



ELN- FAB: SUSTAIN

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EXAMPLE OF FAB-BASED PRACTICE

Reduced tillage for enhancing earthworm numbers and diversity

TYPES OF ECOSYSTEM SERVICES PROVIDED

Maintenance of good soil structure; nutrient cycling

BENEFITS FOR FARMERS OR SOCIETY AS A WHOLE

Improved water infiltration; less waterlogging; reduced soil erosion

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ELN- FAB: SUSTAIN

- Soil is a non-renewable natural resource
- Enormous biodiversity (2-5 Mg/ha)
- Soil ecosystem services

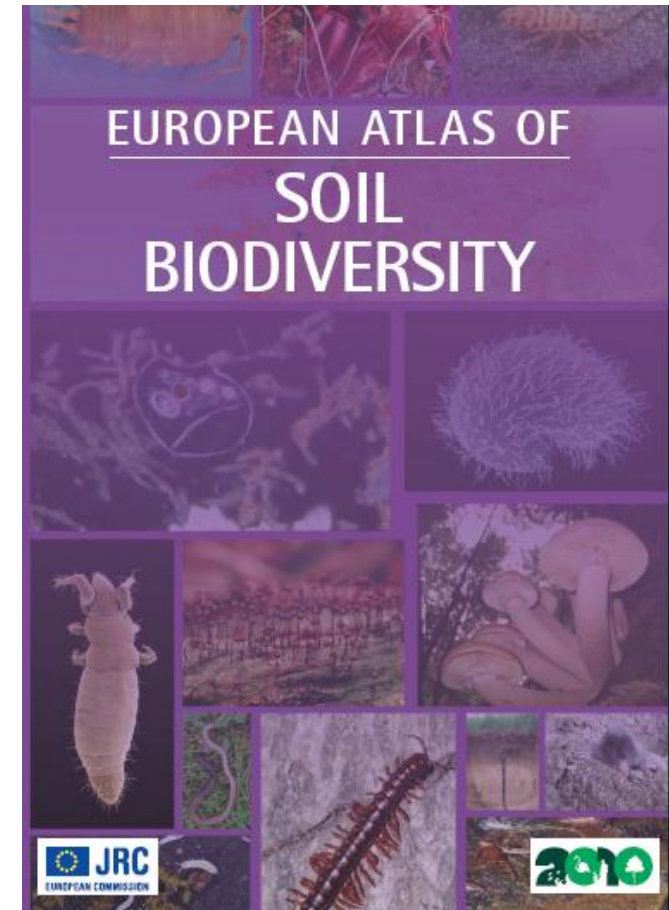
C transformations

Nutrient cycling

Soil structure maintenance

Biological population
regulation

(Kibblewhite et al.,2008)



S. Jeffery, C. Gardi, A. Jones, L. Montanarella, L. Marmo, L. Miko, K. Ritz, G. Peres, J. Römcke and W. H. van der Putten (eds.), 2010, European Atlas of Soil Biodiversity. European Commission, Publications Office of the European Union, Luxembourg.



ELN- FAB: SUSTAIN

- Fungi, bacteria
 - OM decomposition
 - Symbiotic relationships
 - Phosphorus foraging
 - Nitrogen fixing
- Macrofauna (earthworms)
 - Mix plant residue
 - Soil stability (casting)
 - Soil structure formation, water infiltration, aeration

