Long-term strategies and flexibility of organic farmers in southeastern France

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Since the mid-1990s, organic farming has emerged from its marginal and niche production status to become a serious developmental route for more sustainable agriculture befitting current ecological and health challenges. Nonetheless, market fluctuations and changes in the regulatory context combined with technical risks have resulted in the emergence of different points of instability within organic agriculture. On family farms, sustainability is largely guaranteed by a broad range of strategies. Drawing upon a detailed case study of nine organic farms followed up over the course of 14 years, this paper argues that different forms of farm flexibility employed during and since this period have allowed farms to remain viable. It concludes that the diversification of farm production and activities, off-farm employment and farm household commitment to organic agriculture, together with professional membership and social networking, contribute significantly to farm viability. Finally, this paper draws up different farm strategies to support the local development of organic agriculture.

Keywords: farming system; flexibility; organic agriculture; strategy

Introduction

The organic sector has grown substantially throughout Europe over the last decade (Willer et al., 2008). This expansion has been supported by public initiatives in the 1990s, such as the introduction of the European Commission (EC) regulation 2078/91 and the EU granted financial support for conversion and organic production (Lampkin et al., 1999). Organic farming is now recognized by policy makers as one way to achieve sustainable development in agriculture (European Council, 2001). Then, many EU countries have implemented action plans to encourage the expansion of organic farming. Such initiatives have also been taken as a reaction to the perceived negative consequences associated with industrial agriculture in particular following food (i.e. mad cow disease, dioxin contamination) and environmental (i.e. water pollution from nitrate and pesticide) crises which occurred in the 1990s. In addition, agri-business recognized the potential in organic products and a viable market has emerged. The organic sector has thus passed, in 20 years, from a specific market for ‘committed’ consumers to diversified supply chains, the involvement of mass distribution thereby widening the market to a more casual clientele. Therefore, organic farming has in recent years undergone major changes in its economic environment: modifications in regulation (e.g. EC regulation 1804/1999 for animal production and EC regulation 834/2007 applied in January 2009 to organic products), increased competition, reduction in the premium price paid to producers etc.

Organic farming emerged in the wake of the industrialization of agriculture where specialization, standardization and control were imposed on the farm. Organic farmers developed ecological farming principles based on diversity and adaptation that were diametrically opposed to those implemented in industrial agriculture. While organic agriculture has now demonstrated that farming based on these principles
(see www.ifoam.org) can achieve long-term success, the organic food system that drives the market has, by and large, failed to appreciate those principles. For example, specialization has led to an incorporation of the organic sector in mainstream distribution channels. Then, the pressure to industrialize the organic sector exposes organic farmers to long-term vulnerabilities (Kirchenmann, 2000).

This economic uncertainty is also coupled with technical uncertainties. Several studies (e.g. Taylor et al., 2001; Maeder et al., 2002; Badgley et al., 2006) show that production levels are generally variable, from 5 to 50 per cent lower than those obtained in conventional agriculture, due to the presence of numerous uncontrolled limiting factors, for instance, weeds, pests and diseases in grain production.

The ban on chemical inputs in organic farming often obliges farmers to come up with agroecological solutions, while research into agroecology and organic agriculture is already limited (Wezel and Soldat, 2009). Furthermore, the scattering of organic farmers throughout the land, representing less than 4 per cent of the farming population in Europe, makes it difficult to carry out cooperation and networking for information exchange.

It is then already crucial to identify the means available to organic farmers to overcome economic and technical risks, to adapt to market fluctuations and changes in the regulatory context (Michaud et al., 2003), and to break out of their isolation, both in terms of their training and their access to markets.

The aim of this paper is to analyse the strategies and flexibility of organic farms confronted, over the course of time, with technical, regulatory, economic and also social changes imposed specifically on organic farming and more generally on agriculture. This work is based on the analysis of trends emerging from the study of nine farms, quite different from one another, managed organically and monitored from 1993 to 2007. The first goal of the paper is to provide an analysis of the farms over a 15-year period while farm flexibility generally refers to organizational capacity and farm functioning studied from existing and static data. The second goal is to complete the analysis of accounting documents by regular interviews of not only the farmers but also family households. The last goal of the paper is to analyse the role and incidence of stakeholders and family members in the farm flexibility and long-term strategy.

Materials, methods and concepts used

Long-term survey on nine mixed farms managed organically

This research project is based on a case study approach using qualitative and quantitative methods applied on a long-term perspective. The analysis builds on interpretations and data analysis collected through interviews and accounting documents. The nine farms surveyed have been monitored since 1993. These farms are located in two counties, Diois and Plain of Valence, located in the southeast of France (25km north to south, 70km east to west, 44.5°N, 4–5°E) where 10 per cent of the usable agricultural area is organic (Agence Bio, 2007 data). The Diois is a hilly area where farming systems are diverse (livestock, arable crops and perennial systems) while the Plain of Valence is a large plain specialized in arable crops. In this region, the development of the organic sector (production and processors) has been one of the fastest growing in France over the last 15 years.

