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How does the choice of a marketing channel influence the adoption of organic farming?

An analysis of the French fruit production

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Abstract

Recent sanitary crises have emphasized the need for alternative food networks. The intended objectives are mainly to improve the quality of food production and marketing channels. Because changes in the food supply chains appear to be closely linked to changes in agricultural processes, this paper tackles the issue of the influence of marketing channels on the type of farming, towards organic farming. The question is salient for fruit production which is an intense consumer of phytosanitary products and for France, a country which has adopted and reinforced regulations in favour of the environment. A statistical analysis complemented with econometric models allows to measure the close link between marketing channels and organic farming. The data are issued from the 2012 "Orchard Survey", a census of French farms which provides an overview of marketing channels and phytosanitary practices. We focus mainly on two main productions, apples and apricots. The results show that there exists a strong and differentiated influence of marketing channels on environment-friendly practices. Direct selling increases the adoption of organic farming while belonging to producer organizations leads to contrasted effects.

Keywords: Marketing channels, Organic farming, Fruit production, Orchard Survey, France

Code JEL: Q12; Q13

1. Introduction

Recent sanitary crises have strengthened the requirements of consumers in terms of food safety and quality management. Thus, the whole food supply chain has been impacted, from the producers to the consumers, which resulted in the emergence of alternative food networks (Venn et al., 2006). These networks revisit the whole organization and functioning of the food supply chain, from the producer choices to the consumer behaviour (Goodman et al., 2012).

Such evolution is characterized *inter alia* by the development of quality standards (Giraud-Héraud et al., 2006), the promotion of organic farming (Sylvander and Schieb-Bienfait, 2006; Tuomisto et al., 2012) and the development of short food supply chains (Penker, 2006; Renting et al., 2003). Each of these innovations aims at providing responses to limitations encountered within the conventional food sector.

As the first link in the chain, the producer remains a key player. In, particular, he has to take two major decisions, which are the choice of both the type of farming and the marketing channel. The former is related to production practices, *i.e.* conventional farming, with the use of phytosanitary products, versus organic farming, while the latter is related to selling practices, which can take several forms, such as producer organizations, supermarkets, direct selling and transformation.

Echoing on the existing literature, these two dimensions appear closely linked (Aubert and Enjolras, 2016). Indeed, they provide information on the nature and quality of agricultural products and processes. For instance, the type of farming is associated to labels when the production is organic (Moustier and Thi Tan Loc, 2013). So are short food supply chains that the consumers can easily notice through retailing (Kottila and Rönni, 2008). A combination of practices may help reducing asymmetric information effects regarding product quality (Akerlof, 1970).

The road to organic farming takes the form of a process which may lead to a certification (Burton et al., 2003; Heckman, 2006). Consequently, the measure of pesticide use is either performed through the quantities of pesticides used (Aubert and Enjolras, 2014), the adoption of integrated pest management techniques (Aubert et al., 2013; Fernandez-Cornejo, 1996; Fernandez-Cornejo and Ferraioli, 1999; Galt, 2008; McNamara and Keith Douce, 1991) or even the adoption of labelled organic farming practices (Aubert and Enjolras, 2016).

The adoption of a type of farming is driven by several factors. The studies previously mentioned consider a set of explicative variables which take into account the farm structure (acreage and production), its financial situation (profitability and indebtment), as well as the farm holder's characteristics (age and education). The marketing channel is sometimes used as an explanatory variable, with an emphasis mainly on short food supply chains (Broderick et al., 2011; Galt, 2008; Maréchal and Spanu, 2010; Souza Monteiro and Caswell, 2009; Zhou et al., 2011). Consequently, there is lack in considering the influence of marketing channels other than direct and retail selling on the adoption of a type of farming. More precisely, to the

best of our knowledge, no work considers with a non-exclusive form all marketing channels simultaneously. This study aims at filling this gap by studying the influence of the choice of a marketing channel on the adoption of organic farming by French fruit producers.

France is one of the European countries for which phytosanitary requirements are the highest, following the implementation of EcoPhyto I (2008) and Ecophyto II (2015) frameworks, whose objectives are to reduce the intensity of pesticides use in the French agriculture. Fruit production is a relevant sector to be considered insofar as fruits represent less than 1% of the agricultural area but more than 5% of the phytosanitary expenditures. With an amount of pesticides expenses close to €600 per hectare, this sector is the most intensive consumer of pesticides (Butault et al., 2012).

