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Highlighting a Key Question for the Common Agricultural Policy: Adoption of Agriculture System Types

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ABSTRACT

One of the key questions that concerns policy makers, related to the long term planning of the EU's Common Agricultural Policy (CAP), is the form of agriculture that farmers intend to follow in the future. In order to highlight that question, a sample of producers from the region of Eastern Macedonia and Thrace in Greece were surveyed and analyzed in order to identify and assess the factors that influence farmers' adoption of organic, conventional or integrated agriculture systems. The paper methodologically applies double-valued logistic regressions, one for each form of agriculture, to the selected sample. Results indicate that producers' training and high awareness of CAP policies are positively correlated with the future adoption of organic farming systems, while the adoption of integrated agriculture depends on producers' age as well as their positive or negative opinions regarding the conventional agricultural system.

Keywords: *Agricultural Policy; Common Agricultural Policy; Organic Agriculture; Integrated Agriculture.*

Jel Classification Codes: *Q18, Q15, Q10*

1 Introduction

Conventional agriculture, which has been the predominant agricultural system in the past decades, has contributed among other factors, to increased agricultural productivity and sufficient market supply of food products, wholly improving farmers' living standards (Tracy, 1989). However, this intensive agricultural system was considered the main driver for several environmental challenges, such as surface and groundwater pollution, organic matter decline, soil erosion and exploitation of scarce water resources (Ferrigno et al 2005; Fotopoulos, 1999). In response to the aforementioned issues, alternative production systems have been proposed. Those alternatives, which constitute the main trend of modern agriculture, employ innovative cultivation techniques aiming at the sustainable management of agricultural resources. According to Pacini (2003), the main agriculture system types of sustainable farming that implement integrated management of the production process and reduce environmental impacts are organic farming and integrated agriculture.

Organic farming is one of the feasible agriculture systems that is followed in order to balance the negative effects of conventional agriculture. In organic farming, the use of chemical synthesized fertilizers and plant protection chemicals are excluded from the production process (Feret & Douget, 2001). The final agri-food products are of high quality, offering significant comparative advantages to the producers in relation to environmental protection (MacDonald et al., 2000; Stolton, 2002). Indeed, there are enough researchers who suggest organic farming as an indisputable system of sustainable agriculture that meets all the criteria of sustainable environmental management (Padel et al., 2002).

The concept of integrated agriculture started in the mid-1990s. Integrated agriculture is based on the notion that a new integrated management system can be applied in agriculture, focusing on quality and environmental protection but with criteria not as stringent as the requirements of organic farming. In essence, the system contributes to the mitigation of all negative consequences of the conventional agriculture as proposed by the CAP objectives (Lobstein, 1999; Morris & Winter, 1999).

One of the key questions that concerns policy makers, related to the long term planning of the EU's Common Agricultural Policy (CAP), is the form of agriculture (organic, conventional and integrated) that farmers intend to follow in the future. Certainly, farmers’ adoption of decisions is affected by the subsidies and the income support measures of the Common Agricultural Policy (CAP) (Tzouramani et al., 2009, Stolze & Lampkin, 2009, Daugbjerg et al., 2010), but it is not clear if there are other factors that may influence producers’ choices. Thus, the main objective of this work is to identify and assess the factors that influence Greek producers' future adoption of one of the three types of agricultural systems. In order to fulfill this objective, the paper is based on the collection of primary data from a sample of producers in the region of Eastern Macedonia and Thrace in Greece. Since analogous data is not readily available, and official statistics concerning integrated agriculture at national and European levels are limited, the innovative character of the research is based on the analysis of primary data giving important clues to policy makers, since today, as Mzoughi (2011) highlights, the dependency of policy measures on primary data is quite necessary within the context of the forthcoming CAP reform (Mzoughi, 2011).

The rest of the paper is organized as follows. The next section describes the methodology of data collection and the third section of the research is focused on the applied methodology. Then, the main results of the applied methodology are presented and analyzed. The paper concludes with the discussion of the results and the final conclusions.