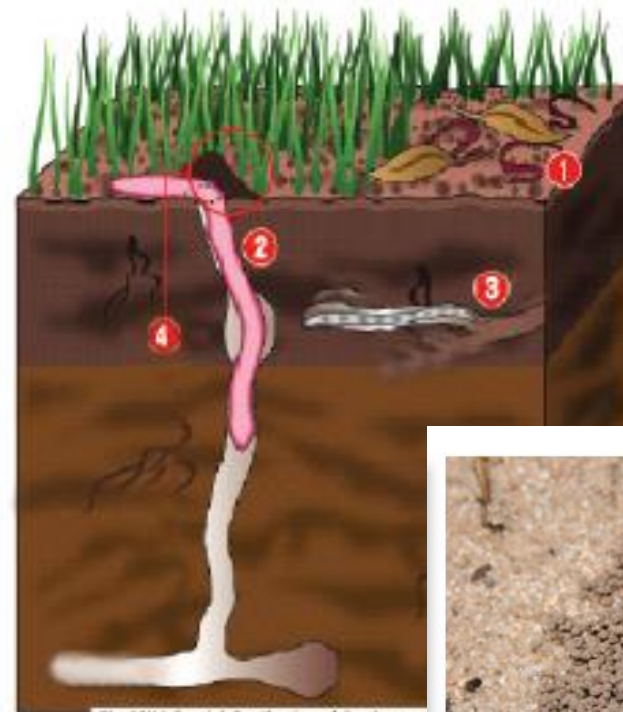


Fig. XIII: Spatial distribution of the three earthworm groups. 1 = epigeic species, 2 = aneic species and 4 = cast deposition on the soil



Fig. 2.13: Granular structure caused by earthworm casts on the surface of a sandy soil. (MMK)



SUSTAIN: Soil Functional Biodiversity and Ecosystem Services, a Transdisciplinary Approach (2011-2014)

SNOWMAN NETWORK

Knowledge for sustainable soils





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French partners



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Dutch partners



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ELN- FAB: SUSTAIN - Objectives

□ Understand how reduced tillage systems, as compared to conventional tillage systems, impact on functional soil biodiversity and soil functions such

- as:
- soil structure maintenance
 - organic matter and nutrient cycling
 - water regulation
 - filtering and pest regulation



□ Quantify the consequences of reduced tillage systems on soil ecosystem services **food production**

- greenhouse-gas (GHG) mitigation

□ Investigate the socio-economic effects of reduced tillage systems

□ Develop and disseminate tools and indicators to evaluate system sustainability



ELN- FAB: SUSTAIN Field sites

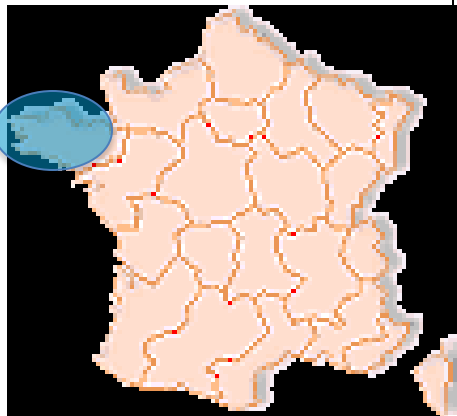
Experimental sites (Data collection)

France

- Brittany
(Kerguéhennec)

Netherlands

- Flevopolder
(Lelystad)
- Hoeksche Waard
(Westmaas)



Farm network (Dissemination)

France

- Brittany
22 farms
(11 pairs of farms)

Netherlands

- 2 regions
Flevopolder
Hoeksche Waard





ELN- FAB: SUSTAIN parameters

Functional biodiversity



earthworms

Biological parameters



nematodes



Soil-aggregate distribution

Organic matter characterisation

Nutrient cycling (N)

Soil functions



Soil stability

Physical & Chemical parameters

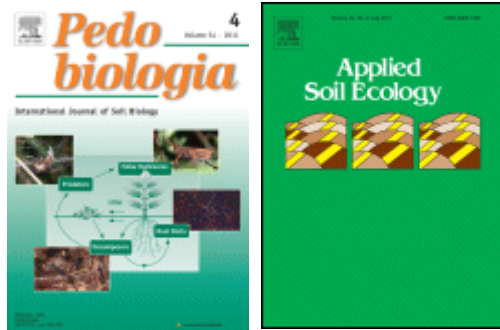
Soil filtering (pesticide loss)



Water infiltration



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Scientific publications

Dissemination



**Farmer training
Student education
Technical meetings
(ELN-FAB!)**



Technical guidelines



**Social events
(science festival)**



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Thanks for your attention!