In 1993, farm management was described through the operation of the farm (structure, type and size of production units, work organization and size, equipment and buildings, market type and volume), and through economic and environmental performance. These farms, in conversion or fully organic, were selected to represent the diversity within organic grain producers in the southeast of France. This work was supplemented, till 1997, by a technical and economic survey to evaluate farm performance during and after the conversion period (Nocquet et al., 1996; Von Fragstein et al., 1997).

Recently, further interviews with farmers were carried out to follow up on the trends and strategies of these farms. Firstly, a semi-structured interview (June 2007) allowed us to assess changes in the operation of the farm over the last 14 years. This interview also captured changes in farmers’ strategy with a special emphasis on the place accorded to organic production on the farm, investment directed to various production units, changes in household activities and marketing issues. Secondly, a detailed analysis of the technical and economic results of the farm was carried out on the basis of accounting documents in order to evaluate the economic and social sustainability of the farm. Accounting documents enabled the construction of an extensive database of 121 variables per year and per farm. Besides the data on quantitative variables over the 14 years, interview
transcripts were used to illustrate some findings. Changes in the size of production units, economic and financial results were assessed every year using the units and indicators normally used in Europe (FADN, 2007). The economic size of an agricultural holding is measured, in Europe, on the basis of its potential gross added value (total standard gross margin [SGM]). Specialization, for its part, is determined on the basis of the contributions of the different lines of production to the total SGM. To determine the total SGM on each farm, coefficients established at the level of the different regions of the European Union for the different lines of production are taken as a basis: for example, SGM for 1ha of wheat or for one dairy cow. For each holding, the number of hectares of wheat or dairy cows is multiplied by the corresponding coefficients used in the Rhône-Alpes region and the total SGM is calculated. The SGM coefficients are calculated at regular intervals and correspond to three-year averages. The holding’s economic size is expressed in European size units (ESU) equal to 1200€. The total SGM, expressed in Euro, is divided by the ESU coefficient. For each crop, the ESUs are calculated per hectare (or per animal in the case of livestock). The turnover of the farm corresponds to the total outputs of the different enterprises. To take into account the real added value of the organic farms, we have therefore calculated the gross farm income (GFI) which corresponds to the outputs, including the balance of current subsidies and taxes, and subtracted intermediate consumption (total inputs including labour cost). The GFI is the indicator normally used in France to take account of the profitability of the activity of producing goods and services, but it does not consider investment and debts incurred by the farm. A document synthesizing the qualitative and quantitative data used was provided to the farmer to complete and validate data collection.

The last stage (June 2008) was to determine, from the general trends, elements of stability and flexibility in the operation of these farms from 1993. This work was done through an interview with the farmer, carried out jointly by an agronomist and a socio-economist. Some elements extracted from the synthesis document were discussed with the farmer for joint analysis and validation of previous results. In the analysis phase, the aim was to move from an individual case study to an overall systemic understanding of the forms of flexibility employed to maintain and adapt farms to the different changes linked with farmers’ strategies. Each interview varied in length from 1.5 to 3h, and made it possible to earn sufficient trust from respondents to discuss the household goals and budget.

The different dimensions of flexibility
Flexibility generally refers to the capacity for adaptation or for the reaction of a system in a situation of uncertainty (Lev and Campbell, 1987; Tarondeau, 1999; Dreyer and Gronhaug, 2004). This term, applied in the management sciences and in industrial economics, is used in various ways to describe the scale (internal or external flexibility), the type (strategic, functional and organizational flexibility) and the subjects concerned (product, process or input).

Some authors (Mercure, 1997; Reix, 1997) focus their approach to flexibility on the management of production factors, that is, capital and the labour force. Thus, one can distinguish strategies associated with the adaptability of resources, which might concern the qualitative aspect of investments or the versatility of workers. But this could equally apply to the quantity of resources used by varying the amount of manpower and/or inputs according to needs.

Two other dimensions are also used by numerous authors (Reix, 1997; Fouque, 1999; Tarondeau, 1999; Dreyer and Gronhaug, 2004). The first is linked with the structure of the enterprise, in its capacity for reaction and innovation. An enterprise can be flexible due to its ability to respond to changes in its environment, but it can also be flexible in its capacity to influence its environment itself (Gerwin, 1993). The second concerns the outputs in their capacity to respond to multiple usages and to contribute to a continuous enlargement of the variety of the products offered (Lémery et al., 2006).

