

High organic inputs explain shallow and deep SOC
storage in a long-term agroforestry system - combining
experimental and modeling approaches

Rick Venema & Bas Kasimir

2018-06-03

Contents

1	Introduction	3
2	Materials and methods	3
2.1	The Model	3
2.2	The Parameters and Starting Values	3
3	Results	4
4	Discussion	4
5	Conclusion	4
6	References	4

1 Introduction

This paper is based around the reproduction of the paper by Cardinal et al. (2018). This paper is about SOC (soil organic carbon) storage. This is the amount of carbon in the soil. The model that is created in that paper contains different models describing the flow of carbon in the soil and trees next to it.

waar zijn we mee bezig, uitbreiden, opnieuw doen

2 Materials and methods

To create a valid model, the model must need to account the depth, distance from the tree and the time in years. This can be done with partial differential equations.

welke methode gebruik ik wat

2.1 The Model

The model is defined in the paper by Cardinal et al. (2018), this model follows a three pool model.

The fresh organic compound (FOC) difference can be found in formula 1.

$$\frac{\delta FOC_{t,z,d}}{\delta t} = I_{t,z,d} + \frac{\delta F_{AD}}{\delta z} + h * f_2 * dec_HSOC_{t,z,d} + h * dec_HSOC2_{t,z,d} - dec_FOC_{t,z,d} \quad (1)$$

$$\frac{\delta HSOC1}{\delta t} = \frac{\delta F_{AD}}{\delta z} + h * f_1 * dec_FOC_{t,z,d} - dec_HSOC1_{t,z,d} \quad (2)$$

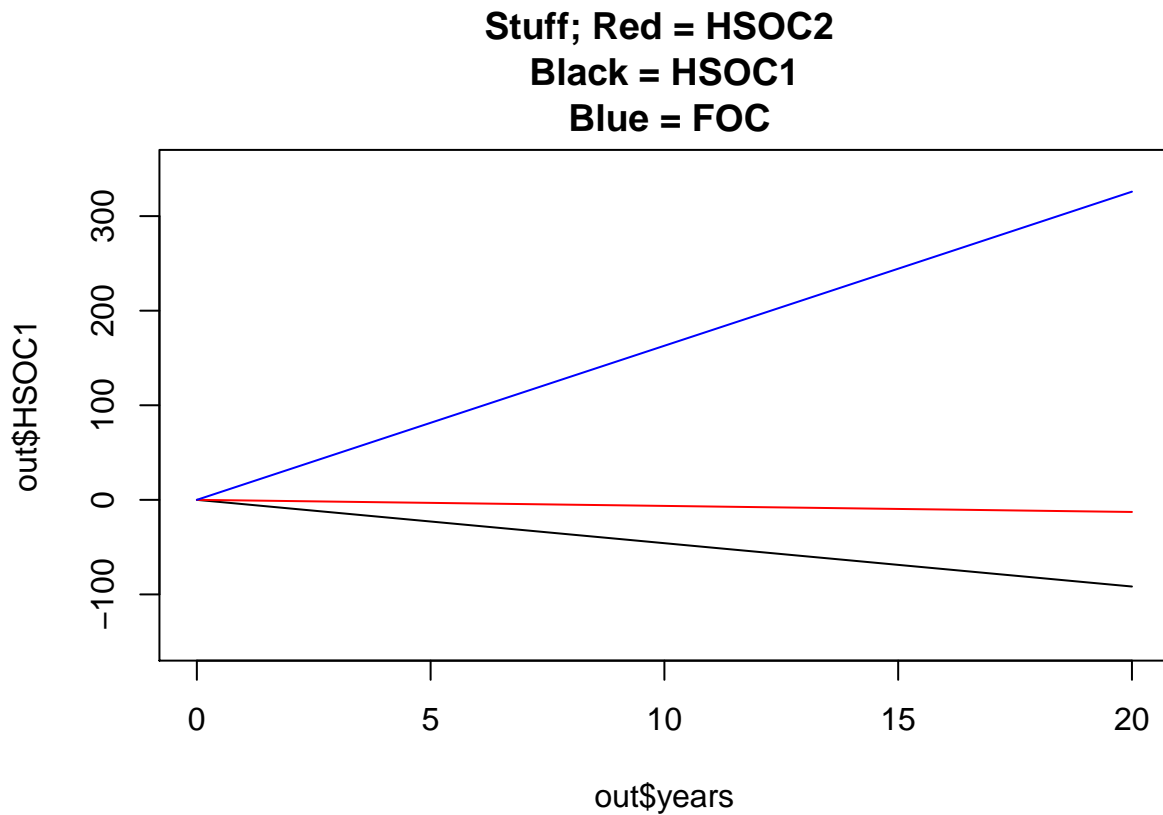
$$\frac{\delta HSOC2}{\delta t} = \frac{\delta F_{AD}}{\delta z} + h * (1 - f_1) * dec_FOC_{t,z,d} + h * (1 - f_2) * dec_HSOC1_{t,z,d} - dec_HSOC2_{t,z,d} \quad (3)$$

2.2 The Parameters and Starting Values

Table 1: Table showing the parameters used

Parameters	
<i>Parameter</i>	<i>value</i>
$I_{t,z,d}$	0.69
Tuesday	9C
Wednesday	10C

3 Results



4 Discussion

conclusie van het verhaal, hoe was het goed uit te voeren?, waarom niet helemaal belicht, verschil.

5 Conclusion

6 References

1. Cardinael, R., Guenet, B., Chevallier, T., Dupraz, C., Cozzi, T., and Chenu, C.: High organic inputs explain shallow and deep SOC storage in a long-term agroforestry system - combining experimental and modeling approaches, *Biogeosciences*, 15, 297-317, <https://di.org/10.5194/bg-15-297-2018>, 2018.
2. Soetaert, K., Petzoldt, T., and Woodrow Setzer, R.: Solving differential equations in R: package deSolve, *J. Stat. Softw.*, 33, 1-25, 2010.