2 Sampling and methodology

Primary data were collected from six prefectures (Serres, Drama, Kavala, Xanthi, Rodopi and Evros) of Anatoliki Makedonia and Thraki in Greece. In those prefectures all the cultivation types which belong to organic, integrated and conventional agricultural are localized, covering a fifth of the total relevant farms in Greece. Specifically, these regions include 871 organic agriculture farms (totaling 6,494 hectares) and 27,234 integrated agriculture farms (totaling 97,035 hectares). In total, in this area 162,684 cultivation units are included occupying 340,000 hectares. Within this region nine farming types of integrated agriculture were identified. All aforementioned farming types also belong to the conventional group. For the selection of the producers' sample in each type of agriculture, a stratified random sampling for distribution (according to Neyman's method) was applied (Yamane 1967; Siardos, 2009). Simple random sampling was applied within each stratum, and the final sample size was the sum of the samples of the partial strata. In this way, the required information from each stratum of the target population was ensured. Because stratification should be based on those variables that are expected to be directly connected to the basic variables of the research (Daoutopoulos, 2011), a "stratum" was defined as the type of cultivation of each form of agriculture. Therefore, the sample size was estimated by the following formula:

$$n = \frac{(\Sigma N_h s_h)^2}{N^2 D^2 + \Sigma N_h s_h^2}$$

The sampling units in every stratum are provided by the following formula:

$$n_h = \frac{N_h s_h}{\Sigma N_h s_h} \cdot n$$

where:

- D = the desired standard error given by D = d / z,
- d = the desired accuracy [equal to half of the confidence interval or subjects specified],
- z = the reliability coefficient corresponding to a probability level),
- sh = the typical value deviation of farm size in each stratum calculated according to data in farm population,
- Nh = the population of each stratum,
- N = the total sample population.

As regards the questionnaire, the research includes farm holders belonging to each of the three different forms of agriculture. Indeed, 122 organic, 150 conventional and 149 integrated agriculture producers were interviewed using a uniform questionnaire which was structured in three sections. The first unit included questions concerning both demographic and personal data of farm leaders (e.g., sex, age, family status, origin and education), as well as the farmers' relationships with organized groups and their incorporation into subsidized programs. The second unit contained questions about the general characteristics of farms (e.g. form of exercised agriculture, disposal, certification type and subsidy type), their business gains, as well as issues concerning the implementing measures of the CAP regime and producers' satisfaction from their application. The third unit comprised questions concerning farmers' positions towards the CAP, in particular towards those factors that affect the application of organic, integrated and conventional agriculture. Finally, information was collected regarding farmers' intentions to be engaged in a specific agricultural system and to retain or abandon this approach.

The most important characteristics of farmers and farm types have been identified, with the assistance of descriptive statistics. More specifically, we calculated the frequencies in each category, as provided by frequency tables. Secondly, a one-way analysis of variance was implemented in order to verify whether a single variable differs significantly among three or more levels.

Table 1.
Key variables of the questionnaire

	Variables
1	Age
2	Sex
3	Family status
4	Place of residence (origin)
5	Level of education
6	Participation in cooperatives etc.
7	Participation in subsized programs
8	Current type of agriculture
9	Problems on product sales
10	Information availability for CAP and CAP measures
11	General opinion for CAP
12	General opinion for CAP exploitation
13	Adoption of conventional farming in the future
14	Adoption of organic farming in the future
15	Adoption of integrated farming in the future

The particular analysis is appropriate for a single factor with three or more levels and multiple observations at each level, through which we calculate the mean of the observations within each level of the factor. Explicitly, the null hypothesis to be tested is the following:

$$H_0 : \mu_1 = \mu_2 = \ldots = \mu_n$$

while the alternative hypothesis is the following:

$$H_a : \{ H_0 \text{ does not apply} \}$$

Prior to the implementation of the aforementioned test, a few assumptions have been tested including the following:

1. Each sample is drawn from a normal distribution population. Within each sample, the observations are sampled randomly.
2. Independency of the samples is ensured.
3. No heteroscedasticity problems should be detected.