The analysis of flexibility requires a consideration of time (Lev and Campbell, 1987; Cohendet and Llerena, 1999). On the one hand, the rapidity with which changes are made is regarded as an element of flexibility; on the other, the nature of these changes – whether they are part of the short-term production cycle or of long-term structural transformations – must also be taken into account. Thus, Tarondeau (1999) distinguishes between strategic flexibility and operational flexibility of the enterprise. The first defines the capacity to change the structure or the projects of the enterprise to adapt to a changing environment. The second characterizes rather the transformations or adjustments which do not fundamentally alter the enterprise in the long term, but
provide it with the adjustments needed to respond to unexpected external events.

A model for analysing flexibility applied to farms

Most work on flexibility is based on industrial sector enterprises subject to frequent organizational changes. Consequently, some specificity to farm organization should be underlined to adapt certain concepts defined in another context.

In France, 87 per cent of full-time farmers were still family farmers at the last agricultural census (MAP, 2001). Hence, in most cases, the farmer combines the functions of entrepreneur and worker. Furthermore, the existence of financial resources from outside the farm (e.g. tourism activities, salaries from other family members) facilitates investments and/or helps the farm to survive. Quantitative flexibility in agriculture is largely based on family work or occasional labour from neighbours, the production system being adjusted to the availability of labour (Mundler and Laurent, 2003). Other strategies aimed at making farming systems more flexible include subcontracting, machinery cooperatives, employer groups etc. (Harff and Lamarche, 1998; CER, 2007).

Another important feature in France concerns the heritage value of certain agricultural resources as land, when most of the farms are transmitted by the elder owner to someone younger in the family (Barthélémy, 2000). The challenge for farmers lies in securing, in the long-term perspective, sustainability for their business, in a context where farming is subject to wide-reaching change and where farms are increasingly exposed to price variability but also agronomic trends and climatic risks.

The strategic and operational decisions of the farmer are influenced by three poles constituting the farm resources (Figure 1): (1) type and organization of resources (land, equipment and buildings of the farm), (2) farmer and household’s goals and activities and (3) types of products and services. Therefore, the farm decision is strongly influenced by the social, economic (prices, markets and public support) and regulatory environment. Each of these three poles can be subject to sudden change in the economic climate, mobilizing the farm’s operational flexibility properties; or to structural change, mobilizing the farm’s strategic flexibility properties.

In the Results section, each type of flexibility will be defined according to the pole on which it has the most influence and according to the dynamics (long term or short term) to which it belongs. The different terms defined by previous authors (Sethi and Sethi, 1990; Mercure, 1997; Tarondeau, 1999) are summarized in Table 1.

Main results

Main changes in the farm structure and management

The main characteristics of the farms studied are shown in Tables 2 and 3. In general, several changes have taken place during the last 14 years. First of all, all the farms have now completely converted their different kinds of production to organic farming, even when the first step towards conversion in 1993 was limited. For instance, in 1993, farms 5–9 had only dedicated a maximum of 30 per cent of grain production to organic farming while the remaining production was farmed conventionally. Second, the grassland livestock production had mostly disappeared (sheep and/or goats in farms 2, 5, 6, 7, 8 and 9 and bovine in farm 1) by the end of the 1990s. Some farmers have replaced this production with intensive poultry rearing (farms 5 and 8); others have increased the area on the farm devoted to cereals (farms 5, 7 and 9) or vineyards (farms 1 and 2). Generally, the labour available on the farm has increased in accordance with the economic size of the farm. The diversity of production within farms has been maintained with a minimum of two kinds on the farms. Only one farmer (farm 2) has increased his specialization in wine-growing by eliminating goat and forage production. The SGM has increased for 75 per cent of the farms concerned. Only two farms regressed in their economic value following the retirement of the farmer (farm 6) or the breakup of an association between two family farms since 1995 (farm 7). This increase in the SGM is correlated with an increase in area (farms 3, 4, 5, 8 and 9) and/or high-value crops (farms 1 and 2).

Major changes have also occurred in matters of general organization. Several farms suffered breakups of associations (farms 2, 5 and 7), family separation (farm 1) or a career change by a spouse outside the farm (farm 9) leading each time to a complete overhaul of the work by closing down certain activities requiring high labour input (e.g. livestock or gardening activity on farms 1, 5, 7 and 9) and/or the development of an employer group for a wine-growing activity or employment of seasonal workers (farms 1, 2 and 7).
Several farms diversified their activities: through the trading and distribution of organic produce for farm 4, agritourism for farm 6 and/or introduction of new high-value crops like field vegetables for farms 5 and 8, thus leading to a major change in farm operations.

In terms of economic performance, we notice a general increase in farm products in the case of mixed farms (farms 1, 3 and 4). Therefore, the disappearance of livestock production has been compensated by an increase in crop and/or poultry production (farms 2, 5, 6, 7, 8 and 9). Also, we find a strong capitalization of certain farms following the purchase of rented land (farms 2, 3, 4 and 9) and the increase in farm size (farms 2, 4 and 9), leading to a limitation in the self-financing of these farms.

