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Diversification & Digitalisation
Trends that Shape Future Agriculture

BOOK OF ABSTRACTS

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Multidimensional and Multiscale assessment of the agroecological transition of a village in Eastern Senegal

PhD Student Maryline Darmaun "PhD"[1]; Dr. Tiphaine Chevallier PhD[2]; Dr. Fatou Faye Ndèye PhD[3]; Dr. Juliette Lairez PhD[4]; Dr. Eric Scopel PhD[4]; Laure Diallo[5]; Dr. Moussa Ndienor PhD[3]; Mamadou Sow[5]; Alpha Kane[5]; Dr. Mame Farma Ndiaye Cissé PhD[3]; Jean Michel Sené[5]; Dr. Lydie Lardy PhD[2]; Dr. Jean-Luc Chotte PhD[2]; Prof. Dr. Stéphane De Tourdonnet PhD[6]; Dr. Laure Hossard[1]

[1]INNOVATION, Univ Montpellier, INRAE, CIRAD, L'Institut Agro – Montpellier SupAgro, Montpellier, France; [2] IRD (Institut de Recherche pour le Développement); [3] ISRA-BAME; [4] CIRAD; [5] Enda Pronat; [6] Institut Agro

Agroecology is seen as the most promising approach to overcome the daunting economic, environmental and social challenges that agriculture is currently facing. Yet, there is a lack of systemic, multiscale and multidimensional assessments of agroecological transitions (GTAE, 2018; Wiget et al., 2020). Research is also needed to gather evidence from and communicate about stories of success and failures to draw lessons on how to accelerate these transitions (Dendoncker et al. 2018). Assessing agroecological transitions presents many methodological challenges related to their complexity. The aim of this study was to develop and apply an innovative multiscale and multidimensional assessment method that overcomes the methodological challenges of the assessment of agroecological transitions. This innovative method builds on a systematic review of existing assessment methods, through which we identified 14 methods. Using the characteristics of these 14 methods, our method articulates different steps, encompassing various scales: 1) a contextualisation step depicting the socio-economic and environmental context and analysing the level of agroecological transition and its development conditions, 2) a multicriteria assessment of the multidimensional impacts at the field, individual, household, farm and landscape levels, and 3) a multistakeholder multicriteria assessment of the impacts at the territory scale. A total of 61 indicators were calculated for the multicriteria assessment: 53 at the field, farm and landscape levels that enabled to reveal technical performance, social aspects and environmental impacts and resilience, and 8 at the individual level that allowed to assess individual well-being. We applied the method in a case study in Eastern Senegal, in the village of Sare Boubou, located in the Tambacounda region. Supported by a Senegalese NGO, the village is going through an agroecological transition with the aim of improving households' self-sufficiency. The application of the method provides a holistic assessment of the agroecological transition. Results show that the adoption of agroecological practices benefited from a good dissemination of agroecological knowledge among farmers and a long-standing support from the Senegalese NGO. Breaks to the broader adoption related to a lack of agricultural equipment, a difficult access to credit and to market, a declining soil fertility and irregular rainfall. At the village level, the agroecological transition is characterized by fairly high scores (65%) regarding ecological aspects (related to farm-livestock integration, the inclusion of rotations and crop combinations, the use of organic fertilizers and a good input self-sufficiency) and social aspects (high social capital), and low scores for economic aspects

(related to marketing difficulties). The method allows to demonstrate the variability across farms in the village, regarding the level of agroecological transition and the multidimensional impacts. Levels of agroecological transitions between farms vary particularly for issues related to cultivated biodiversity and diversity of activities, the level of introduction of crop rotation, and level of supply of organic matter. The variability of multidimensional impacts between farms relate to economic aspects (such as self-consumption, specialisation rate and material well-being). This variability illustrates individual strategies. The assessment of individual well-being further highlights variability across individuals related to social cohesion and drudgery of work. The agroecological transition supported by the NGO therefore does not lead to the same impacts according to farm specificities. Mobilizing regional and local references enables to visualise strengths and weaknesses of the agricultural systems, as shown above. Such information could help to improve current support given to agroecological transitions.