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Operationalising One Health in regional food systems

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Food systems are central interfaces of human, animal and environmental health. They shape nutrition, food security, animal welfare, biodiversity, climate impacts and supply-chain resilience. Yet operationalising One Health in regional food systems remains difficult, as indicators, cross-stage relations and data gaps are often unclear. This work develops a conceptual, data-oriented, and relational modelling framework for applying One Health to the food system of Lower Saxony, Germany, using pesticide use as a case. It maps value chains from production to consumption and waste, and links actors, products, flows, infrastructures, governance and health- and sustainability-related outcomes. Domains include consumer and occupational health, animal health and welfare, nutrient flows, water quality, land use, biodiversity, greenhouse gas emissions and resilience. The methodology combines value-chain and indicator mapping, data assessment and ontology-based modelling. Statistical, administrative, spatial and qualitative data are assessed with respect to availability, resolution, accessibility, interoperability and modelling relevance. Entities and relationships are represented using an ontology-based model and formalised via a graph-based structure capturing complex network relationships. The framework translates One Health into a regional food-system model and supports scenario analyses, vulnerability assessments, policy information and decision support for sustainable food systems.

Keywords

One Health; regional food systems; pesticide use; agri-food value chains; ontology-based modelling; graph-based modelling; sustainability indicators

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165

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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