Finally, we notice that many farms have access to financial resources outside the farm, mainly due to a spouse having off-farm work (farms 3, 4, 5 and 7), providing some economic security which allows risk-taking.

**Trends and flexibility**

From the quantitative and qualitative facts gathered during the different phases, we have identified four trends reflecting elements of flexibility used by the farmer.

**Type 1: activism and collective willpower (farm 1)**

This is one of the pioneers who supported the development of organic farming in his county. In the late 1990s, he was one of the key players in the development of the organic sector in cereal and wine production through the setting up of an organic branch linked with advisory services. The numerous responsibilities that this farmer has undertaken have hindered the development and the technical supervision of his farm. Hence, we find a stagnation in his technical performance over the course of time, also explained by the low fertility management linked with the disappearance of livestock production and limited number of technical operations (i.e. no weeding, no fertilization with off-farm inputs). This ‘purist’, involved from the start in organic farming,
has tried to retain a small-scale family farm based on the IFOAM Basic Standards principles (IFOAM, 2009). For instance, the system on this farm is based on autonomy, combining a small-scale meat animal production producing manure (10 livestock units) with various crops (market gardening, arable crops and vines) to guarantee self-consumption and subsistence. However, the farmer has gradually reduced the

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**Table 2 | Main characteristics of the farms**

<table>
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<tr>
<th></th>
<th>Farm 1</th>
<th>Farm 2</th>
<th>Farm 3</th>
<th>Farm 4</th>
<th>Farm 5</th>
<th>Farm 6</th>
<th>Farm 7</th>
<th>Farm 8</th>
<th>Farm 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of farming</td>
<td>Wine</td>
<td>Wine</td>
<td>Field crops</td>
<td>Mixed</td>
<td>Mixed</td>
<td>Field crops</td>
<td>Field crops</td>
<td>Field crops</td>
<td>Field crops</td>
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<tr>
<td>Location</td>
<td>Diois</td>
<td>Diois</td>
<td>Plain of Valence</td>
<td>Plain of Valence</td>
<td>Diois</td>
<td>Diois</td>
<td>Diois</td>
<td>Diois</td>
<td>Plain of Valence</td>
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<tr>
<td>SGM(^1) in 1993</td>
<td>39</td>
<td>71</td>
<td>35</td>
<td>176</td>
<td>48</td>
<td>19</td>
<td>103</td>
<td>99</td>
<td>44</td>
</tr>
<tr>
<td>SGM in 2007</td>
<td>59</td>
<td>124</td>
<td>52</td>
<td>239</td>
<td>101</td>
<td>3</td>
<td>60</td>
<td>119</td>
<td>58</td>
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<tr>
<td><strong>Evolution</strong></td>
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<tr>
<td>Land area (in hectares) in 1993</td>
<td>28</td>
<td>20</td>
<td>26</td>
<td>100</td>
<td>39</td>
<td>48</td>
<td>23</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>Land area (in hectares) in 2007</td>
<td>34</td>
<td>20</td>
<td>37</td>
<td>160</td>
<td>79</td>
<td>51</td>
<td>60</td>
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<td><strong>Evolution</strong></td>
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<tr>
<td>AWU(^2) in 1993</td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td>2.5</td>
<td>1</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>AWU in 2007</td>
<td>1</td>
<td>3.5</td>
<td>2.5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1.5</td>
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\(^1\)SGM expressed in ESUs.
\(^2\)AWU Labour force expressed in annual work unit. One annual unit corresponds to the work performed by one person who is occupied on an agricultural holding on a full-time basis fixed at 1800h per year (Eurostat, 2007).

**Table 3 | Economic performance of the farms**

<table>
<thead>
<tr>
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<td>Field crops</td>
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<tr>
<td>Turnover in 1993 (K€)</td>
<td>62</td>
<td>85</td>
<td>119</td>
<td>206</td>
<td>92</td>
<td>53</td>
<td>132</td>
<td>119</td>
<td>104</td>
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<tr>
<td>Turnover in 2007 (K€)</td>
<td>75</td>
<td>180</td>
<td>216</td>
<td>739</td>
<td>93</td>
<td>64(^1)</td>
<td>99</td>
<td>234</td>
<td>170</td>
</tr>
<tr>
<td><strong>Evolution</strong></td>
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<tr>
<td>GFI(^2) in 1993</td>
<td>40</td>
<td>29</td>
<td>29</td>
<td>38</td>
<td>45</td>
<td>27</td>
<td>64</td>
<td>60</td>
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<tr>
<td>GFI in 2007</td>
<td>46</td>
<td>92</td>
<td>72</td>
<td>47</td>
<td>46</td>
<td>31</td>
<td>51</td>
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\(^1\)Retired in 2001.
\(^2\)Materials, methods and concepts used Turnover and GFI see 11.
labour-intensive and less remunerative kinds of production (beef cattle and field vegetables) leading to increased specialization in wine production. This process of specialization has been strongly reinforced since his divorce in 2000. The financial balance of this farm has subsequently been guaranteed by the presence of very profitable vineyards (increasing from 3.7ha in 1993 to 6.5ha in 2007) with organic labelling.

