Gaming around diversification to teach and learn about agroecology in fruit growing

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Abstract

Sustainable fruit growing will only be achieved through a deep redesign of orchard systems. Many technical options are available, but their ex ante *assemblage sometimes suffers from a lack of realism or feasibility. Serious games may be a useful way to share knowledge, experience and scenarios through design workshops, with various types of participants. Partners hereby worked in 2018 on a game that can support players to build their alternative scenario while considering a balance between economic, environmental and social sustainability.*

Keywords: agroecology, diversification, functional biodiversity, orchard, resilience

Introduction

Modern orchards have often become monocultures, ecological deserts in some cases, and unable to rely on their own resources to cope with natural risks such as pests or disease. What research undertakes for years is to tackle one problem after one other, when problems' sources mostly come from initial design mistakes, starting from susceptible cultivars and specialization. So-called modernization, rationalization for maximal income actually turned to intensification, specialization and strong assistance.

Fruit production and fruit farms shall then become more resilient, both at the plot and at farm level. Farmers shall benefit from agroecological measures, be they productive or not, as long as they remain functional and useful for them.

Partners of the Core Organic+ Ecoorchard project[5] organized a European survey for tracking agroecological and innovative practices in EU organic apple orchards (Penvern S. et al., 2019). From this useful inventory showing a great diversity of choices and priorities throughout Europe, they suggested to create a serious game on design on new innovative orchards, in order to sensibilize students or new farmers to opportunities, advantages, limits or trade-offs to be considered when thinking about complexity and diversification for resilience.

This serious game has been thought in a way that participant have to prioritize technical choices while considering time and money constraints. Each choice is explained ans discussed among participants who run for their own scenario. Each scenario can be driven by trees and yield, or by orchard diversification. Gamers can choose to plant intensive orchards, but may also consider seven other options offered, from infrastructures to fruit diversification, agroforestry, or animal introduction.

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[5] an european project funded by Core Organic (2015- 2018) in which surveys were performed among apple growers to question the implementation of techniques favorable to functional biodiversity within orchards. https://ebionetwork.julius-kuehn.de

After five consecutive choices, a diagnosis is achieved and shared by the game master to all participants. Choices lead to scores for economical, environmental performances, in order to give some recommendations on scenarii created.
This game has been tested and demonstrated in various occasions, and showed to be useful for exploring a great diversity of possible options for new plantations. It is mostly relevant to stimulate deep discussions and open new perspectives.
So far this game is adapted for 'amateur' participants and showed to be performative to teach agroecology and show complexity of trade-offs for agroecological systems.
It has been produced in several copies in order to be used in agricultural schools or in fairs, in southern France.
Partners did not yet go deeper into quantification of time/money requested for each specific choice, to better support professional gamers in a 'real' project. This option looks complicated, given a high variability in contexts. However, it remains open.

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