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1. Introduction

Over the last decade, growing interest in organic products can be observed in the economic literature concerning food quality and safety (Bonti-Ankomah and Yiridoe, 2006). Although many empirical economic analyses have been carried out on organic farming and on consumer behaviour, the same attention has not been paid to the processing sectors and the relative retailing coordination within the organic supply chains.

The paper aims to study the features of the processing sector in terms of quality management capability of firms and vertical organisation of the organic supply chains in six EU Nuts II regions. These regions are Lombardy and Tuscany for Italy, Rhone-Alpes and Paca for France, Catalunya and Murcia for Spain. The data were collected by an *ad hoc* questionnaire. Such regions have been selected as they are included in a European project (Medocc–Interreg IIIb) regarding cohesion among Mediterranean countries. On the basis of Eurostat data, in 2003, 53% of the UE-15 organic operators were concentrated in the three analysed countries (France, Italy and Spain) (Rohner-Thielen, 2005), but over the 2000-2004 period the number of organic farmers in these countries decreased, whereas the number of organic processors increased by 30%.

The paper is structured as follows: section 2 describes the economic issues of the market of organic products; section 3 explains the survey conducted and the methodological issues; section 4 analyses the results and the concluding remarks are set down in section 5.

2. Economic issues

In the *European Action Plan for Organic Food and Farming* (EAP) (Commission of the European Communities, 2004) the organic farming is viewed as a sector producing public goods that are "primarily environmental benefit but also public health"; at the same time, according to the consumer perceptions, "the motive for consumers to buy organic products is linked to health and taste". With the aim of grant the policy actions outlined in the EAP, at the end of year 2005, the Commission has presented a Regulation proposal on *organic production and labelling of organic products* (Commission of the European Communities, 2005) as a revision of Council Regulation n. 2092/91 on organic production of agricultural products. The proposal underlines that "farming shall aim at producing products of high quality instead of maximising production".

At international level the link between environmental issues and quality and safety attributes are underlined in the organic products principles sanctioned by the International federation of organic agriculture movements (IFOAM, 2005): "organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being".

On the other side, over the last years the economic literature about quality and safety attributes of organic products has been receiving a growing interest. With regard to consumer concerns, and in line with the EAP document, a number of studies have underlined that safety, quality and health play the most important role in consumer preferences about organic foods (Bonti-Ankomah and Yiridoe, 2006). Moreover, in the economic literature many analyses have pointed out a relevant consumer willingness to pay premium prices for organic products (Canavari *et al.*, 2002).

In this context, considering that consumer choices are related to the perception of quality and safety attributes, in the processing sector firms are leaded to develop appropriate strategies to ensure, and communicate, such characteristics.

Therefore, in order to achieve a premium price, firms strategy for organic products should be based on quality management, certification system, labelling and brand image. Such instruments could involve process control, inspection, testing and identity preservation (Antle, 2001).

For organic products, typically evaluated as credence good (Nelson, 1970; Darby and Karni, 1973), quality strategies help to transform the credence characteristic into search attributes (Bonti-Ankomah and Yiridoe, 2006), leading to a reduction of the asymmetric information level.

As a consequence, quality management strategies can affect vertical relationships in the supply chains, adopting contracts, agreements and other tools of vertical organisation.

3. Methodological and empirical issues

To analyse the supply chains of the organic products in the six Mediterranean Regions we carried out a sampling survey during the winter and spring 2005. We created an *ad hoc* questionnaire subdivided in the following parts:

- general information of the firms,
- production features and quality management,
- raw materials supplying,
- commercial channels.

Most of the questions were in a multiple choice format, although in each part there was the possibility for open answers to improve the understanding of that section (Kalton, 1983).

The survey was based on a sample of 304 firms stratified on the basis of the six regions involved in the study. During the sampling stage, the main objective was to set up sub-sample representatives of the respective regions even though this yielded a quite inhomogeneous total sample.

The sample was subdivided into two parts: 67% are processing firms and 33% are retailers. As for retailers, 92% of them are shops specialized in organic products and 8% are modern grocery retailers (supermarkets and hypermarkets).

Due to the different characteristics of organic supply chains among the six involved regions, the regional sub-samples were stratified, as far as possible, to be representative of the existing structure.

However, it is important to underline that the sample of processing firms comprises a variety of production, processing and commercialisation activities all within the same firm. This characteristic is more evident in regions like Tuscany and Murcia, and in this case the activity which appeared to dominate was the one chosen.

Concerning the processing firms, 83% of the total sample belongs to the food sector, the remainders are firms that process aromatic and medicinal organic plants.

