

The Chancellor of Ghent University has the honour of inviting you to attend the public defense of the doctoral dissertation of

**ir. Lieselot Boone**

Title of the doctoral dissertation:

*Quantification of Agricultural Productivity in  
Environmental Sustainability Assessments:  
Methodological developments and case studies*

The public defence will take place on May 23<sup>rd</sup> 2019 at 16:30 in the room Ceremoniezaal at Campus Aula, Voldersstraat 9, 9000 Ghent.

There will be a contiguous reception to which you are heartily invited.  
Please confirm your attendance **before 16/05/2019** to:  
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**Abstract of the doctoral research**

The rising demand for food and feed has put an increasing pressure on agriculture, with agricultural intensification as a direct response. This contributes to a higher crop productivity. However, **intensive agricultural practices** entail adverse environmental impacts because they **take a huge toll on land resources** and soil quality, and so they can compromise the ability to produce biomass in the long term. In the transition towards sustainable agriculture, a thoughtful selection of farm management practices that are environmentally sound and yet secure food production is required. Evaluations of environmental sustainability are increasingly based on life cycle assessments (LCAs). However, **difficulties and gaps exist when conducting an agricultural LCA**. The aims of this thesis were to gain a better understanding and to develop methodologies to cope with these challenges.

A first complexity is the **large variability among agricultural systems**. The main drivers causing variability and the extent to which this variability affects the environmental performance have been explored. Second, a framework with proper indicators is proposed to **account for the impact of land use practices on soil quality and long-term productivity**, aspects that were rather poorly addressed in LCA up to now. Finally, an approach is developed to not only **account in LCA** for the yield but **for a range of ecosystem services delivered by an agro-ecosystem**. This approach allows to fairly compare the environmental sustainability of organic and conventional food production systems.

The findings of this thesis enable to more correctly evaluate the environmental sustainability of agricultural practices, which is an important asset in stimulating sustainable farming.

**Brief Curriculum Vitae**

Lieselot Boone (° Bruges, 05/10/1989) obtained the degree of Master of Science in Bioscience Engineering, option Environmental Technology, at Ghent University in 2013. She started a PhD at the Research Group STEN, Department of Green Chemistry and Technology, Ghent University, in cooperation with the Research Institute for Agricultural, Fisheries and Food (ILVO), in January 2015. This PhD project was funded by the Flemish Agency Flanders Innovation and Entrepreneurship (VLAIO) (2015-2018). She (co-)authored seven peer-reviewed scientific papers in international journals, of which five as first author and of which three have already been published. She presented the results of her research on several international conferences, guided one thesis student in finishing her master thesis and assisted in the practical exercises of *Process Engineering* and *Process Engineering 2*.