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Habitat and Biodiversity: One out of five essential soil functions for agricultural soils

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Current agricultural challenges require developing new agricultural systems that can optimize the ecological functioning of soils in order to limit the use of chemical inputs (i.e. disease suppression) and maintain a high organic matter content. This implies our ability to evaluate the effects of management practices on immediate performance objectives (i.e. fertility linked to nutrient cycling) but also in longer-term objective (i.e. C cycling and storage) in a variety of agro-climatic conditions. These issues demand the development of systemic approaches for understanding the determinants of soil functioning.
In ecology, it is generally accepted that there are many positive relationships between soil biodiversity indicators and the functioning of ecosystems. Indeed, soil organisms and their interactions are essential drivers of ecosystem processes and impact the response, resilience and adaptability of ecosystems to environmental pressures. Thus, maintaining soil biodiversity is a condition for the sustainability of cropping systems.
In this new context, the European project Landmark considers soil functions as a key to the improvement of agricultural land management towards sustainable development goals, amongst the five functions is soil biodiversity and habitat provisioning. We propose to present how we manage within this project to deal with this challenging objective at three spatial scales : field, landscape (regional) and European (policy). We aim to define a link between the physical, chemical and biological soil properties and “habitat & biodiversity” soil function in order to identify key indicators which modulate biodiversity. This will allow us to quantify and assess this soil function, in order to provide insight in win wins and tradeoffs in soil functions to enhance management practices which optimise the biodiversity in European agricultural systems.