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Inspiring case study on soil functions: Establishing effects of soil management options on soil functions in arable farming in the Netherlands

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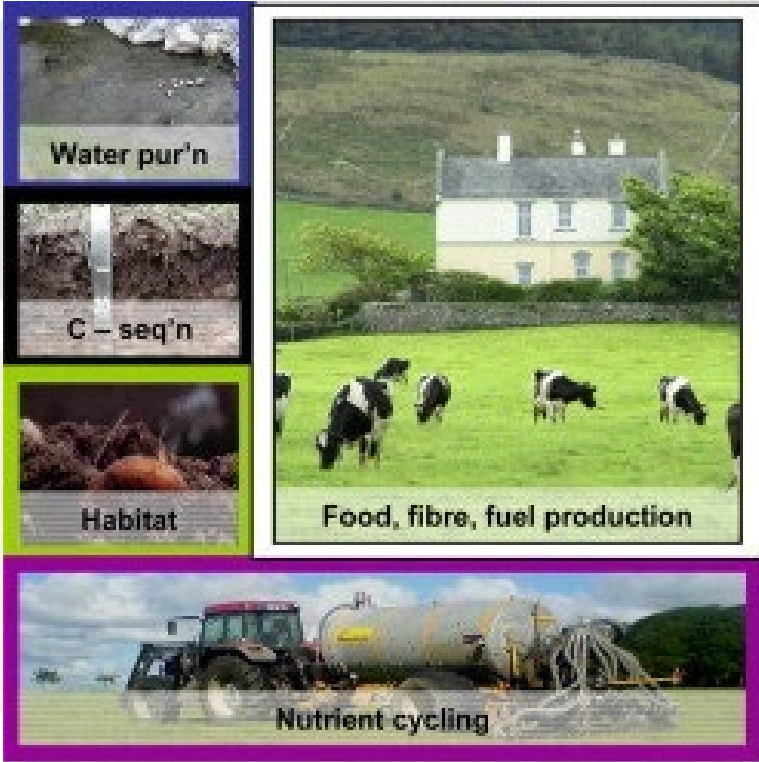


13-14 April 2021

EIP-AGRI Seminar 'Healthy soils for Europe:
sustainable management through knowledge and practice'

The challenge

Various soil functions



Complexity of the soil

Influence of

- Parent material
- Climate
- Water
- Land use
- ...



Sustainable soil management options

Soil quality on sandy soils



Soil quality on (light) clay soils



Long term system experiments arable farming



Soil quality on reclaimed peat soils

Soil health experiment

Methodology

1. Define indicators for soil functions and applicability
2. Define management options in LTE's
3. Quantitative assessment of management options based on results LTE's
4. Generalization to soil type and general management options
5. Define practical advice and messages



Quantitative and qualitative effects of soil management options on soil functions

Management option	Soil type	Productivity	Waterregulation & purification		Recycling of nutrients	Carbon sequestration	Habitat voor biodiversity
			Climate adaptation	Water quality			
<i>Reduced tillage</i>	Clay	•	•	o	•	•	•
	Sand	•	o	•	•	•	
	Reclaimed peat	•	o	•	•	•	
<i>Extra compost</i>	Clay	•		o		•	•
	Sand	•	o	•	•	•	
	Reclaimed peat	•	o	•	•	•	

moderate negative effect	data not yet analyzed
neutral effect	data not available
moderate positive effect	• significant effect
large positive effect	o not significant effect

Applicability of soil management options

Management option	Soil type	Knowledge & skills	Financial results	Labour needs	Mechanisation needs	Technical applicability
<i>Reduced tillage</i>	Clay	Large		+ conventional - organic	Yes	60-100% conventional
	Sand	Moderate				10-60% organic
	Reclaimed peat					
<i>Extra compost</i>	Clay	Low			No	0-10%
	Sand		+ conventional - organic			
	Reclaimed peat					

moderate negative effect	data not yet analyzed
neutral effect	data not available
moderate positive effect	• significant effect
large positive effect	o not significant effect

Conclusions

Effects of measures can be assessed integrally

- We continue evaluating soil measures with this methodology

Difficult to formulate concrete specific advice for farmers

- Exact prediction of effects at field level is not possible

'No-regret' measures are lacking

- Every measure has its trade-offs

EIP-AGRI seminar

Healthy soils for Europe: sustainable management through knowledge and practice

Online – 13-14 April 2021

All information of the seminar is available on
www.eip-agri.eu

On the event webpage
<https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-healthy-soils-europe-sustainable>

