A place based development of organic farming to tackle water pollution problems

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Abstract

Organic farming (OF) appears as a potential solution to water pollutions problems because its regulations forbids the use of chemical fertilisers and pesticides. Developing OF to protect water quality requires having a place-based development of OF and it is a new challenge. In France, various projects therefore aim at targeting OF development in sensitive water catchment areas. In this paper, we carried out a case study analysis of such projects, analysing their design, the policy tools implemented and the stakeholders involved in their governance. Water managers appears as playing an active role in the promotion and the development of OF at local level. The implementation of local projects, in which OF is considered as a solution to local problems and challenges, appear as being a new feature of OF development. It brings organic stakeholders to interact with non agricultural stakeholders and this is one of the challenges to be dealt with for Organic 3.0.without the rest of the paper.

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Introduction

Many countries face water pollution by nitrates and pesticides used in agriculture. In this context, organic farming (OF) appears as a potential solution to tackle water pollution problems (Benoit et al., 2014; Thieu et al., 2011) as its regulation forbids the use of chemical fertilisers and pesticides. In France, an environmental law, published in 2009, stipulates that OF should be developed in sensitive water catchments areas. Thus, various projects associating OF development and water quality protection have emerged (Vincent and Fleury, 2015). Their aim is to foster and target the development of OF in sensitive water catchment areas. To have a visible impact on water quality, it is necessary to have a substantial development of OF in these areas. In other words, developing OF to tackle water pollution problems requires to have a place-based development of organic farming. This is a new challenge because, so far, OF development was mainly based on the individual motivations of farmers to convert. Our hypothesis is that the objective of developing OF in order to protect water resources changes the OF development pattern. The following research questions will be addressed in the paper: Can local pollution problems be seen as a mean to foster OF development? How are these projects associating OF and water quality preservation being designed and implemented ?

Material and methods

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An inventory aiming at identifying projects associating OF development and water quality protection was carried out at national level. More than 30 projects were identified. Based on this inventory, we selected four projects, located in different regions of France, for a case study analysis. These four projects have been chosen to illustrate the diversity of types of projects associating OF and water quality.

For the case study, we first did a documentary analysis to better understand the goals and the organisation of each project. This analysis was based on different types of documents: project websites, newspaper articles, project proposal (for projects that have applied for financial supports), internal project reports, local action plans.

We also carried out semi-structured interviews with stakeholders involved in the project: water managers, local elected officials (from municipalities or rural districts), advisors working in extension services, farmers, cooperatives collecting and processing agricultural products, as well as with policy makers dealing with water management issues or with organic farming. In total, 42 interviews were carried out. The interviews aimed at understanding: the history of each project, its objectives, its organisation, the actions being implemented and those being planned for the future, and the stakeholders' motivations for participating in the project as well as their specific role in it.

Results

Water stakeholders: new key actors for the development of organic farming

The national inventory and the case study analysis showed that numerous projects aiming at developing organic farming to protect water quality have emerged in France since 2009. Various stakeholders took the lead in setting up such projects: agricultural stakeholders (such as farmers and agricultural advisors, cooperatives involved in the processing and marketing of organic products…) but also non-agricultural stakeholders such as local authorities (municipalities, rural district or metropolis) in charge of water management (table 1). In two of the analysed projects, local water managers have initiated the projects and are the project leaders. In the other two, the project leaders are agricultural stakeholders but they have received financial and institutional supports from one of the French Water Agency[7]. Water stakeholders therefore appear as key players in the governance of these local projects aiming at developing OF.

Place-based development of organic farming: a new feature in the history of organic farming

The main challenge in the analysed projects is to develop organic farming in the local water sensitive areas. In order to foster this place-based development of OF, local action plans have been set up and implemented in each project. They rely on adapted policy tools. Some of them aim at supporting the development of the organic surfaces (for example via extra financial support for conversion, given only to farmers whose fields are located in water sensitive areas). Others are rather market-oriented and aim at creating local processing units and supply chains to facilitate conversions of farmers and to create added value for organic products originating from these specific water sensitive areas. The national objective to develop OF in water sensitive areas has therefore a clear impact on the design and the features of new OF development projects in France.