The analysis of variance is quite robust in the case of small samples and unequal deviations within the groups (Field, 2009); therefore, in a study where a serious violation of the assumptions is confirmed, an alternative non-parametric analysis of variance is employed. The non-parametric techniques do not require the validity of conditions for the distribution of the dependent variable since data classification is employed (ranking). In the present study, the Kruskal-Wallis test which is a non-parametric method is used since no assumptions about the type of underlying distribution are needed to be made.

In this work logistic regression was applied in order to investigate which factors influence farmers' decisions to uptake or continue applying an agricultural system in the future. Specifically, producers were asked to declare the degree of agreement regarding the implementation of organic, integrated and conventional farming in the future or its continuation through the use of a five-point Likert scale. The answers 1 = Extremely likely and 2 = Likely have been coded as YES, suggesting that producers will follow the corresponding type of agriculture in the future, while the answers 3 = Neutral, 4 = Unlikely and 5 = Extremely unlikely have been coded as NO, indicating that producers will not adopt the corresponding type of agriculture in the future.

Thus, three dummy variables were created which were used as dependent variables in each of the three logistic regressions.

The independent variables included producers' age, agricultural income, participation in training seminars, problems in sales, satisfaction of CAP information, opinion for CAP measures, opinion for CAP measures' exploitation and a favorable or not favorable opinion for the available agricultural systems. The latter variable was mainly selected due to its importance on drawing specific political conclusions. The selection of these specific variables was based on the step process (forward selection) as it showed that the above variables are simultaneously important in three regression models, and thus results will be comparable. Following comparable analyses (e.g. Papadopoulos et al., 2016), variables concerning production costs were not included; regarding the meaning of the selected variables, their context is also straightforward due to previous experienced and common sense. Nevertheless, regarding the independent variable of "Problems in sale", this variable expresses the magnitude of the problems faced by producers of the three system types of agriculture for the sale of their products, expressed on a Likert scale.

An incentive to uptake the organic (Oxouzi, 2008) and integrated agriculture (Theocharopoulos, 2009) is the easier sale of organic and integrated agricultural products. In the model of this research, this variable does not seem to be involved as an independent one that affects the future of alternative agriculture, but it is thoroughly analyzed in the descriptive analysis modules. Furthermore, the variable of "Opinion for CAP" describes the opinion of the producers for the CAP. This opinion seems to be one of the major variables that affect the type of agriculture the producers are thinking to adopt. This specific variable affects significantly those who are thinking of pursuing organic farming. It should be highlighted that this view of the producers for the CAP is affected by the low subsidy they receive. Producers do not consider sponsoring an important factor that will lead to their decision to uptake the integrated agriculture. Producers do not consider subsidies to be satisfied with the subsidy they receive (Kourouxou, 2008). Finally, the variable "Opinion for CAP exploitation" is trying to capture the opinions formed by the producers for the exploitation of CAP measures and policies. Taking advantage of various CAP measures seems to indirectly influence producers' decisions to pursue a type of alternative agriculture, as it appears to be an important factor in adopting/continuing conventional agriculture.

3 Results

3.1 The future adoption of organic farming

In the first logistic regression, the dependent variable deals with the producers' intention to adopt organic farming in the future. The purpose of this analysis was to find out which of the independent variables have a significant effect on this decision. The model employed was the following:

$$\text{logit}[P(Y=1)] = \alpha + \beta_1 x_1 + \ldots + \beta_8 x_8$$

where *P(Y=1)* is the probability for a participant to respond to organic farming in the future, and x_i, i = 1,.....8 are the categorical independent variables.

