



Tropentag, September 14-16, 2022, hybrid conference

“Can agroecological farming feed the world?
Farmers’ and academia’s views”

Suitability of methods for assessing the sustainability of agroecological transition-dynamics in crop-livestock-tree farming systems

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Abstract

Many tools have been developed to assess the sustainability of agricultural production. However, the majority of the existing methods are limited to investigating strengths and weaknesses of already established farming systems. As such, these methods may not be suitable for assessing the sustainability of dynamics in the farming systems when they are transiting towards being either organic or agroecological farming. Studies in this regard are sparse. To address this limitation, we conducted a comparative analysis of six sustainability assessment tools. These tools were IDEA (Indicateurs de Durabilité des Exploitations Agricoles), MOTIFS (Monitoring tool for integrated farm sustainability), SAFA (Tool for Sustainability Assessment of Food and Agriculture Systems), TAPE (Tool for agroecology performance evaluation), ESSIMAGE (Tool for the assessment of the agroecological performance of agricultural production systems), and a framework developed by GTAE organisation to evaluate effects and conditions of agroecology. The tools were compared through two main criteria: scientific soundness and user-friendliness, using a scoring system with the range from 0 to 3 for sub-criteria, adapted and adjusted from Talukder & Blay-Palmer, (2017). Performance criteria in economic, environmental, and social dimensions from different tools were compared for similarities, differences, and alignment with principles of the agroecological farming. Further, the tools were tested on their ability to deal with transition-dynamics in crop-livestock-tree farming systems towards safe food systems. Results showed that the MOTIFS and SAFA scored the highest for scientific soundness and user-friendliness in the sustainability assessment, followed by IDEA and TAPE. TAPE, SAFA, MOTIFS were found to be more sensitive in assessing the multi-functional performance of agroecological farming systems and the transition to agroecology. In conclusion, TAPE, SAFA, MOTIFS tools are more suitable than other methods to investigate the sustainability of agroecological transition-dynamics in crop-livestock-tree farming systems.

Keywords: Agroecological transition, crop-livestock-tree systems, suitability, sustainability assessment methods

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