG project : Promoting Ecosystem Services (ESS) in Grapes

The objective of PromESSinG project is to identify soil management options for promoting biodiversity linked ESS.



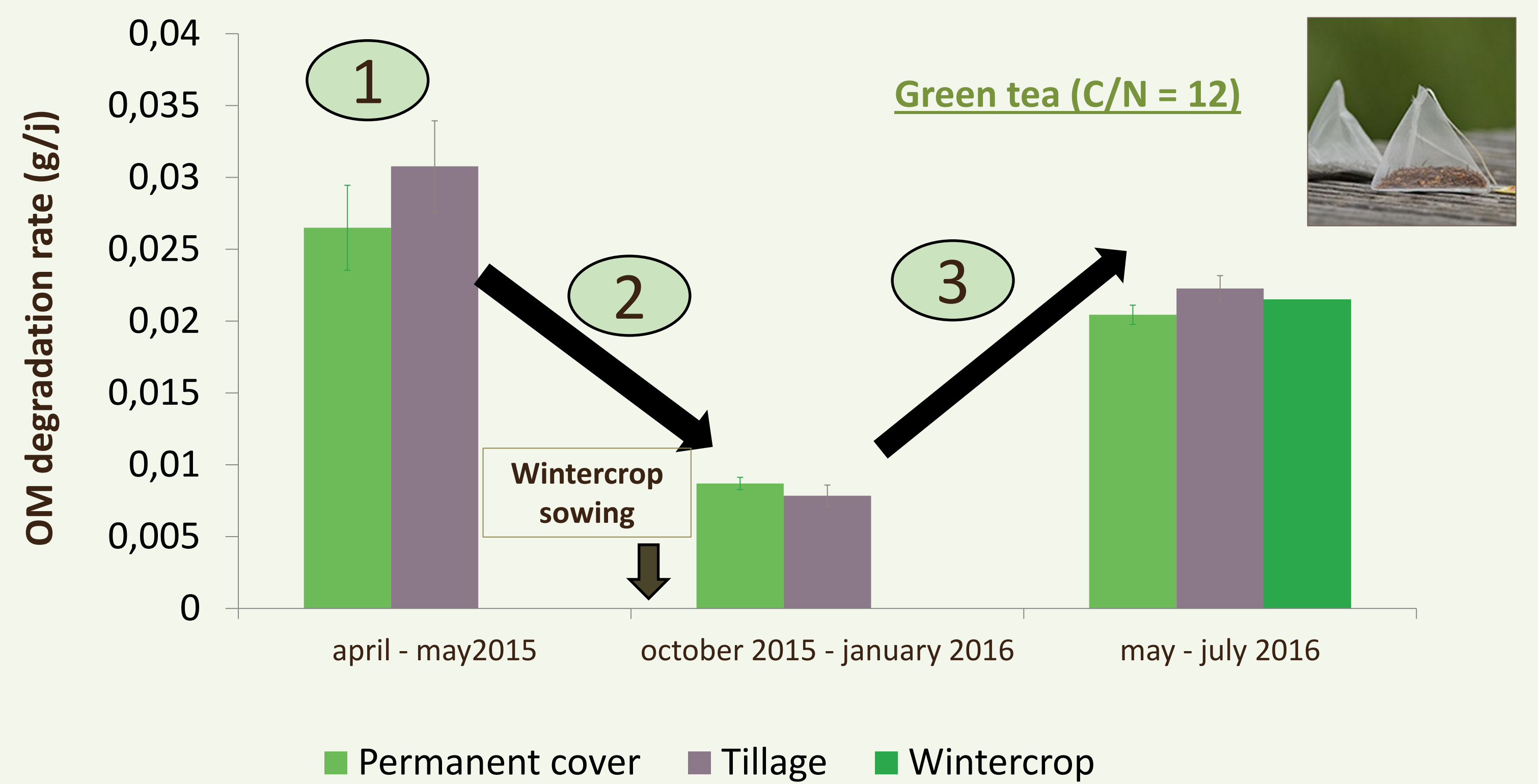
Methods

9 french vineyards originally covered with permanent herbaceous vegetation (destroyed in April 2015) → 3 soil management strategies :

- ❖ Permanent cover
- ❖ Tillage
- ❖ Winter crop : vetch/oat mix (50kg/ha) ; sown in october 2015/destroyed in may 2016