Some differences exist among the six sub-samples: Catalunya is mainly characterised by animal productions; in Lombardy firms focused on processing bread, dairy products, and pasta represent more than 50% of the total; in Murcia the majority of the companies belong to the fruit and vegetable sector; the Rhone-Alpes region is characterised by 33% of firms producing aromatic and medicinal organic plants; Tuscany has a high quota of farms devoted to agritourism, integrating the various steps from production to commercialisation.

4. Results

Results revealed that a relevant problem that emerges from the survey involves the assurance of safety and quality levels for organic products. Production regulations, more restrictive than those of EU law, are particularly widespread in Rhone-Alpes, Lombardy and Murcia; quality controls are widespread throughout the six regions, and in Lombardy and Rhone-Alpes a significant number of firms have adopted ISO certification.

An interesting case is represented by Lombardy where the interviewed firms underline the importance of quality controls for organic products and 65% of them state that the existing controls are adequate. Indeed, controls can avoid potential scandals that can occur in the organic sector.

An important aspect that emerge from the analysis is the price of the organic products, as it is higher with respect to those of conventional products. For 10% of the firms prices are increased more than 40%; for 37% of the firms premium prices range from 20% to 40% and for 36% of the firms from 10% to 20%. On the other hand, for 17% of the firms no increase in prices is practised.

With regard to the trade channels of the processing firms, the survey revealed that 29% of the firms use shops specialized in organic products, direct sale are used by 25% of the firms, while only 21% of the firms state that they use supermarkets as the main trade channel. Wholesale trading is used by 14% of firms, while canteens, restaurants and agritourism activities constitute channels that are not widely used for organic products. Exports can also represent a commercial channel for organic products, as in the case of Rhone-Alpes, Paca and Murcia. The shops specialized appears particularly important in regions such as Paca and Catalunya.

The 75% of the firms declare that they intend to develop the organic sector in the future, indicating that the organic market enjoys possibilities for further growth. In Murcia and in French regions, is quite high the number of firms that intend to increase organic products, while in Lombardy it appears to be limited.

Concerning the provisioning, half of the firms interviewed (45%) use agricultural commodities for the transformation process, while the 27% use semi-finished items together with agricultural raw materials. Therefore, the 72% of the firms of the sample have a direct connection with farms. On the other side, 22% of the firms use, for the most part, either semi-finished items or finished products.

It is therefore possible to say that, in general, organic production chains display more intensive vertical coordination between agriculture and the processing sector than conventional chains, and this is evident in the high level of purchasing relative to raw materials and agricultural semi-finished items.

More specifically, in Lombardy, Tuscany and Murcia the supplies for more than 60% of the firms are based on agricultural raw materials, while in Rhone-Alpes some 78% of firms use both agricultural and semi-finished products.

National, local and regional are the most representative geographical markets choose by firms to sell their products. Particularly, national markets are used by 31% of firms in the sample, local markets by 30%, and regional market by 22% of the firms.

As for supplies modalities, the majority of firms use supply contracts (55%), while the spot market is used by 23% of firms.

The majority of the processing firms (60%) have not indicated any excessive bargaining power on the part of their customers. This fact can be explained by the significant diffusion of commercial channels which do not exercise strong vertical competition, as the organic specialized shops and direct sales.

With regard to retailers strategies, the retailers choice to sell organic products is related to the consumer willingness to pay a premium price for quality and safety attributes. The retailers consider the quality of organic production to be an advantage in characterising the sector. The survey underlines that the premium price most frequently applied by retailers ranges from 10 to 40%.

5. Concluding remarks

The analysis has revealed that, for processing firms of organic products, a very relevant aspect concerns the assurance of product safety and quality levels. The premium prices that processing firms expect to achieve range from 20% to 40% for 37% of the firms of the sample, and from 10% to 20% for 36% of the firms.

The most important trade channels are organic shops, direct sales and supermarkets. The significant diffusion of specialised shops and direct sales leads to a limited bargaining power of retailers.

The organic chains generally display more intensive coordination than conventional chains for two factors: first, the geographical areas; second, the majority of processing firms use, for input supply, contracts that permit a greater degree of coordination.

Also for the retailers quality and safety of organic products play a crucial role particularly in the willingness to pay of consumers for such products.

With regard to the perspectives of development for organic products, both processors and retailers state their intention to develop this sector in the future, even if in some regions such as Lombardy the market for organic products has not shown an increasing trend in recent years. Moreover, the survey underlines the need to clarify the position of organic products in the market, to rationalise the use of brand and to increase marketing and promotion actions.

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