Table 2.
Logistic regression coefficients for organic farming of the future

Independent Variables	B	S.E.	Exp(B)	95% C.I. for EXP(B)	
				Lower	Upper
Age <35 years	-0.619	(0.624)	0.538	0.158	1.830
Age 36-55 years	0.061	(0.575)	1.063	0.344	3.280
Training programs	4.109	(0.538)**	60.914	21.228	174.790
Non-agricultural income <25% of total	0.876	(0.475)	2.401	0.946	6.091
No problems in sale	0.155	(0.811)	1.167	0.238	5.725
Some problems in sale	-0.152	(0.643)	0.859	0.244	3.025
Many problems in sale	0.053	(0.581)	1.054	0.338	3.293
No Satisfaction of Information	2.279	(0.900)*	9.765	1.672	57.016
Some Satisfaction of Information	2.439	(0.863)**	11.457	2.112	62.142
Much Satisfaction of Information	2.828	(0.847)**	16.904	3.216	88.852
Positive opinion for CAP	-3.614	(0.828)**	0.027	0.005	0.137
Neutral opinion for CAP	-4.201	(1.122)**	0.015	0.002	0.135
Positive opinion for CAP exploitation	1.422	(0.751)	4.147	0.951	18.081
Neutral opinion for CAP exploitation	0.736	(0.489)	2.088	0.801	5.444
Point of view: Organic farming of the future	6.886	(0.926)**	978.140	159.363	6003.63
Point of view: Integrated farming of the future	2.979	(0.849)**	19.666	3.726	103.791
Constant	-5.715	(1.423)**	0.003		
Number of observations	421				

*= $p < 0.05$, **= $p < 0.01$, $X^2 = 41.100$ with df = 8, p-value <0.05.

Initially, the results showed that the model fits the data (Indicators R^2>0.5, Cox & Snel=0.557 and Nagelkerke = 0.743) which is confirmed by the Hosmer and Lemeshow test ($X^2 = 41.100$ with df = 8, p-value < 0.05). In addition, these specific independent variables have large percentages of correct classification of the respondents in the dependent variable categories, meaning they can predict very well whether producers will engage in organic farming in the future. It seems that independent variables predict correctly by 95.1% that someone will deal with organic farming in the future and 86.1% that they will not deal with this type of farming. The overall correct classification rate reaches 90.5%, which is very satisfactory. Table 2 illustrates the coefficients as well as the probabilities.

According to Table 1, attending training programs affects producers' decisions to deal with organic farming in the future. Specifically, those who have already attended training programs are more likely to be engaged in organic farming, while the majority are already organic farmers. Therefore, producers who have undergone some training are about 61 times more likely to deal with organic farming than those who have not attended any training program (B = 4.109 (0.538), expB = 60.914, p <0.01).

However, it should be emphasized that (bio) growers' training is mainly offered by certification bodies, and is not an obligation resulting from CAP regulations. In other words, certification bodies train their organic farmers once a year, as required by the organic management certification protocol, while the CAP does not support a corresponding training program.

Furthermore, producers' satisfaction concerning their knowledge of CAP actions seems to affect their decision to deal with organic farming. Specifically, farmers who are unsatisfied or less satisfied with the provided information of CAP actions are less likely to be engaged in organic farming compared to satisfied producers (B = 2.279 (0.900), expB = 9.765, $p < 0.05$). However, probabilities of organic farming adoption are increased as the degree of producers' satisfaction is raised. In particular, producers who are moderately satisfied with the CAP information are 11 times more likely to apply organic farming systems (B = 2.439 (0.863), expB = 11.457, $p < 0.01$), while quite satisfied producers are about 17 times more likely to be engaged in organic farming in the future (B = 2.828 (0.847), expB = 16.904, $p < 0.01$).

Another contributing factor for organic farming adoption concerns producers' opinion for CAP measures. Specifically, producers who express a positive opinion for CAP measures are less likely to adopt the organic farming system compared to those with negative opinions (B = -3.614 (0.828), expB = 0.027, $p < 0.01$). Also, producers who express a neutral opinion for CAP measures are 67 (1/0.015=67) times more likely to avoid the adoption of an organic agricultural system in the future (B = -4.201 (1.122), expB = 0.015, $p < 0.01$).

Finally, producers' perception about the future agricultural system influences their decision to adopt organic farming. Specifically, those who consider that organic agriculture constitutes the dominant agriculture system of the future (rather than conventional) have approximately 978 times more chance to adopt it (B = 6.886 (0.926), expB = 978.140, $p < 0.01$), while those who believe that integrated agriculture is the farming system of the future (compared to conventional) are about 19 times more likely to follow organic farming (B = 2.979 (0.849), expB = 19.666, $p < 0.01$).