The farmer strategy is assured mainly by great flexibility in the labour force provided by a strong social integration in the local community. Also significant is a dense network of cooperation with other farmers, based on reciprocity and mutual trust, and the setting up of a group of employers in vineyard production. This adaptation in the labour force relies on low investment, guaranteeing farm sustainability. Therefore, this farmer already delegates his commercial activity to cooperatives (for wine and cereals). For this farmer, the decisions are mainly explained by the ‘farmer and household goals and activities’ pole.

Type 2: family farm and technical management (farms 2, 3, 6, 7 and 9)

These are farmers who want to maintain the family dimension of their structure while seeking an improvement in technical performance. These farms had livestock production (sheep for meat or milking goats), which was abandoned following the reduction of the labour force (inside the family or after the break-up of an association). The decision to abandon livestock can also be largely explained by the poor profitability of related production due to the choice of inappropriate breeding or due to the absence of an organic milking collective in the county.

These farms have maintained a balanced and often diversified production system based on the presence of high-value crops (vines, garlic, aromatic and medicinal plants), organic cereals and forage legumes. Nonetheless, the tendency to specialize around the most profitable crop can be noticed over the course of the 14 years on farms 2 (vines) and 3 (garlic).

These farms are fully organic in all their different kinds of production even though the conversion at the beginning of the 1990s was only initiated on a small part of their cereal crops. The commitment to organic farming has been progressive; it is now consolidated by personal responsibilities in the organic farming network (cooperative and farmers’ union) with no desire to go back. These farmers have invested heavily in the improvement of technical performance through, for instance, investment in specific equipment (e.g. machinery for weeding and organic manure spreading) and regular participation in collective experimental networks. These farmers have therefore been able to profit from the network of farmers and advisors, reducing the isolation of some of the pioneers. They are now key players in the development of organic farming in their county.

All these farms develop different forms of flexibility in their strategy:

- The progressive increase in capital by buying land (the case of farms 2, 6, 7 and 9) or by an investment in agritourism (farms 13 and 14), illustrating functional flexibility.
- Securing extra labour for seasonal activities (all farms) both by paying a loyalty bonus to seasonal workers and by the availability of family and friends to help when necessary, illustrating relational flexibility.
- Income from off-farm salaries (farms 3 and 7) or the securing of outlets by responsibilities in the collective marketing organizations (farms 2, 7 and 9), illustrating both relational and technical flexibility.

In conclusion, the limited operational flexibility of these farms is made up for by land and/or financial reserves which have been acquired progressively over the course of time and which enable the farmers, as they explain, to cope with unexpected problems. For these farms, the central point around which they make their decisions is the ‘type and organization of resources’ pole.

Type 3: diversification and opportunism (farms 5 and 8)

These are diversified mixed crop–livestock farms which partially converted their arable crops to organic farming in the 1990s. They are constantly finding new sources of income on the farm (e.g. giving up milking goats after the price fall, development of poultry following an increase in demand from industrial processors, conversion of walnuts to organic farming following the introduction of substantial grants for the conversion of perennial crops, conversion of their entire arable area following the adjustment of subsidies, the development of a range of field vegetables grown organically in response to a growing export market etc.).

These farmers invest in production requiring heavy investment, which they try to make flexible (e.g. by versatility of equipment and collective purchases),
and providing high turnover. Being in a state of perpetual change, integration into the market sphere takes priority over the technical control of production (which requires know-how acquired over the medium term). They limit the risks by operating in small informal groups. Within these groups, they share their knowledge and sometimes big investments (e.g. a vegetable washing/packing shed for organic vegetables exported to the United Kingdom).

These farmers also get together to control certain profitable niche markets so as to reinforce their bargaining power with distributors. However, they do not invest in collective marketing organizations unlike the previous group. The increase in the economic size of the farm proceeds through an enlargement of their production and an increase in manpower by hiring paid workers. Hence, their strategies remain very individual; they reject all forms of association and want to retain their role as decision makers.

Their farm strategy is based on economic opportunity, on obtaining grants or finding and controlling niche markets. Likewise, the commitment to organic farming is a question of opportunity; returning to a conventional system seems possible.

By ceaselessly modifying their organization and their products, these farmers bring into play all forms of strategic flexibility mentioned before: functional flexibility by the different uses of resources (land, building and equipment), relational flexibility by investing in local social and professional networks and technical flexibility. But for them, the central point around which they make their decisions is the ‘type of products and services’ pole.