France is also a country in which food supply chains are changing, with a remarkable dynamics in favour of direct and retail selling. In 2010, 27% of fruit producers were selling all or part of their produces through these marketing channels (French Ministry of Agriculture, 2010). This trend encompasses regional disparities linked to the main local productions. However, producer organizations remain the predominant marketing selling used by fruit producing farmers because they improve producers' competitive conditions (Camanzi et al., 2011).

Our analysis uses data from the "Orchard Survey" (Enquête Vergers), carried out by 2012 by the French Statistical and Forecasting Service (SSP). This sample of farms provides detailed information related to the adoption of organic farming, as well as marketing channels. In addition to the study of the overall population of fruit farms, we consider the situation of the two main productions, *i.e.* apples and apricots. While the former correspond to a national and storable production, the latter is rather regional and more perishable. The influence of the marketing channels on the type of farming, namely organic farming, is measured through an econometric modelling which considers the diversity of marketing channels and the productions mentioned above.

This article is structured as follows. In the first section, we develop the empirical strategy. In the second section, we present the results using descriptive statistics and econometric models. In the third section, we conclude and provide some perspectives.

2. Empirical strategy

In this section, we detail the main marketing channels available for French fruit producers. Then we present the specific database used and its importance in understanding farmers' choices of a marketing channel. We also illustrate the econometric model to be estimated.

2.1. Marketing channels and Organic Farming

French fruit production encompasses a wide range of products ranging from the most perishable ones (apricots, peaches...) to storable ones (apple, nuts...). Similarly, farms are very diverse in terms of species, variety, quality and quantity of produces¹. These features have a strong influence on marketing channels adopted by fruit-producing farms.

The most important of them are Producer Organizations (POs), with about 50% of volumes marketed. This is explained by the institutional context (Commission Regulation (EC) No. 1580/2007 of 21 December 2007): by marketing through POs, members-producers receive European payments included within operational programs. In that framework, POs organize generally the traceability of produces and provide the necessary means for the management of good agricultural practices (Dubuisson-Quellier et al., 2006).

Then, wholesalers encompass about 25% of volumes traded. As intermediaries in the sector of fruits and vegetables, wholesalers implement residual control plan for pesticides residues. They ensure the traceability of their supplies by imposing specifications to their suppliers (Michel, 2014).

Another important marketing channel is that of forwarders, with 15% of traded volumes. Because they are very often involved in the importation of goods, they usually set up a voluntary self-monitoring plan designed to minimize health risks (Rouvière and Latouche, 2014).

The most dynamic marketing channel is that of direct selling (Moati and Ranvier, 2005). It refers to channels involving at most one intermediary between the producer and the consumer. This type of channels represents today about 5% of the marketed volumes. Regarding the latter, supplies are governed by specifications which impose standards of quality and traceability (Scandella and Christy, 2011). However, direct selling relies on consumer confidence through informal relationships, organic farming and associations supporting small farming (AMAP).

Finally, less than 5% of the marketed produces are intended to export or transformation.

¹ The main statistics about fruit production in France are available on this website: www.agreste.agriculture.gouv.fr/enquetes/productions-vegetales-528/vergers-et-fruits/

According to recent data from the Agence Bio² (2016), the market share of organic farming produces represents about 14% of overall production for fruits and the most consumed vegetables in France. Specialty stores sell the largest share (43%) while mass retail accounts for 30% and direct selling for 27%. If we consider the only fruit production, specialty stores account for 45%, mass retail for 32% and direct selling for 23%.

2.2 Database

The empirical analysis developed in this paper is based on an "Orchard Survey" (Enquête Vergers), carried out by 2012 by the French Statistical and Forecasting Service (SSP). This survey is designed to meet one of the main objectives of the EcoPhyto 2018 framework: the characterization of phytosanitary practices. Hence, this database lets appreciate both the degree of use of phytosanitary products (through the number of treatments) and the implementation of alternative practices (measured by the number of auxiliaries).

All farms producing fruits are considered but the sampling is quite complex to allow results being representative of a specific fruit on a specific region. More precisely, two subpopulations are considered: on the one hand farms producing apples, apricots, peaches, kiwis, citrus, nuts or plums and on the other hand farms producing pears, cherries and table grapes. For each production, farms are surveyed if they produce at least 2.47 acres for the former and at least 1.24 acres for the latter.

