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"Filling gaps and removing traps for sustainable resource management"

## The (in)visible Components of Participatory Action Research

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## Abstract

Scientists are increasingly recognising the importance of transdisciplinary collaboration as well as the incorporation of different worldviews in research. Such components are claimed to be crucial in scientific studies attempting to assess and design complex social ecological systems capable to provide multiple ecosystem services and conservation of natural resources. Despite the importance to engage local actors as co-creators in the research process using transdisciplinary and participatory approaches, few studies develop and assess effective methodologies for doing so. Research focus is often on data collection and interpretation, while social values and strategies to approach local actors and build a relationship of trust and collaboration are often overlooked. In this paper, we discuss participatory action research as an approach for engaging with local actors and to develop effective strategies for building more sustainable and resilient agri-food systems. Based on a case study in Brazil, we highlight six main components that are crucial for implementing participatory action research: (i) Collective definition of research questions; (ii) Participatory methodologies for building scientific knowledge; (iii) Sharing and discussing research results with local actors (iv); Integration between research and education; (v) Strengthening capacity building and interdisciplinary team work; and (vi) Social engagement with farmers. Our findings shows that building a team of researchers with different theoretical backgrounds and learning styles is important for effectively engaging with farmers and their organisations, and making research outcomes more relevant for society. The use of participatory methodologies is crucial not only to make this process possible, but also to generate valuable scientific data. However, engaging with farmers and different knowledge disciplines requires extra effort and time from researchers, which is not always valued or recognised by academia. Yet, participatory research processes can be facilitated by longterm local networks involving organisations such as universities, NGO's and farmer's cooperatives, associations and movements.

Keywords: Bottom-up, local actors, social network, social-ecological systems, transdisciplinary