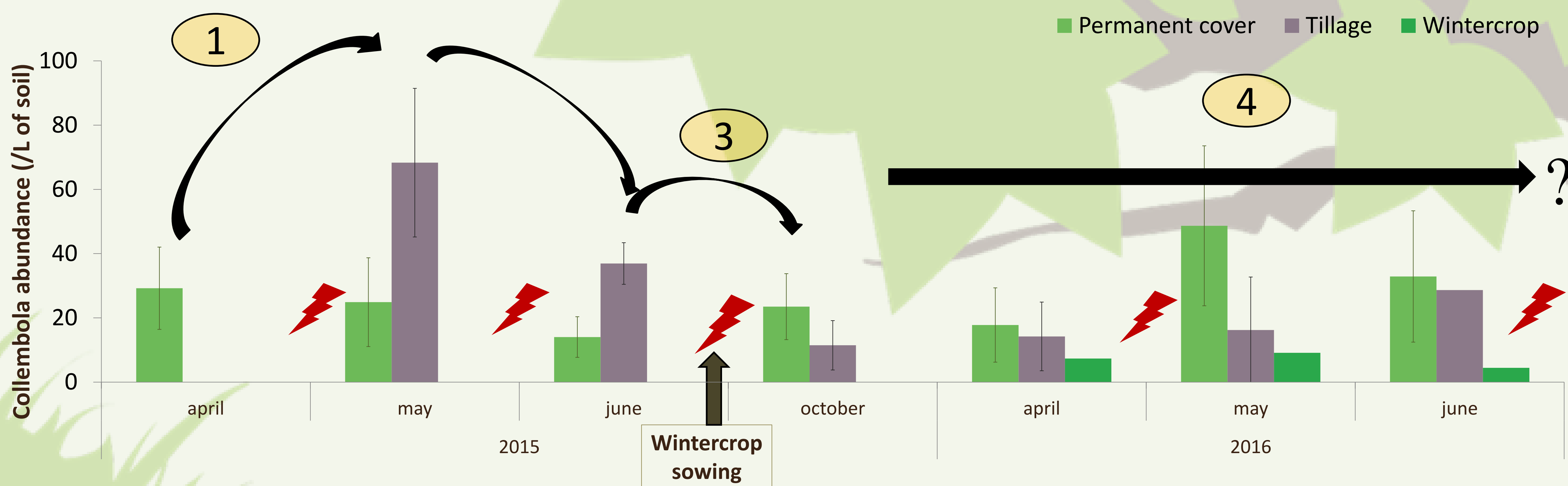
- OM degradation rates estimated by Tea Bag Index method.
- Collembola abundances sampled using Berlese-Tullgren device.

Results : OM degradation rates between soil treatments



- 1 The cover destruction seems to enhance the decomposition rate in vineyard soils
- 2 OM degradation rates were higher in permanent herbaceous modality
- 3 Winter crop sowing in October 2015 → strong increase of organic matter in Winter crop modality in spring 2016 but no significant difference between treatments

Results : Collembola abundances between soil treatments



- 1 Strong and significant increase of collembola abundance (x 3) with tillage compared to the permanent cover → Tillage seems to enhance soil microarthropoda
- 2 Decrease of abundances in both permanent cover and tillage modalities → Linked to dry soil conditions?
- 3 In fall 2015, the trend reversed itself: collembola abundances got higher in permanent cover compared with tillage treatment → Trophic resources decrease?
- 4 During 2016 vegetative season, trends observed in (3) are maintained : higher collembola abundances in permanent covered soils. → Habitat and trophic resources more stable in non tilled soils?

Conclusion/Discussion

❖ OM decomposition is lower in covered soils compared to tilled soils during vegetative season, while this trend reverses in winter. Rates tend to decrease in Winter in both permanent and tilled soils, probably because of climatic conditions (cold temperatures).

❖ Collembola abundances are quite stable in covered soils whereas abundances strongly increase (x3) after the first perturbation. Then, abundances in disturbed soils are always lower than control treatment (disturbed habitat?)

❖ Perspectives : soil treatment effects on ecological classes (epiedaphic, hemiedaphic, euedaphic organisms) → Effects on collembola vertical distribution? On community shifts?