Once identified, two strata are implemented. First, for the main producing region, and for each production, farms are selected. Then, for each of these farms, plots are surveyed. A plot is defined mainly by the same variety and the same fruit specie. Hence, the "Orchard Survey" is representative, for each fruit production, of all regions surveyed. The stratification implemented lets appreciate the main productive regions.

For each farm, the database references both cultivated produces and the associated marketing channels. We then know the acreage and the volumes sold using each channel. In addition to these data, the database provides individual information on the farm such as its usable agricultural area, its acreage, its region, its main activity and its status.

This database is both the most precise available at the farm and the plot levels, and it is also the most comprehensive and recent that we have. Table 1 summarizes the variables used for the analysis.

Table 1. List of variables used in the analysis

We focus more specifically on two main productions, apples and apricots, which concentrate most of fruit area under cultivation (Figure 1). Productions of minor importance such as

² Agence Bio is a French agency for the development and the promotion of organic farming: <http://www.agencebio.org>

peaches, plums, cherries, pears, nuts, kiwis, citrus and table grapes are therefore not considered in the analysis.

Figure 1. Relative importance of some fruit productions in total fruit acreage.

In addition to their relative importance in overall fruit production, apples are produces that are non-perishable and can be stored. Moreover, many sources of supply exist. Conversely, apricots are very perishable produces, which require a local supply. A comparison of these different productions is supposed to provide contrasted results.

In this study, we are considering immediate marketing channels and not the end destination of the produces. Consequently, export sales correspond to exports made by a producer by himself. Produces sold abroad through a producer organization are recorded as exports.

Considered marketing channels include: producer organizations, wholesalers, exporters, direct selling, supermarkets and hypermarkets, forwarders and transformation. An overview of the relative importance of each channel is provided in Figure 2. This figure considers the distribution of quantities of fruits sold. Two main differences can be noticed: (i) between produces and (ii) between types of farming.

Apples seem representative of the fruit production regarding marketing channels. 60% of volumes are sold through producer organizations, and 20% through wholesalers. The situation is different for apricots. While producer organizations represent the preferred marketing channel (more than 35% of volumes sold), wholesalers and forwarders are also favored by producers. Such differences lie in the nature of the produce, apples being standard and calibrated fruits that can be sold using mass-market channels. By contrast, apricots are fresh fruits that can be sold using alternative channels.

The adoption of organic farming translates into differences in marketing channels. The most salient evolution is the dramatic decrease in the share of forwarders while the share of direct selling is strongly increasing. The reason lies in the image of quality which is much more conveyed by close relationships between producers and consumers. A slight increase is also noticed for transformation and wholesalers while organic farming does not influence volumes sold using producers organizations and super/hypermarkets.

Figure 2. Distribution of marketing channels for apples, apricots and overall fruit production according to farming practices.

One should note that when a producer is involved in a producer organization, by construction almost all his production is sold to this structure. Table 2 indicates the share of the production sold through producer organizations (PO) when a farmer belongs to one of them. For instance, apple producers involved in a PO sell 94.5% of their production to this PO when they practice conventional farming and 86.9% of their production when they practice organic farming. No significant difference can be noticed among considered produces and types of farming. We

can therefore consider that a farmer has basically two choices: selling through POs or using a combination of other marketing channels.

Table 2. Share of the production sold through producer organizations for a farmer involved in one of them

2.3 Econometric modelling

The adoption of organic farming is determined using an econometric model. We specifically chose a logit model because it clearly differentiates the choices made by farmers involved in retail selling.

Formally, the model considered can be defined as follows:

$$(1) \quad \text{Organic farming} = \alpha + \beta * \text{Marketing channel} + \gamma * \text{Acreage} + \delta * \text{Region} \\ + \theta * \text{Activity} + \xi * \text{Farm status} + \varepsilon$$

Where α represents the constant, β , γ , δ , θ and ζ the coefficients associated with each group of variables and ε the residuals.

Because selling through producer organizations is almost exclusive (Table 2), we estimate for each type of fruit separate models. The first one includes wholesalers, exporters, direct selling, supermarkets and hypermarkets, forwarders and transformation, while the second one is restricted to producer organizations.