3.2 The choice for conventional farming

The development of the second logistic regression has as a dependent variable farmers' intention to follow conventional agriculture in the future. The purpose of this regression was to determine which of the used independent variables have a significant impact on this decision. The model employed was the following:

$$\text{logit}[P(Y=1)] = \alpha + \beta_1 x_1 + \ldots + \beta_8 x_8$$

where *P(Y=1)* is the probability for a participant to respond to conventional farming of the future, and x_i, i = 1...8 are the categorical independent variables.

Initially, the results show that the model fits the data (Indicators $R^2>0.5$, Cox & Snel=0.510 and Nagelkerke= 0.712) which is confirmed by the Hosmer and Lemeshow test ($X^2=11.472$ με df=7, p-value<0.05). In addition, these specific independent variables have large percentages of correct classification of the respondents in the dependent variable categories, meaning they can predict very well whether producers will engage in conventional farming in the future. It seems that independent variables predict correctly by 91.9% that someone will deal with conventional farming in the future and 77.4% will not deal with this type of farming. The overall correct classification rate reaches 87.2%, which is very satisfactory. Table 3 illustrates the coefficients as well as the probabilities for the included variables. It is clear that certain variables are omitted from the table due to lack of statistical significance.

According to Table 2, age seems to play an important role in farmers' decisions to deal with conventional agriculture in the future. Specifically, those who are above 35 years old are about 4 times more likely to select conventional farming (B = 1.401 (0.524), expB = 4.072, $p < 0.01$). Thus, the analysis of the age variables suggests the importance of age on type of agriculture adoption. Furthermore, attending training programs affects producers' decisions to apply the conventional farming system in the future. More precisely, those who have attended training programs are less likely to be engaged in conventional farming. In other words, those who have not attended training programs are more likely to deal with conventional farming compared to those who have obtain better training. (B = -2.277 (0.490), expB = 0.103, $p < 0.05$). The percentage of non-farming income is also important in predicting farmers' intentions to follow conventional agriculture. In particular, farmers whose income from non-agricultural activities is less than 25% are more likely to apply another agricultural system rather than conventional farming in the future (B = -1.164 (0.464), expB = 0.312, $p < 0.05$). Hence, for those producers whose income mainly originates from agriculture, it is more probable to avoid the selection of conventional agricultural systems in the future. Finally, producers' opinions for CAP measures influences their decision regarding the implementation of a conventional farming system in the future. In particular, producers who express positive opinion about CAP measures are less likely to be engaged in a conventional agricultural system in the future (B = -1.694 (0.752), expB = 0.184, p <0.0)1

Table 3.
Logistic regression coefficients for conventional farming of the future

Independent Variables	B	S.E.	Exp(B)	95% C.I. for EXP(B)	
				Lower	**Lower**
Age <35 years	-1.401	(0.524)**	0.245	0.159	11.361
Age 36-55 years	-0.387	(0.548)	0.679	0.232	1.987
Training programs	-2.277	(0.490)**	0.103	0.039	0.268
Non-agricultural income <25% of total	-1.164	(0.464)*	0.312	0.126	0.776
No problems in sale	-1.368	(0.778)	0.254	0.055	1.169
Some problems in sale	-0.967	(0.584)	0.380	0,121	1.194
Many problems in sale	0.395	(0.523)	1,485	0.533	4.138
No Satisfaction of Information	-1.551	(0.837)	0.212	0.041	1.094
Some Satisfaction of Information	-1.454	(0.776)	0.234	0.051	1.069
Much Satisfaction of Information	-0.850	(0.730)	0.427	0.102	1.789
Positive opinion for CAP	-1.694	(0.752)*	0.184	0.042	0.802
Neutral opinion for CAP	0.840	(0.480)	2.316	0.905	5.931
Constant	20.766	(51.293)	10448.09		
Number of observations	421				

*=p<0.05, **=p<0.01, X2=11.472 with df=7, p-value<0.05

3.3 The adoption of integrated farming in the future

The dependent variable of third logistic regression concerns producers' intention to select integrated agriculture in the future. The purpose was to determine which of the used independent variables have a significant effect on this decision. The model employed was the following:

$$\text{logit}[P(Y=1)] = \alpha + \beta_1 x_1 + \ldots + \beta_8 x_8$$

where *P(Y=1)* is the probability for a participant to respond to integrated farming of the future, and $x_{i,}$ i = 1,...,8 are the categorical independent variables.