**Type 4: ‘entrepreneurial mutation’, diversification and commercial control (farm 4)**

The last farm has initiated a major change in its activities over the last 14 years. As in the previous group, the farm strategy rests on the maintenance of diversified crops and the control of its markets. After having been one of the key players in the cooperative development of cereal collection in the county, this farmer has rapidly refocused his attention on his farm whose economic size has more than doubled. Having long been involved in organic farming, he has acquired good technical skills following major investment in machinery, building and staff. The regular increase in the size of the production has been achieved in association with new partners. Decision making is thus shared between the three associates. This strategy of growth and autonomy resulted in structural diversification whereby specific farm resources were redeployed into new activities (e.g. the setting up in 2000 of a private unit to collect cereals from neighbours) and services (e.g. the creation in 2006 of a farm gate sales and distribution activity for the catering trade). This strategy was also influenced by the bankruptcy of the main purchaser for organic poultry in 2002, a triggering factor for the processing and distribution of organic products. Over the course of time, this farm has seized various opportunities offered by organic farming by profiting from grants for conversion and investment in machinery and buildings offered by the organic national plan, and also more recently by developing direct marketing to institutional catering. Therefore, this development was achieved through a management style more open to external financial sources, and an acceptable amount of risk taking.

Thus, this farm is characterized by strong strategic flexibility (mainly functional and technical), but poor operational flexibility because of its relative inertia (much capital employed and poor mobility of staff, who are specialized). For these farmers, unlike the three previous groups, the collective decision-making process seems to lie in equilibrium between the three poles.

**Farmer strategy facing changes in the economic context**

To test the robustness of the typology presented in the previous section, we decided to analyse the farmers’ strategies facing price fluctuations of organic cereal over the course of time, which commonly affected all farms. During the last 14 years, the organic cereal market has faced different elements of instability. Whereas the French supply of organic cereals only represented 40 per cent of the industry’s needs in 1995, this percentage reached 56 per cent in 2000 and 100 per cent from 2003. This large growth was made possible by the arrival of new growers from the conventional sector, supported by conversion aid. This quick development has resulted in greater competition since 2000 inducing a decline in the price paid to producers by 30–60 per cent associated with increasing requirements from processors. Over the last five years, premiums for organic products have fluctuated considerably in accordance with the large variation on the world cereal market. Faced with such instability, three strategies have been developed by organic cereal growers:
1. **Enlargement of the size of high-value production.**
Three farms (nos 1, 2 and 3), from types 1 and 2, have concentrated investment (labour, equipment, land) in the development of perennial crops (vines) and/or specialized crops (garlic and aromatic plants) of high value, at the expense of organic cereals. The technical and economic investment in these crops (e.g. maintenance of soil fertility by regular applications of organic manure purchased from outside the farm) has led to an increase in crop yield and quality. These results have compensated for the decline in turnover represented by organic cereal. Then, these farms have reinforced the specialization rate on high-value crops (see Table 4).

2. **Limitation of inputs and diversification in rotation.**
These farmers (farms 6, 7 and 9) from type 2 decided to limit their expenditure on cereal crops (e.g. limitation of organic fertilizer and/or amendment applications; limitation of investment in machinery and/or purchase of shared machinery) and have tried to diversify crops with organic walnuts, aromatic and medicinal plants. Their objective is thus to avoid specialization of their production in cereal crops in order to limit the technical and economic risks observed in cereal production.

3. **Search for niche markets and control of markets.**
Farms from types 3 and 4 (farms 4, 5 and 8) have tended to control their market by moving into niche and expanding markets (e.g. the production of field vegetables for the export market, the development of an activity distributing processed organic products grown on the farm and direct selling of flour to bakers and consumers).

**Discussion**

With respect to the questions this paper focuses on, the following issues are discussed: (1) the place of organic production in agricultural development and in farm strategy, (2) the elements of farm flexibility and (3) farm vulnerability.

**Place of organic production in agricultural development**

Most conversions to organic farming in the department of Drôme have occurred in areas where these were supported by economic actors. For instance, conversion to organic farming has been largely concentrated in the Diois district where organic channels are guaranteed by three cooperatives (wine, aromatic plants and cereals) selling organic and conventional products. Then, the proportion of farmed land in organic production is over 20 per cent for mixed farms. Despite the large numbers of organic farms, there is no desire to critique the mainstream system. Farmers are eager to sustain social cohesion and to cooperate with conventional farmers. As do Langer (2002) and Milestad (2003), we also noticed that the shift in practice between conventional and organic farming is slight in this district characterized by extensive farming with low intensification and diversity. On the contrary, in the Plain of Valence, the organic farmers’ connections with the conventional community are weak, where the latter is characterized by intensified and specialized farming systems. Nonetheless, cooperation and networking among organic farmers have facilitated information exchange and innovation (Morgan and Murdoch, 2000). In the mid-1990s, regular exchanges between farmers had initially compensated for the lack of public support and research into organic production. More recently, the public advisory service and researchers have largely supported innovation on technical issues (for instance, on nitrogen, weed and soil tillage management). Therefore, the setting up of an active organic farmers association in the late 1990s has given support to the development of an organic sector in the two cooperatives collecting grains in Diois and the Plain of Valence.

