



ID der Kurzfassung : 513

Operationalising One Health in regional food systems

Inhalt

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

Registration ID

165

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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Track Klassifizierung: Agriculture & Food Systems

Typ des Beitrags: Both options possible

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