
Soil biodiversity, ecosystem services and agricultural practices: an integrated approach to assess the effect of reduced tillage systems

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Abstract

Many studies worldwide have analysed the impact of reduced tillage systems on different soil functions, but without an overview of the impact of these systems. The SUSTAIN project (European SNOWMAN programme), performed in France and the Netherlands, proposes an interdisciplinary collaboration. One of the goal of SUSTAIN is: how reduced-tillage systems impact on ecosystem services such as soil biodiversity regulation (earthworms, nematodes, microorganisms), soil structure maintenance (aggregate stability, soil erosion), water regulation and quality (run-off, transfer of pesticides) and food production. Data have been collected from long term experimental fields within conventional and organic farming managements (from 5 up to 13 years), and have been complemented with data from farm networks. The impact of different reduced tillage systems (direct seeding, minimum tillage, non-inverse tillage, superficial ploughing) have been analysed and compared to conventional ploughing. Measurements (biological, chemical, physical, agronomical) have been done at several dates which allow an overview of the evolution of soil properties according to climate variation and crop rotation. The study will present some results and conclusions of this collaborative work, thereby shedding light on the benefits and trade-offs related to reduced tillage systems in NW Europe.

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