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► To cite this version:

Anne Merot. Conversion towards organic farming leads to a complexification of the farming system management: application to vineyard systems. 5. International Symposium for Farming Systems Design (AGRO2015), Sep 2015, Montpellier, France. 538 p., 2015, FSD5 Proceedings (5th International Symposium for Farming Systems Design). hal-01601483

HAL Id: hal-01601483

<https://hal.science/hal-01601483>

Submitted on 2 Jun 2020

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Conversion towards organic farming leads to a complexification of the farming system management: application to vineyard systems

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1 Introduction

In the current context of climatic, socio-economic and environmental changes, farmers have to modify their farming systems to reduce environmental impacts while still assuring profitability at farm scale. Organic farming appeared to be an interesting production mode to face these changes. In few farms simple adjustments can be sufficient to operate conversion but in most of farms changes in the crop management sequence are not obvious and can lead to deep evolutions (Lamine & Bellon, 2009). Advisers worry about farm sustainability when converting to organic farming without enough preparation. A state of art of the scientific literature showed that not much attention has been given to the conversion period from conventional to organic farming.

Thus in this work, we analyse technical and organizational changes associated to the conversion and showed that conversion towards organic farming for vineyards systems often leads to a complexification of the cropping system management.

2 Materials and Methods

The work was carried out in Southern France in the Languedoc region. The Languedoc-Roussillon is the larger vineyard area in France. In 2010 it represented 30 % of the total French vineyard (Agreste, 2010). In 2011 (Agence Bio, 2011), 19 907 ha of organic vineyards corresponding to 1199 farms were inventoried in Languedoc-Roussillon. 57% of these 19 907 ha were still in conversion towards organic farming. 16 farms were interviewed from 2009 to 2012 the year before conversion towards organic farming and the first year labelled. The survey was conducted at the vineyard scale. The sample of farms interviewed was based on a 3-key classification of the farms on the study area (Merot *et al.*, 2008): we selected on four soil and landscape zones highly representative of the region. The type of commercialization was also taken into account (wine-growers in cooperative or individual cellars) and the vineyard area. We collected data on production factors, management practices and associated indicators. A characterization of the changes operated in relation to the organic label was performed.

3 Discussion

Results showed that the conversion towards organic farming resulted in an increase of the farming system complexity. Considering the whole set of farms interviewed, the frequency of changes varied largely from one agricultural practice to another but most of agricultural practices were finally impacted by the conversion. It was interesting also to remark the diversity of changes between farms. The intensity of changes was less important in some farms.

We noted that the number of operations was enlarged (+ 15 %). Most particularly soil management was intensified (+ 25% of traffic) and the phytosanitary traffic was higher (+ 14%). The changes observed concerned also the number of crop management sequences (for 8/16 farms – fig. 1).

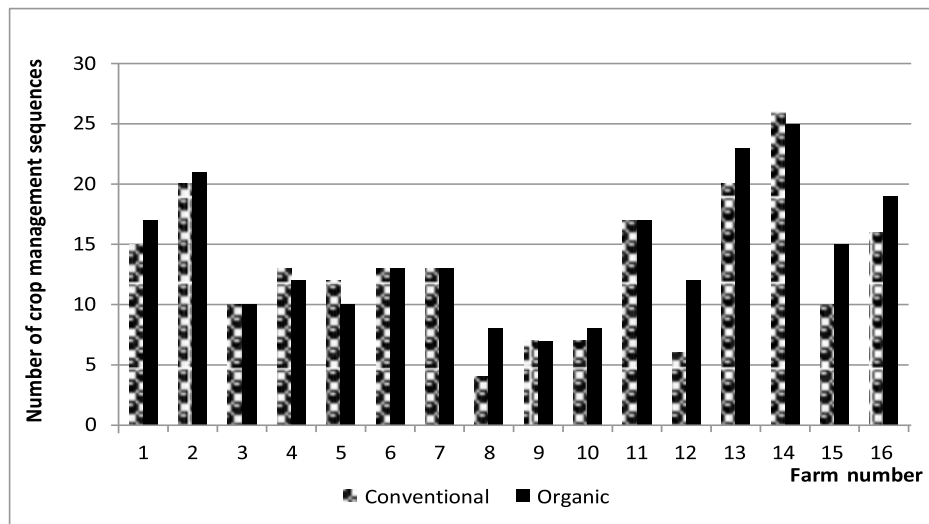


Fig. 1. Evolution of the number of crop management sequences before (conventional) and after conversion (organic) towards organic farming.

Whereas the number of fields in production stayed relatively stable in most of farms surveyed, the number of crop management sequences increased for 50% of vineyards studied.

The number of indicators used for technical decision making was also higher after the conversion towards organic farming (5.5 indicators in average in conventional farming and 6.7 in organic farming). These changes impacted directly production factors so as labor and equipment and the farming system organization leading to a complexification of this organization. To compensate this complexification, two strategies were identified depending on the type of commercialization. Wine growers in cooperative decided to maintain the vineyard area and increased labor whereas individual cellars tended to reduce the number of fields to limit the increase of crop management sequences and labor.

4 Conclusions

These results suggested that conversion towards organic farming implied more than a substitution of products: It was more a complete re-organization of the farming system management in most of farms surveyed. In fact, the label gives the list of pesticides not forbidden. But in reality, organic farming conversion is never an addition of substitutions. It could begin with addition of substitutions. But after one or two years, farmers have to face changes in organization and in labour so that they have to re-organize their vineyard system. Converting to organic farming lead to a complexification of the decision-making: field heterogeneity is taken more deeply into account and crop management sequences are more numerous. Behind this change, there is also an adaptation of the field indicators used for decision-making. Adapting indicators to analyse, manage and assess the conversion is therefore one essential issue for supporting conversions.

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