In general, organic farming reduces agriculture’s negative environmental impact, gives growers better income, maintains traditional farming practices and enhances trust among consumers (Offermann and Nieberg, 1999). Then, organic production allows farmers to maintain their identity and social cohesion with other farmers, consumers and also citizens. These conditions can potentially play an important role in making the farming system more sustainable from an economic and environmental point of view.

**Role of organic production in farm strategy**

Milestad (2003) has demonstrated that organic principles match elements determining farm resilience, defined as the capacity of a system to undergo disturbance while maintaining its key functions and controls (Holling, 1996). Nonetheless, the motives behind conversions to organic farming differ, as well as the degree to which the organic principles are known and striven for. In this case study, farmers’ experiences with organic farming are strongly connected to EU and national policies developed in the late
1990s. However, the farmers’ assessment of organic farming revealed different approaches. Some farmers (type 1 and partly type 2) describe their desired system as a holistic structure that incorporates social, economic and ecological features that promote both long-term survival and short-term viability. Farmers’ willingness can be described as containing elements of social, ecological and economic issues conducive to sustainable development. They promote small-scale family farms, diversity and environmentally friendly practices characterized by a low level of mechanization and limited usage of external inputs. In this context, traditional farming practices were sustained and developed with organic farming. In times of low economic viability in extensive livestock (sheep and goat) production, the conversion to organic can offer some security for farmers, achieved through public support and higher prices. In this specific situation, the conversion to organic farming linked with diversification enables extensive livestock farmers to stay in business, maintain economic viability and long-term survival, and preserve traditional practices and landscape management. Other farmers (types 3 and 4) identify organic farming mainly with the EC regulation and EU policies support. The general aim is to improve economic viability; farmers may adapt to policies, regulation and market pressures rather than to the environmental and social issues. Regulation is a common requirement for all organic farms – these farms focus on complying with the minimum requirements demanded by regulation, whereas the others try to adhere to IFOAM organic principles (IFOAM, 2009). These farmers consider conventional agri-business useful for building and supporting the organic market. They want to be active in and/or control niche markets. Then, they have to cope with stipulations from processing and marketing channels as regards traceability, homogeneity, regularity and volume. Consequently, these farms tend to increase specialization, scale (e.g. labour force and area) and input intensification. The intensification of agriculture and a dependence on standardized production methods imply a decrease in diversified farming systems. For instance, the development of high-value products (wine, fresh vegetable products for the export market) meant simplification and less investment in the organic grain sector.

### The elements of farm flexibility

The results section has underlined different dimensions of flexibility applied on farms. Elements of farm flexibility are discussed in this section.

### Farm structure

In the ‘Farmer strategy facing changes in the economic context’ section, we have shown that diversification can be used as an adjustment strategy to respond to a change in the context, such as price variability, which has a direct bearing upon farming (Ilbery et al., 1996). While the specialization and intensification process in western industrial agriculture has been forced by the agri-business sector, diversity of products was a means of spreading the technical and economic risk across different productions. It helps farmers retain the capacity to reorganize the system,
enabling them to master sudden changes without collapse.

Industrial development or diversification into higher value-added crops (wine, field vegetables) often demands large investments (technology, land and labour) and is therefore only an option for medium- and large-sized (economic and land) farms, observed in types 3 and 4, managed by younger households or by farmers with an identified successor. The group of farms that have followed a commercial pathway are mainly characterized by their significantly large size (e.g. individually for type 4 or in groups for types 3) enabling them to provide sufficient volume and to negotiate with processors and distributors.

In Diois county, non-availability of land at a reasonable price, especially for wine production, hinders those farmers who wish to expand their holdings. Nonetheless, additional benefits obtained from organic wine (with a premium of over 30 per cent compared with conventional wine) have allowed some wine growers (e.g. farms 1 and 2) to enlarge land for wine production.

**Professional membership and social networks**

The interviews revealed that most of the organic farmers are now involved in strong professional memberships which were absent 14 years before. These farmers’ networks, involving links with public advisory services and research institutions, have strongly improved professional information on how to solve some technical and economic problems originating on the farm. Networks can create flexibility in problem-solving and a balance of power and innovation among interest groups (Milestad, 2003). Therefore, many farmers (see types 1, 2 and partly 3) tend to employ strategies in the sphere of reciprocity with other farmers and family members (Meert et al., 2005). Even though individualization is a general trend in West European agriculture, social networks can play a determining role in organic and, more generally, alternative agriculture. For instance, joint initiatives such as the use of common specific materials (e.g. for compost or weed control) or the joint purchase of inputs or sales of farm products improve economic sustainability. Finally, the commitment between farmers and consumers or citizens facilitates collective initiatives (e.g. communication on organic food, advisory support services and investment in specific equipment) supported by public institutions.