3. Results

In this section, we present the results of the descriptive statistics and of the econometric model (6 regressions), which enable us to understand the adoption of organic farming. We therefore distinguish farms committed to organic farming from conventional farming.

3.1 Descriptive statistics

5.9% of fruit producers adopt organic farming but this proportion amounts to 6.9% of apricot producers (18% of overall organic fruit producers) and 9.8% of apple producers (44% of overall organic fruit producers).

Marketed quantities for organic farming are generally lower on average and less volatile (Table 3). This result is particularly significant for apricot production, whatever the marketing channel considered. It is also noticed for apple production, especially direct selling and super/hypermarkets. Indeed, organic farming is associated to smaller farms and smaller volumes. The only exception to the general trend is related to apples and the overall fruit production sold through producer organizations. In that case, volumes are a bit higher for

organic farming compared to conventional farming, which denotes a group strategy fully oriented towards organic farming.

Table 3. Marketed quantities according to the marketing channel, the produce and the type of farming

The distribution of organic farming among the French regions highlights some differences (Table 4). For instance, organic apple production tends to be underrepresented in the biggest fruit producing regions. This result is similar for overall fruit production, which can be related to the importance of apple production in total fruit production. Conversely, some regions concentrate organic apricot production, such as Languedoc-Roussillon and Provence-Alpes-Côte d'Azur which are located in the South of France.

For all productions but apples, farms are mainly not operated individually, and this proportion increases for organic farms. Quality farming tends to rely on a personal initiative. Because apple production is mainly sold through producer organizations, it seems there exists a kind of collective dynamics for farmers involved in organic farming.

While most of farm holders are male, the proportion of female is slightly higher for farms involved in organic farming. One should note that not all farms have provided this information.

Table 4. Distribution of the types of farming according to the main variables

3.2 Econometric model

We complement these descriptive statistics by econometric models that explain the adoption of organic farming considering the set of explicative variables exposed earlier. The results are presented in Table 5.

Table 5. Econometric models

The analysis emphasizes that some marketing channels are prone to organic farming. The effect is more stressed for apple and apricot producers compared to the overall fruit production.

In particular, we notice that selling produces through wholesalers, forwarders and exporters, *i.e.* without direct access to consumers, incites farmers to adopt organic farming. In that case, the farmer's commercial strategy is to evolve towards better quality, which may lead to higher valuation of his production. In line with this remark and as expected, direct selling provides strong incentive to adopt organic farming. In that precise case, farmers and producers interact closely, so that there exists a natural and inherent convergence between an environment-friendly production process and a short supply chain.

Producer organizations represent an exclusive marketing channel. The model emphasizes differentiated effects on organic farming adoption according to the produce: a negative influence for apples, a positive influence for apricots and no significant effect regarding overall fruit production. Since producer organizations benefit from European subsidies to encourage farmers implementing environment-friendly practices, concerned farmers are more likely to adopt the organic farming label (Dubuisson-Quellier et al., 2006). Such effect is noticed in practice for apricot producers, while the opposite effect observed for farmers producing apples. Because producer organizations are the leading marketing channel for apples, a storable produce, the change in farming practices may not be obvious for concerned farmers. Conversely, producer organizations may represent an opportunity for apricot producers to adopt organic farming.

The most important regions specializing in fruit production (Aquitaine, Limousin, Provence-Alpes-Côte d'Azur and Rhône-Alpes) are generally more willing to adopt organic farming because of the favorable commercial environment in these regions. Finally, being an individual farm does not provide enough incentives to adopt organic farming, probably because of the efforts necessary to implement this type of farming.

4. Conclusion

In this article, we have proposed to analyse the link between the choice of marketing channels and the adoption of organic farming. The existing literature emphasized a strong link between these two main aspects of farm production processes. The question is of importance for fruit production, a sector which is an intense consumer of phytosanitary products and which is prone to the adoption of alternative supply chains.

This study focused on French fruit producing farms, by considering the overall fruit production and two main produces, apples and apricots. Data came from the 2012 "Orchard Survey", a census of French farms which provides an overview of marketing channels and phytosanitary practices.

The results were threefold. Firstly, they confirmed the existence of a strong and positive relationship between short food supply chains and organic farming, these two strategies being oriented toward increased produce quality. Secondly, they highlighted other influences (wholesalers, supermarkets) that were not considered until now. Thirdly, they emphasized the strong and differentiated influence producer organizations on the adoption of organic farming.