The results initially show that the model does not appear to fit adequately in the data (R^2 <0.5, Cox & Snel = 0.315 and Nagelkerke = 0.459), which is also confirmed by the Hosmer and Lemeshow test (X^2 = 11.492 with df = 8, p-value> 0.05). In addition, these specific independent variables have high rates of correct ranking of respondents in only one of the two categories of the dependent variable, thus they can predict very satisfactorily whether producers will deal with integrated agriculture in the future. It seems that independent variables predict correctly by 89.7% that one farmer will deal with integrated agriculture in the future and only 58.6% will not deal with this type of agriculture. The overall percentage of good ranking is 81.5%, which is very satisfactory. Table 4 illustrates the coefficients as well as the probabilities.

According to Table 3, age appears to play an important role in producers' decisions to deal with integrated agriculture in the future. In particular, producers aged under 35 years old are about 3 times more likely to apply the integrated agricultural system than older-aged producers (B = 1.152 (0.544), expB = 3.164, p <0.05). Agricultural income also constitutes a significant contributing factor. Specifically, producers whose income from non-farming activities is less than 25% are less likely to adopt the selection of integrated agriculture in the future (B = -1.666 (0.515), expB = 0.189, p < 0.01). Therefore, producers whose agriculture is the main source of income prefer the conventional compared to integrated agricultural system. Furthermore, producers' opinion about CAP measures' exploitation influences their decision to apply the integrated agricultural system in the future. In particular, farmers with neutral opinions regarding the exploitation of CAP measures have a higher probability of not being involved in integrated agriculture (B = -1.762 (0.548), expB = 0.223, p <0.01), and, therefore, it becomes obvious that integrated management producers are not satisfied with the CAP measures' implementation. Finally, producers' perception regarding the dominant future agricultural system affects their intention to implement the integrated agriculture. Specifically, producers who select organic farming over conventional are less likely to adopt integrated agriculture (B = -1.762 (0.428), expB = 0.172, p <0.01). On the contrary, producers who choose integrated farming as the prevalent agricultural system in the future are more likely to implement it compared to the conventional agricultural system ((B = 2.353 (0.671), expB = 10.512, p <0.01).

Table 4.
Logistic regression coefficients for integrated farming of the future

Independent Variables	B	S.E.	Exp(B)	95% C.I. for EXP(B)	
				Lower	Lower
Age <35 years	1.152	(0.544)*	3.164	1.089	9.195
Age 36-55 years	-0.267	(0.468)	0.766	0.306	1.915
Training programs	0.602	(0.478)	1.826	0.715	4.663
Non-agricultural income <25% of total	-1.666	(0.515)**	0.189	0.069	0.519
No problems in sale	-0.273	(0.739)	0.761	0.179	3.240
Some problems in sale	0.276	(0.474)	1.317	0.521	3.334
Many problems in sale	-0.316	(0.422)	0.729	0.319	1.667
No Satisfaction of Information	0.007	(0.656)	1.007	0.278	3.644
Some Satisfaction of Information	0.345	(0.615)	1.413	0.423	4.713
Much Satisfaction of Information	0.185	(0.589)	1.203	0.379	3.815
Positive opinion for CAP	0.803	(0.661)	2.233	0.611	8.165
Neutral opinion for CAP	0.514	(0.660)	1.671	0.459	6.091
Positive opinion for CAP exploitation	-1.084	(0.610)	0.338	0.102	1.118
Neutral opinion for CAP exploitation	-1.501	(0.548)**	0.223	0.076	0.652
Point of view: Organic farming of the future	-1.762	(0.428)**	0.172	0.074	0.398
Point of view: Integrated farming of the future	2.353	(0.671)**	10.512	2.821	39.174
Constant	2.987	(1.147)	19.831		
Number of observations			421		