**Pluriactivity and family household's goals**

Pluriactivity refers to the percentage of households with at least one spouse having an off-farm gainful activity as his/her main occupation. Pluriactivity is viewed as a complementary source of income that improves risk-taking in the adoption of alternative farm production activities and diversification. In our context, 75 per cent of farms have off-farm resource coming from a spouse’s external job (farms 3, 4, 5, 7 and 9) or tourism activity (farm 6). While farm families are inevitably penetrated by external sources of capital, they also retain significant flexibility and freedom of movement in adapting to the changing demands of markets, technology and the shifting relations in production (Gasson and Errington, 1993).

Adoption of alternative options such as organic production depends also upon the choice of family farms’ survival strategies in an ever-changing and often adverse socioeconomic environment (Padel, 1994). The changing gender roles are also a good explanation for the long-term strategy. First, women were partly responsible for the disappearance or reduction in livestock production on the farms (e.g. farms 1, 2, 5, 8 and 9) and preferred off-farm employment. Second, women are responsible for housekeeping and gardening, and many of them take an interest in health of people, animals and the landscape (Egri, 1999). On the contrary, these farms are most vulnerable to changes in agricultural policy, since they face the threat of a reduction in total family income should the family unit fall apart. For instance, the paradox of the specialization process of ‘purist’ farm 1 is essentially explained by his divorce in the year 2000.

**Farm vulnerability**

Key elements of farm vulnerability, observed on different farms and/or expressed by the farmers, are discussed in this section.

**Spatial impact**

One of the assumptions underlying the decision to carry out interviews in two counties was that survival strategies and development paths may differ between regions depending on three factors: firstly, whether organic farms are surrounded by other organic producers; secondly, whether organic farmers are surrounded by stakeholders such as advisory services and cooperatives; and thirdly, whether they are situated in the vicinity of large cities where consumption
of organic food is higher. Regarding the first question, the results of the interviews indicated the strong influence that local social networks had on the development of organic agriculture. While collective initiatives are dominant and active in Diois county, farmers in the Plain of Valence tend to find individual solutions outside the framework of a cooperative. The second question regarding the role of stakeholders did not influence the development of organic agriculture when policies are applied at a regional or national level. Finally, the impact of nearby urban centres did not influence the market issues of cereals, wine and aromatic plants as these markets are more national or international. The marketing channels in the Plain of Valence, near big cities like Valence and Lyon, are more or less similar to those in the isolated county of Diois. Nonetheless, the impact of nearby urban centres seems to play an important role in determining the direct sale of fresh products like vegetables and fruit.

**Technical issues**

The specialization process observed in organic systems meant the limitation of complementarity between crop and animal systems, which has led to a deficit of manure fertilizers on most farms and an overload on others (e.g. farms 4 and 5 have maintained poultry production inside or outside the organic sector) (Björklund *et al.*, 1998; David, 2000). Therefore, the EC regulation 1804/1999 for animal production has restricted the use of composted chicken manures from conventional origins while overproduction exists in this sector. Then, N management is one of the most limiting factors affecting yield and quality performance of organic cereals (Casagrande *et al.*, 2009). Therefore, weeds (Bond and Grundy, 2001), pests and diseases (van Bruggen, 1995) and soil compaction (Peigné *et al.*, 2007) tend to limit organic performance. Further scientific and technical knowledge should be developed to avoid or limit harmful abiotic factors observed on organic crops.

Others elements like price variability (see the ‘Farmer strategy facing changes in the economic context’ section) and the human and financial structure of the farm family are elements of vulnerability discussed in previous sections.

**Conclusion**

The first point is to notice that monitoring farm performance and farmer’s strategy over long periods of time is a good way for understanding the adaptive capacity and response of farmers to changing circumstances, as flexibility must be analysed in a multi-period rather than in a mono-period context. Moreover, both decisions and incidence in farm system management do not always fit a specific event and it seems not optimal to assess them on a period-by-period basis. This paper underlines the relative flexibility and innovations of organic farmers in conditions where technical and economic risks are important.

The originality of this approach was also to analyse conjointly the evolution of the farm structure and activities and the place and role of the family households. This paper recognizes the role of the family and neighbourhood in the labour force and also more generally in the farmers’ strategy.

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**Notes**

1. Sheep breeding, selected in the 90s, was prolific but with a low level of resilience. This production was not adapted to the EU policy support for animal production based on livestock unit and not on performance.
2. The new national organic plan fixed, for 2012, a minimum level of 20% of organic food in institutional catering.
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