

# Characterizing agroecological farming systems by combining the resilience and ESR framework

Laura Schotte <sup>1,2</sup>, Erwin Wauters <sup>1,3</sup> & Fleur Marchand <sup>1,4</sup>

## CONTEXT

Agriculture Flanders highly specialized and export oriented



Dependence on external inputs and vulnerable markets

**Agroecology** as possible solution?

## WHAT IS AGROECOLOGY?

“Use of ecological concepts and principles for design & management of sustainable agroecosystems, replacing external inputs by natural processes” <sup>[a]</sup>

Scientific discipline, set of principles & practices & social movement <sup>[b]</sup>

## RESEARCH QUESTIONS

**WHY** and **HOW** do farmers apply agroecology &  
**WHICH FACTORS** influence their decisions?

## METHODOLOGY

Study of agroecological farming systems:  
systems approach by combining three frameworks

## MULTI LEVEL PERSPECTIVE <sup>[e]</sup>

Identify lock-in and success factors influencing strategy choices

different levels (landscape, regime, farm or niche)

different time spans (shocks – stress)

## RESILIENCE <sup>[d,f]</sup>

Identify which strategies farming systems apply to enhance resilience

Characterize the **EFFICIENCY / SUBSTITUTION / REDESIGN** <sup>[b,c]</sup> production phase by these strategies

### EFFICIENCY

improving input efficiency,  
without reducing external  
input dependency

### SUBSTITUTION

replacing chemical inputs by  
organic inputs, without change  
in system structure

### REDESIGN

replacing external inputs  
by ecological processes

## AGROECOLOGY

## CONCLUSION

Combination of three frameworks → holistic way of analyzing & representing agroecosystems

- Well known frameworks → combination and application to agroecology → contribution scientific pillar agroecology
- Actual application → contribution to upscaling agroecology in practice

## References

<sup>a</sup> Altieri, M. A. (1995). *Agroecology – The Science of Sustainable Agriculture*. 2<sup>nd</sup> ed. Westview Press, London

<sup>b</sup> Bellon, S., Desclaux, D. & Le Pichon, V. (2010). Innovation and research in organic farming: A multi-level approach to facilitate cooperation among stakeholders. Paper presented at the IFSA Congress, Boku, Austria

<sup>c</sup> Chantre, E. & Cardona, A. (2014). Trajectories of French Field Crop Farmers Moving Towards Sustainable Farming Practices: Change, Learning and Links with the Advisory Services. *Agroecology and Sustainable Food Systems*, 38, 573 – 602

<sup>d</sup> Darnhofer, I., Fairweather, J. & Moller, H. (2010a). Assessing a farm's sustainability: insights from resilience thinking. *International Journal of Agricultural Sustainability*, 8(3), 186 – 198

<sup>e</sup> Paredis, E. (2009). Socio-technische systeeminnovaties en transitie: van theoretische inzichten naar beleidsvertaling. Working paper n°10, Mei 2009

<sup>f</sup> Rist, L., Felton, A., Nyström, M., Troell, M., Sponseller, A., Bengtsson, J., Österblom, H., Lindborg, R., Tildäker, P., Angeler, D.G., Milestad, R. & Moen, J. (2014). Applying resilience thinking to production ecosystems. *Ecosphere*, 5(6), 73

<sup>g</sup> Silici, L. (2014). *Agroecology – What it is and what it has to offer*. IIED Issue Paper. IIED, London

<sup>1</sup> Social Sciences Unit, Institute for Agricultural and Fisheries Research (ILVO) – contact: laura.schotte@ilvo.vlaanderen.be

<sup>2</sup> Earth and Life Institute, Université catholique de Louvain

<sup>3</sup> Department of Veterinary Sciences, University of Antwerp

<sup>4</sup> Ecosystem Management Research Group and IMDO, University of Antwerp



**Flanders**  
is agriculture and fisheries