These results proved the interest to study the main fruit produces. It would be of interest to extend the analysis towards other fruits and even other crops. Because most farmers are able to combine marketing channels, an analysis of the interaction between them would also be relevant. In terms of public policies, the knowledge of (marketing) strategies suitable for organic farming may improve the way farms are able to adopt new patterns of production.

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Table 1. List of variables used in the analysis

Variable		Unit	Definition
Usable Agricultural Area		Hectare	Cultivated area
Marketing channels	Producer Organizations	Production	Production sold through producer organizations
	Wholesalers		Production sold through wholesalers
	Exporters		Production sold through exporters
	Direct selling		Production sold through direct selling
	Super & Hypermarkets		Production sold through super and hypermarkets
	Forwarders		Production sold through forwarders
	Transformation		Production sold for transformation
Main activity	Wine-growing	Yes/No	Farm specializing in wine-growing
	Fruit production		Farm specializing in fruit production
	Other activity		Farm specializing in another activity
Regions	Aquitaine	Yes/No	Farm located in Aquitaine
	Centre		Farm located in Centre-Val de Loire
	Languedoc-Roussillon		Farm located in Languedoc-Roussillon
	Limousin		Farm located in Limousin
	Midi-Pyrénées		Farm located in Midi-Pyrénées
	PACA		Farm located in Provence-Alpes-Côte d'Azur
	Rhône-Alpes		Farm located in Rhône-Alpes
	Other region		Farm located in another region
Farm status		Yes/No	Individual farm (ref) or Group of farms
Gender		Yes/No	Gender (ref = man) of the farm holder (<i>information partly missing</i>)

Table 2. Share of the production sold through producer organizations for a farmer involved in one of them

	Apples	Apricots	Fruit production
Conventional farming	94.55	97.42	94.87
Organic farming	86.95	97.41	94.11
<i>All farms</i>	<i>94.14</i>	<i>97.42</i>	<i>94.82</i>

Source: Orchard Survey (2012)

Table 3. Marketed quantities according to the marketing channel, the produce and the type of farming

		Apples				Apricots				Fruit production			
		Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level
Producer Organizations	Nb of farms	1274	71	1345		537	52	590		4143	270	4413	
	Mean	6607,71	7255,44	6641,96		917,25	230,66	856,26	***	2854,76	3096,49	2869,55	
	Std deviation	10200,6	13732,36	10411,39	***	1658,21	239,08	1595,29	***	6637,89	9043,53	6807,05	***
Wholesalers	Nb of farms	1014	112	1126		709	50	759		3036	256	3191	
	Mean	2695,7	1667,44	2593,19		496,91	185,18	476,43	***	1359,31	1227,02	1349,04	
	Std deviation	6202,89	2718,1	5954,91	**	856,63	250,34	834,19	***	4209,38	2514,24	4102,79	***
Direct selling	Nb of farms	1490	255	1746		391	43	435		2802	416	3218	
	Mean	548,07	316,73	514,24	***	86,3	39,37	81,61	***	389,41	259,67	372,62	***
	Std deviation	872,05	578,29	839,71	***	142,2	49,23	136,45	***	794,39	522,11	766,04	***
Supermarkets and Hypermarkets	Nb of farms	334	70	404		147	16	163		700	131	831	
	Mean	1766,47	525,63	1551,27	**	472,07	98,1	434,59	***	1344,4	432,33	1200,81	***
	Std deviation	3713,48	787,14	3423,85	***	835,45	139,08	802,1	**	4071,94	781,31	3762,37	***
Forwarders	Nb of farms	336	19	355		661	28	690		1735	82	1817	
	Mean	2687,12	747,46	2584,69		601,53	166,01	583,55	***	1115,36	550,88	1089,85	***
	Std deviation	4785,22	1239,24	4684,3		950,39	191,56	935,21	***	2840,01	1046,3	2786,23	**
Transformation	Nb of farms	803	177	980		140	37	177		1286	248	1534	
	Mean	428,87	265,91	399,42		72,14	22,09	61,56	***	359,49	237,2	339,7	***
	Std deviation	1660,45	713,17	1534,53		115,66	24,23	105,07	***	1401,65	667,4	1311,42	*
Number of farms		3457	375	3832		2102	156	2259		13489	845	14355	

Source: Orchard Survey (2012)

Note: Exporters have been omitted because the number of observations is not sufficient for the statistical analysis.

