

Regional conversion to organic farming in Camargue, South of France.

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Introduction

European agricultural systems are in constant evolution under the joint effects of multiple factors of change, some exogenous to agricultural systems, such as the evolution of agricultural markets, the changes of public policies or climate change, and some are endogenous changes such as the development of new techniques and practices. Systems in organic farming (OF) are good examples of systems offering an alternative to conventional systems which are currently growing fast due to both the development of new techniques and to a favorable political and economic context. However, the development of these systems remains limited and slow, for various reasons.

In the Mediterranean basin, the Camargue is a small region within the Rhone delta, characterized by a relatively flat and low altitude landscape. The proximity of the sea and the important evapotranspiration entail soil salinization. Farm lands there are in direct relationship with natural spaces whose patrimonial interest is world famous. The impacts of flooded rice fields (the territory's main crop) on the natural environment are a recurrent source of concern. The development of organic farming is considered as a means of reducing the negative external parameters of agriculture on natural environments, which in turn raises questions regarding the other possible consequences of a regional development of organic farming in the territory. Identifying the obstacles and possible levers to the development of these systems, and assessing the consequences of an important development of OF could help local stakeholders in this territory in their reflection. The aim of this communication is to draw a summary of the knowledge about obstacles and levers to the development of Organic Rice Production (ORP) in Camargue and to assess the possible consequences of a regional development of OF. This communication is based on various works recently undertaken in Camargue: surveys with farmers and territory stakeholders to identify the obstacles and levers to the development of OF at various levels, an in-depth study of constraints related to the various types of soil and lastly, a work of construction and integrated assessment of scenarii related to the development of ORP.

Materials and methods

Through numerous research projects conducted in Camargue (see Mouret et al., this conference), valuable knowledge was acquired on technical systems in conventional and organic farming as well as on the stakeholders involved in agricultural production. A summary of this knowledge helped identify the obstacles and levers to the development of ORP on three levels: the level of the plot and the technical system of ORP, the level of the farm and management of crop rotation and lastly, the level of the territory and the elements of the politico-economic context of ORP. 22 interviews were conducted with 14 farmers and 8 territorial stakeholders (local authorities, consultants and stakeholders of the sector) to collect their opinions on the various obstacles and levers at these different levels. Among the obstacles, adjusting the constraints of OF to the type of soil and in particular to the problem of salinization of lowlands on the one hand, and the

challenges of profitability of ORP cultivation systems on the other hand have each been researched.

The first study was conducted using the concepts of rules of decision-making by farm operators to define their crop rotations. It helped quantify the constraints and rotation possibilities per type of soil as present in Camargue. This study was based on surveys conducted in farms as well as on the observation of interactive simulation sessions and on the analysis of the farmers' experience feedback on these simulations (Maily 2011). Last, taking these constraints into account, scenarii were elaborated and assessed with farmers and local stakeholders of the Camargue territory. These scenarii dealt with the evolution of the territory's farming systems in a context of a reform of the CAP entailing the suppression of the subsidy for rice production. One of the strategies considered by farmers and stakeholders of the territory was to develop systems in OF. The issues of profitability of OF systems, trajectories of possible conversion and the impacts of sustainable development on various metrics at the scale of the territory were addressed, using different models. (Delmotte, 2011).

Results and discussions

At plot level, obstacles to the development of organic rice production remain: the difficulty of managing weeds and in particular, *scirpus maritimus*, impacts rice productivity in OF and the seed stock of weeds that keep growing year after year. The absence of varieties specifically selected for organic rice production and the low quality of available seeds (cleanliness, germination rate) are the second factors evoked by farmers. Lastly, the climate of Camargue and its temperature constraints is the third factor limiting the agronomic performance of rice in OF. The possible levers identified are related to the development of specific techniques for weed control as well as the development of short cycle varieties adapted to the local context and to ORP. At farm level, the constraints identified are related to the low performance of cultivation systems, including the performance of rice in an organic system, but also the performance of other cultures, and to the difficulty of identifying adapted cultivation and crop rotation systems, namely for farms where a large proportion of soils have frequent salt reemergence. The change of rotation when converting to ORP (extension, diversification) represents a risk and can otherwise induce slower amortization of investments necessary for rice cultivation and can require the reorganization of work at the level of the farm. At the level of the territory, constraints identified regarding the development of OF are related to the low level of technical support and the absence of networking among the stakeholders, to public policies that are not very encouraging and to markets, outlets or sector organizations which remain largely opaque to the farmers. In the face of all these constraints, there are many possible levers. Surveys on constraints related to soil types helped formalize the timeframe for minimal and maximal return of organic rice per soil type and confirmed the impossibility of defining a sustainable rotation from the point of view of salinity and weed management on lowlands, which represent some 20% of surfaces cultivated in Camargue. These works made it possible to estimate the maximum possible square footage in ORP from an agronomic point of view at the level of the territory. From a current surface of about 20000ha, if all of Camargue's agriculture was organic, the surface of rice fields would not exceed 13000ha in the case it was technically possible to plant rice twice in sequence and where the maximum return time was 4 years for weed control.

Sessions of simulation with local stakeholders made it possible to highlight different conversion strategies and identify cultivation systems which are more or less profitable depending on market prices. Conversion can be partial, with the introduction of alfalfa and durum wheat in rotation

with rice in the case of a farm with livestock, or systems including other legumes (e.g. peas, lentils) in rotation with rice for farms without animal breeding. By combining various approaches at the level of the plot, the farm and the territory, and involving the various territorial stakeholders by means of surveys and simulation sessions, this study contributed to highlighting different obstacles and levers to the conversion to OF. Further research is required to support the latter in their reflection and in the implementation of action plans to serve the development of OF in this territory.

References

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