This objective to foster a place-based development of OF is new in France. A few other cases of place based-development of OF to tackle water pollution problems exist in other countries, such as the well-known example of Munich, Germany (Barataud *et al.,* 2014). In the case of Munich, a successful program for OF development was carried out since the nineties and OF nowadays covers more than 80% of the agricultural area. But this case is very particular as 60% of the water catchment area is covered by forest and farming systems present there are extensive mixed systems (Barataud *et al.,* 2014). The cases we have studied are very different as they are located in quite

[7] There are 6 water agency in France. Water agencies are in charge of coordinating and implementing the water policy actions in France.

intensive agricultural areas, where there were no conversion dynamics before the projects started. Our analysis show that the use of new policy tools, coming from food policies as well as water policies and regulations enabled to create dynamics of conversion in areas that were not considered as "favourable for OF development" *a priori*.

Table 1: Overview of the four studied projects associating organic farming development and water quality protection

Projects	Main project objective	Project leader	Main policy actions implemented
Development of OF in the Vanne valley	Protection of the water catchment areas	Water manager	- Extra financial support for conversion to OF -Water manager investing in organising local organic supply chains
Promoting organic and sustainable agriculture in the water catchment of Rennes	Protection of the water catchment areas	Water manager	-Creation of a label for organic and sustainable products produced in the water catchment area -Introduction of labelled products in mass catering (through green public procurement)
Farmers' group for the "Development of sustainable agriculture" in Ardèche	Reduce pesticides use on farms to reduce their environmental impact	Group of farmers conventional farmers who actually decided to convert to organic, with the support the Water Agency	-Collective investment for purchasing of mechanical weeding machineries -Extra financial support for conversion to OF -Action towards the local dairy for setting up a system to collect organic milk
Creation of an organic mill in Côte d'Or	Creation of a unit to process the locally produced organic wheat and thus facilitate conversions to OF of local farmers	Group of agricultural cooperatives, with the support the Water Agency	-Awareness raising amongst conventional farmers -Market development

So far, research carried out to analyse the OF development did not really focus on the local level. Part of the research work focuses at the level of individual farmers, analysing farmers' motivations and attitudes towards the adoption of OF (Padel, 2001). Other researches have analysed the development of OF as a movement (Michelsen et al., 2001). Research targeted at the territorial dimension of OF development is rare. A few author have highlighted that OF development pattern are not homogenous in all areas and that spatial aggregation phenomena can be observed (Allaire *et al.*, 2015, Gabriel *et al.*, 2009). Other have concluded that OF development patterns are sometimes place-dependent, resulting from specific local contexts (Kjeldsen and Ingemann, 2009). But most of

these researches did not analyse how these local dynamics leading to aggregations phenomena have emerged and developed. Our work shows that the analysis of how local projects for the development of OF are designed and evolved over time is a necessary step to better understand ongoing changes in the history of the movement. Indeed this placed based development of OF, be it for tackling water pollution problems or for solving other local issues, appears to us as a new feature and a new step in the history of OF. In this new step, OF is considered as an holistic solution to local challenges (such as environmental problems but also territorial food sovereignty, education to healthy food and diets…) and new non-agricultural actors are involved in the design and in the governance of these local projects.

Discussion

In the vision elaborated by IFOAM-Organics international for organic 3.0, six different features have been identified as key challenges that need to be addressed to enable organic food and farming to get out of its "niche". Building alliances with other sustainability initiatives is one of them. Our study show that the upscaling of organic food farming indeed relies on the building of new alliances (but not necessarily only with sustainability initiatives). The objective of developing OF to protect water quality brought the organic stakeholders (organic farmers association, extension services for organic farming, organic processors…) to work with new actors: water managers, local public authorities etc… The success of these projects partly relied on the capacity of the organic stakeholders to work with non agricultural stakeholders. Building of alliances with non-agricultural stakeholders at local level for setting up local action plan for OF therefore appears as one of the key challenges to be addressed in the organic 3.0 era.

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