Table 4. Distribution of the types of farming according to the main variables

		Apples				Apricots				Fruit production			
		Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level
Region	Aquitaine	7,48	6,03	7,34		0,76	1,98	0,85		19,89	14,14	19,55	
	Languedoc-R.	6,04	6,44	6,08		29,15	43,67	30,16		11,12	16,07	11,41	
	Limousin	7,80	3,26	7,35						3,60	1,44	3,47	
	Midi-Pyrénées	13,05	12,46	12,99		2,62	1,28	2,53		12,65	10,68	12,54	
	Centre	13,22	14,66	13,36						3,97	7,33	4,17	
	PACA	20,16	15,13	19,67		14,75	20,24	15,13		14,86	17,79	15,03	
	Rhône-Alpes	16,16	17,14	16,26		51,90	32,19	50,54		24,31	17,26	23,90	
	Other region	16,09	24,88	16,95		0,80	0,64	0,79		9,59	15,28	9,93	
Main activity	Wine-growing	3,86	3,79	3,85		12,41	7,45	12,07		13,72	9,59	13,48	***
	Fruit production	76,05	74,52	75,9		69,93	75,09	70,28		56,85	67,48	57,48	
	Other activity	20,09	21,68	20,25		17,66	17,46	17,65		29,43	22,94	29,04	
Farm Status	Individual farm	55,89	51,39	55,45	*	40,56	46,43	40,97		38,52	46,03	38,96	***
	Other status	44,11	48,61	44,55		59,44	53,57	59,03		61,48	53,97	61,04	
Total		100	100	100		100	100	100		100	100	100	

		Apples				Apricots				Fruit production			
		Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level	Conventional	Organic	All farms	Significance level
Gender	Female	17,32	21,6	17,78	*	19,13	20,1	19,19		23,06	23,48	23,08	***
	Male	82,68	78,4	82,22		80,87	79,9	80,81		76,94	76,52	76,92	
Share of farms for which this information is not available		55,89	51,39	55,45		40,56	46,43	40,97		38,52	46,03	38,96	

Source: Orchard Survey (2012)

Table 5. Econometric models

	Apples		Apricots		Fruit production	
<i>Marketing channel</i>						
Wholesalers	0.0001***		0.0020***		0.0001	
Direct selling	0.0005***		0.0045*		-0.0000	
Super and Hypermarkets	0.0001		0.0019		0.0000	
Forwarders	0.0008***		0.0039***		0.0006***	
Transformation	-0.0001		-0.0031		-0.0001*	
Producer Organizations		-0.7780***		0.3152*		0.0130
<i>Acreage</i>						
Usable Agricultural Area	0.0001	0.0001	-0.0001	0.0002	0.0001***	0.0001***
Usable Agricultural Area Squared	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
<i>Region (ref: Other)</i>						
Aquitaine	0.7181**	0.4206*	0.1796	-1.0023	1.2677***	0.7697***
Languedoc-Roussillon	0.2771	0.1962	-0.4378	-0.2793	0.1060	0.1743
Limousin	-0.1853	0.8499***			0.8601***	1.4014***
Midi-Pyrénées	0.0476	0.2699	0.6139	0.6625	0.5109***	0.6432***
Centre	-0.0418	0.1778			-0.2458	-0.0282
PACA	0.7495***	0.6906***	-0.2626	-0.2695	0.1336	0.2975***
Rhône-Alpes	0.5156***	0.3893**	-0.1727	0.4139	0.8090***	0.8129***
<i>Main activity (ref: Other)</i>						
Wine-growing	0.2524	0.1489	0.8127**	0.5685	0.3719**	0.4277***
Fruit production	-0.0230	0.1200	-0.0354	0.1425	-0.2154*	-0.1256
<i>Farm Status</i>						
Individual farm	-0.3065**	-0.0643	-0.8248***	-0.6436***	-0.7112***	-0.4747
Intercept	1.0569***	1.3665***	1.5996	1.5697	1.7254***	1.8170***
Concordance rate (%)	66.6	63.7	74.6	66.5	76.0	63.2
Number of observations	3 833		2 259		14 355	

Source: Orchard Survey (2012)