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**Agroecology Scientific Day 2024**  
Workshop n°2, Session n°4

**Title: Metrics to Support Agroecological Transitions**

**Abstract:** Measuring the performance of food and agricultural systems is critical for their transformation towards a sustainable, healthy, and resilient future. To guide decisions and ensure agrifood systems deliver multiple functions, a holistic systems perspective is needed. Previous reviews of assessment approaches have focused primarily on the farm level and have been limited in their scope and definition of what it means to be holistic. In a systematic review, we describe and evaluate 206 approaches based on four key characteristics of holistic systems assessment: 1) measuring multiple dimensions of performance, 2) integrating multiple stakeholder perspectives, 3) evaluating emergent system properties, and 4) collecting and presenting data in ways which reveal interactions, synergies, and trade-offs, so that they can be understood and considered when designing solutions. We find that many assessments limit themselves to examining multiple dimensions of performance, neglecting the remaining three key characteristics of holistic assessment. While a systemic perspective is often acknowledged as important, only 14% of assessments considered synergies and trade-offs between metrics and 26% addressed emergent system properties. There is a trend toward more systemic framings such as agroecology and the inclusion of emergent properties. We conclude that there will never be one assessment approach that will work for everyone, can measure everything, and be used everywhere because of the diversity of agrifood systems and assessment objectives. Improving holistic assessment of agrifood systems is not a question of improving existing assessments. The gap to be addressed is the lack of methods for designing effective holistic systems assessments. This gap can be closed by providing clear guidance on how to navigate the abundance of existing approaches and develop assessments that meet specific needs. A meta-framework for guiding the development of holistic systems assessments can offer such guidance. Additionally, the Transformative Partnership Platform (TPP) on Agroecology is developing an open access data base that allows users to select the most appropriate metrics for their purpose and provides support to diverse metrics users to identify the most suitable approach in their respective context.

**Bibliographic references**

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