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CONCEPTUALISING FIELDS OF ACTION FOR
SUSTAINABLE INTENSIFICATION – A SYSTEMATIC
LITERATURE REVIEW AND APPLICATION TO REGIONAL
CASE STUDIES

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CONCEPTUALISING FIELDS OF ACTION FOR SUSTAINABLE INTENSIFICATION – A SYSTEMATIC LITERATURE REVIEW AND APPLICATION TO REGIONAL CASE STUDIES

Summary

Given the challenges of food security and environmental degradation, sustainable intensification (SI) that combines food production and environmental goals has received growing attention. This study traces the heterogeneous debate in a systematic literature review covering 20 years. To enhance structured, action-oriented understanding, we propose a conceptual framework that anchors the portfolio of SI practices in four fields of action covering farm to landscape level and land-use to organisational optimisation. Applying the framework in four European case studies demonstrates that future research and context-specific implementation must focus on the decision-making rationales of agents, coordinated action and coupling of locally-adapted practices.

Keywords

sustainable intensification, agriculture, food security, conceptual framework, regional planning

1 Problem Statement

After two decades of research on sustainable intensification (SI), namely the aspiration to expand food production on less environmental costs (Gadanakis et al., 2015), blurred boundaries of different theoretical notions and overlap of concepts characterise a controversial debate (Wezel et al., 2015). Determining approaches for implementation-oriented selection and application of SI practices depending on regional problem contexts to support decision-making of farmers and regional stakeholders and enhancing the conceptual understanding of SI is neglected. Based on a systematic literature review and focusing on the level of implementation, the objectives of this study are (1) to comprehensively explore the SI literature and provide a structured analysis of its diversity and scope, (2) to propose a practice-oriented conceptual framework on the basis of the portfolio of existing SI practices, and (3) to demonstrate the applicability of the framework for specific problem settings in selected European case study regions.

2 Methods

We carry out a systematic review of the existing literature in the field of sustainable intensification to obtain an interdisciplinary, comprehensive overview of the topic that allows quantifying trends. Using the Scopus database, we applied the search term “sustainable intensification” in title, keywords or abstract for papers, which have been published until December 31st, 2016. Our final database resulted in 330 papers. For each paper the metadata was recorded as well as information on SI definitions, geographical coverage and proposed SI practices. Subsequently, we intertwine the review with the development of a conceptual framework of SI practices. The applicability of the developed framework to specific regional problem settings is tested in four European case studies using participatory stakeholder processes involving in total 68 participants from the fields of agriculture, administration,

environment and research. Case study regions were selected in order to capture a variety of geographical contexts, land use and landscape characteristics.

3 Results

The temporal and geographical development of the SI literature consists of three phases connected to parallel debates, such as livelihood support for smallholder agriculture, the ecosystem service and climate change discourses leading to recent publication increase, especially in Europe. The heterogeneity of the SI debate becomes explicit in systematic differences in the coverage of scientific disciplines and keywords. We demonstrate that understanding of the SI approach emerges when focusing on its implementation by proposing a conceptual framework for SI practices. In this framework, SI practices are structured in a spatial dimension from farm to landscape scale and a dimension referring to land-use and organisational optimisation. Assigning identified practices, four fields of action emerge labelled “Agronomic development”, “Resource use efficiency”, “Land use allocation”, and “Regional integration”. 46% of the literature focuses on a single field. Only one third deals with two or more fields. The distribution of practices shows that it engages more with practices on the farm level, especially with agronomic developments. Addressing SI at a superordinate level of regional land-use planning or steering societal interactions is underrepresented. To evaluate its applicability, stakeholders in four European case studies selected regional SI practices based on the framework. Practices depend on regional problem contexts and local knowledge and cover all fields of action. For the future, stakeholders in all regions see a strong need for coordinated action on the landscape level, especially in the field of regional integration.

4 Conclusion

The proposed conceptual framework structures a heterogeneous discourse and can serve as baseline to capture the scope of SI. Opportunities to couple practices on farm and landscape level should be identified to catch up with practitioners’ needs. This requires interdisciplinary research efforts. For successful and coordinated implementation, the decision-making rationales of farmers and stakeholders involved in regional governance and land-use planning have to be explored.

Literature

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