*=p<0.05, **=p<0.01, X^2=11.492 with df=8, p-value >0.05

4 Discussion

Earlier research has come to the conclusion that the adoption of organic farming is based mainly on environmental consciousness and producer ideology (Willer and Gillmour, 1992; Fairweather, 1999; Duram, 2000; Storstad and Bjorkhaug, 2003). However, the ideological background weakened, especially after the integration of organic farming into the modern economic system (Rigby and Caceres, 2001). More recent studies support that the significant development of organic farming is assisted by the various EU policy interventions and the economic incentives provided by the existing CAP regime (Tzouramani et al., 2009; Stolze & Lampkin, 2009; Offermann et al., 2009). Thus, the CAP reform in 2003 seemed to be able to support the continued positive development of organic farming (Haring & Offermann, 2005).

The model's statistical analysis indicated that producers' training is positively correlated with organic farming adoption. Thus, producers who have followed training programs focusing on alternative management forms are more likely to apply the organic agricultural system. Therefore, any action and measure (not necessarily subsidized) of the CAP that enhances producers' training and education increases the implementation of this alternative form of agriculture in Greece. This conclusion is in accordance with previous research which studied the contributing factors for organic farming adoption, concluding that training and environment protection are considered the most affecting factors (Duram, 2000; Storstad & Bjorkhaug, 2003; Ferto & Forgacs, 2009; Oxouzi, 2008). Theocharopoulos, 2009). Furthermore, the well-informed producers regarding CAP policies and actions are being led into organic farming implementation, as well as those who evaluate organic farming as the dominant agricultural system of the future. On the other hand, the future selection of conventional farming is influenced by producers' age, training, income and opinions for the CAP regime. Specifically, older and non-trained producers, as well as producers whose main source of income is derived from non-agricultural activities, seem to select conventional farming. Also, the producers' negative opinions about the CAP regime leads to conventional farming adoption.

Hence, it becomes apparent that producers' perceptions and knowledge about CAP policiesy differentiate their future actions concerning the agricultural system's implementation. Younger producers and those with high awareness of CAP content are led to choose organic farming, whereas older and less-informed producers tend to select conventional agriculture.

Regarding the future implementation of integrated agriculture, producers' age, income, and future perceptions regarding agricultural systems reinforce this selection. Specifically, integrated agriculture is very likely to be applied by younger producers, professional producers whose main source of income stems from agriculture, as well as by those who evaluated integrated farming as the prevailing agricultural system of the future. However, integrated agriculture is the newest farm management system and this is why it is not widely used and has not been thoroughly evaluated by researchers (Morris & Winter, 1999; Dimara et al., 2004; Henson & Reardon, 2005). Thus, training programs' implementation would facilitate the acceptance of an integrated management system, as it becomes obvious by this research of the positive influence of education in the adoption of organic farming systems.

5 Conclusions

Policy makers nowadays, in order to design, plan and articulate effective policy measures (like EU's Common Agricultural Policy), more and more heavily rely on concrete facts and policy recommendations driven by scientifically extracted primary data. Following this trend, the present work tries to identify and assess the factors that influence producers' adoption decisions among two alternative farm management systems (organic or integrated agriculture) vis-à-vis conventional agriculture, in order to draw some important policy recommendations.

Based on everyday experience, a keen observer would have been expecting that producers' decisions to pursue an alternative form of cultivation was going to be affected mainly by relative CAP income support actions and subsidies. Nevertheless, according to the findings of the present study, the main factors that determine farmers' decisions to implement alternative forms of agriculture in the future include age, training, the level of agricultural income and the degree of awareness for CAP measures and actions. Consequently, it is evident that the adoption of alternative agricultural production methods will be fostered not exclusively by income support measures of the Common Agricultural Policy but by concrete actions that will focus on training and informing producers about CAP and the practice of alternative agricultural methods. Relying on information measures will help integrated agricultural producers to get a better knowledge regarding CAP measures and, at the same time, to take advantage of all available complementary actions, while training for producers will lead to an increase in organic farming and may influence the further adoption of integrated agriculture, since the latter constitutes the newest system applied for the management of agriculture.

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