

SUSTAG

ASSESSING OPTIONS FOR THE SUSTAINABLE INTENSIFICATION OF AGRICULTURE FOR INTEGRATED PRODUCTION OF FOOD AND NON-FOOD PRODUCTS AT DIFFERENT SCALES

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BACKGROUND

The broad EU public expects agriculture to provide food security, protect the environment and biodiversity, and sustain rural communities and landscapes. Beyond these expectations, agriculture must be highly adaptable in the face of climate change and volatile market and political conditions, in which the demand for food and non-food crops is set to increase. The creation and support of a competitive European bioeconomy offers the opportunity to simultaneously address food security and nonfood crop demand, while at the same time providing the opportunity to reduce the negative impacts of agriculture on the environment.

OBJECTIVE

The overarching aim of SUSTAg is to identify both generic and location-specific integrated production systems and other sustainable intensification measures (SI) at the global/European and case study level which are optimal across different sustainability dimensions (ecological, economic and social). The feasibility of actually operationalizing the different systems is evaluated with three regional case studies and on the European level. The study makes use of innovative crossdisciplinary (e.g. crop science, farm systems, supply chain, economic) and multi-scale (global, European, regional) integrated modelling analysis, with global and European scale analysis setting economic and political boundary conditions regarding the relative competitiveness of case study regions. At each scale, evaluation of SI options considers: production conditions; dynamics in demand for food and non-food products; resource use and availability; socio-economic and policy environment; and climate change. Results are presented in transparent and relevant SI evaluation metrics to allow stakeholders to analyze and weigh tradeoffs at each of the case study and European scales.

METHODOLOGY

SUSTAg builds on a multi-scale modelling approach integrating the global, European and regional level. To ensure consistency, the global and European scale analysis will provide the boundary conditions to the case studies. All levels work with a consistent and harmonized set of agricultural-specific climate, socio-economic, and policy scenarios. We focus on three integrated production systems, each represented by one case study:

- Dual use of energy and food crops (Spain);
- Production of food crops using the crop residues for applications in the bio-based economy (Netherlands and Germany);
- Biogas production from manure and non-food crops (Finland).