Abstract Title: Assessing the environmental impacts of production- and consumption-side measures in sustainable agriculture intensification in the European Union

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Abstract

Sustainable agricultural intensification (SI) is an important strategy to respond to the combined future challenge of food security and climate change. This study aims at assessing the potential of different SI measures for reducing GHG (greenhouse gas) emissions and increasing land-use efficiency in the European Union's agriculture sector. This study also aims to identify the most effective SI pathways, trade-offs with other climate mitigation strategies and their effects on trade and yield gap. A scenario and life cycle approach was followed to quantify the environmental impacts of SI focusing on both production- and consumption-side measures. The SI pathways assessed in this study include changing current human diet and livestock's diet, shifting from monoculture cropping to double cropping (i.e. crop rotation) and incorporating crop residues (e.g. straw/stover) into the soil. The results reveal that all SI pathways have potential to increase land use efficiency and reduce GHG emissions in the EU agriculture sector. Among the SI measures, shifting from current diet to recommended National diets showed a remarkable potential to reduce environmental impacts in terms of GHG emissions and land use change compared to other three SI pathways. Increased GHG emission savings in other SI options (e.g. utilizing food waste for animal feed production and incorporating straw into the soil to increase soil organic carbon level) is counter effected by reduced savings in the energy sector. This explorative and comparative study highlights the potential of different SI measures especially changing human diet to contribute to a reduction of environmental impacts related to biomass and land resources, soil organic carbon, fertilizer use and energy use.

Keywords— climate mitigation strategies, GHG emissions reduction, land-use efficiency, sustainable agriculture intensification

Professional Biography

Dr. Anna Liza Bais-Moleman has completed her PhD from the Institute of Social Ecology, Alpen-Adria University in Vienna, Austria. During her doctoral studies, she was involved in a CASTLE (Careers in Sustainability Excellence) project funded by European Union's programme called Marie Curie Actions- ITN. She is a postdoctoral researcher at

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Any Comments: