Organic World Congress 2020 | FRANCE
SEPTEMBER 21ST TO 27TH, 2020 IN RENNES
AT THE COUVENT DES JACOBINS • RENNES MÉTROPOLE CONFERENCE CENTRE
www.owc.ifoam.bio/2020

OWC 2020 Paper Submission - Science Forum

Topic 4 - Innovation in Organic farming: "thinking out of the Box"

OWC2020-SCI-1405

LOCAL ISSUES AND MARKET AS DRIVERS FOR INNOVATION IN ORGANIC FARMING

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Abstract: This paper analyses innovation processes in the French organic sector. On the basis of an inventory of multi-stakeholders innovative groups at national level and detailed case studies, we identify and characterise different types of innovation dynamics. While most groups implement simple innovations, a few carry out more complex and multiple innovations. Some are coupled innovations, to achieve consistency between local environmental stakes, farming systems and practices, agricultural products and market opportunities. They involved various actors working collectively. Others innovations are the outcome of a co-evolution process, taking place at production and processing levels rather independently.

Introduction: Innovations in organic agriculture have a crucial role to anticipate and to respond to market and societal changes. This paper aims at progressing in the understanding of how stakeholders of the organic sector adapt to a changing environment and innovate. To do so, we carried out a research and development project based on the analysis of "innovative groups". The research objective is to characterise innovations in multi-stakeholders groups and analyse the innovation process. We focus on the dynamics of multiple innovations and analysed how they interplay with other factors such as market, policies and collective action.

Material and methods: An inventory of innovative groups dealing with organic farming was carried out at national level. More than hundred groups were identified in France. We characterised which type(s) of innovations implemented and in case of multiples innovations, we analysed the dynamics of innovations. To characterise the innovations, we used the typology of Oslo Manual which distinguishes four types of innovation: product, process, organisational and marketing innovations (OCDE/Eurostat, 2018). We selected ten cases having implemented multiple innovations for an in-depth case study analysis. or each case study, we analysed the available documents (website…) and we interviewed 10 to 20 stakeholders: farmers, policy makers, agricultural advisors, processors, local authorities and environmental organisations. We documented: objectives of the stakeholders, their innovation strategies, the reasons to innovate, difficulties faced, key moments in the dynamics, initiated actions.

Results:

A characterisation of multiple innovations

Our analysis provides a comprehensive overview of the reasons that led stakeholders to innovate and how innovations are interplayed.

A majority of the groups listed in our inventory (more than 80%) carried out a single innovation, i.e. targeting solely one type of innovation, be it product, process, organisation or marketing related (OCDE/Eurostat, 2018). The other groups implemented multiple innovations. A detailed analysis of cases of multiple innovations enabled to analyse how they interplay. We identified two main types of interplays between innovations. The first one is the design of coupled innovations (Meynard et al., 2017), meaning that innovations take place on different aspects of the agri-food system simultaneously and are the results of interactions between various players. The second type of interplay identified is a co-evolution process of innovations (Saviotti & Pyka, 2013), meaning that innovation take place at farm and at market and food system levels but rather independently. To discuss the two main types of interplays between innovations that we identified we present hereafter two contrasted situations: one aiming at enabling organic farmers to better tackle water pollution problems; the second one, refers to different innovations related to a complex process of co-evolution between farming practices and the different levels of a whole supply chain.

A case of coupled innovation: a group to improving farm's sustainability to tackle water pollution problems

The first case is a group of 25 organic farmers, who gathered in 2015 in an association called « Agribio Vanne et Othe ». All of them are located in the Vanne valley (Yonne and Aube departments), on a water catchment area. Since 2009, the water manager implements a local action plan to foster organic farming, as a solution to prevent water pollution. The organic farmers grew from 6 to 31 between 2009 and 2016. The water manager created a group. Its objective was to connect organic farmers of the area to enable them to discuss about their difficulties, exchange practices and to improve the sustainability of their system and practices. For the water manager, the objective was to make sure that organic new comers can get support from colleagues. For farmers, the aim was to have a formalized group enabling peer to peer exchanges but also to discuss actions proposed by the water manager. While the primary objective was rather to deal with technical questions related to farming practices and sustainability of farms, the group started to work on a collective strategy to sell and market their products. The aim was that to create a specific added value for agricultural products produced on a water sensitive areas and resulting from adapted farming practices. Four of them created a local brand "Terres du Pays d'Othe, Othentiquement Bio" for direct selling. For the future, the purpose is to also introduce these local products in public canteens. For the water manager, it would be a way to support farmers having environmentally friendly practices through public procurement, thus connecting both environmental and food issues.

A case of co-evolution of farming practices, farming systems and the different levels of a whole supply chain

The second case study covers farmers, cooperatives and processors producing, collecting or processing aromatic and medicinal plants in Diois (Drôme Department). In this area, aromatic and medicinal plants are produced for decades (Duffaud-Prevost, 2015)

. Farmers have different selling strategies. Some of them do on-farm processing and direct selling (herbal teas, essential oils, cosmetics …). Others are involved in longer and complex value chains. They sell to processors, which produce various products: cosmetics, medicinal products, food supplements or different extracts and molecules. Most of processors have a double strategy: they buy plants locally in Drôme but also abroad where prices are lower. So the production in Diois comprise both small-scale alternative strategies and an international and competitive market where processors are looking for molecules (rather than plants) for very specific uses.

In this context, innovation is rather designed by individuals than collectively. Innovations are implemented to tackle production, processing or marketing challenges. On the production side, most innovations are carried out at farm level, to create tools and machineries adapted to specific plants. On the processing side, the needs for innovation are diverse and largely depend on end products. They cover processing technics, products formulation and require research, highly advanced technologies. s. We observe a sort of co-evolution between farming practices, farming systems, processes of transformation, and changes of the markets.

Table 1: Types of innovation implemented in the two case studies

Case	Objectives	Project leaders	Types of innovation
1	Creating a formalised organic farmers' group to improve the sustainability of farms in a water sensitive area	Organic farmers and water manager	**Organisational innovation :** create a place for collective action, having a group to exchange with the water manager **Marketing innovation :** creation of a local brand **Coupled innovations progressively emerging:** to achieve a consistency between water quality stakes, types of agricultural products and market opportunities
2	Co-evolution of farming practices, farming systems and the different levels of a whole supply chain	organic farmers and increasingly international stakeholders of the supply chain	**Process innovation:** At farm level: adaptation of tools or technics (i.e.: animal traction…) At processor level: high tech process innovations for high-skilled products (i.e. molecular extraction) **Product innovation:** creation of a wide panel both at farm or at company levels : tisane, cosmetics, various forms of extraction for medical or cosmetics purposes… **Co-evolution of innovations:** inter-play between demand-side and supply-side leading to different innovations

Discussion: In the two case studies, innovations appear as a need to adapt to changing surroundings. In the first case, the first source of change is an environmental problem (water pollution) that brings the farmers to re-adapt their farming systems and practices. The creation of the group was initially meant to deal with technical questions but then moved to marketing issues. This exemplifies the design of coupled innovations (Meynard *et al.*, 2017) (table 1) which are implemented in consistency: new farming practices, re-design of the farming systems to introduce new crops (i.e. lentils) and design of a marketing strategy.

In the second case, farmers used to innovate on the production and farming practices aspects. More recently, the innovation relates also very much to the processing challenges. It is carried out by processors that play on a globalized markets and that need to integrate new technologies to be more competitive while responding to consumers' needs and

keeping an identity. Innovations in this case are thus rather a co-evolution process (Saviotti & Pyka, 2013), taking place at production and processing levels than the outcome of a coordinated and collective action involving different stakeholders of the value chain.

In conclusion, innovations carried out to adapt to multiple local stakes are complex processes combining various types of innovations. Depending on the cases, these innovations occur independently or they are the outcome of coordinated action between different stakeholders.

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Acknowledgments

The authors gratefully acknowledge support from the Network for Rural Development in France and from the Water Agency Rhône Méditerranée Corse.

Disclosure of Interest: None Declared

Keywords: coupled innovations, environment, globalisation of market , local initiatives