Why to Support Ecological Agriculture in the Common Agricultural Policies? Case of Romania

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Abstract. This paper has as the main objective the comparative analysis of production costs in fruits trees ecological agriculture as well as for conventional agriculture. Sequentially, it was determinated the expenses changes that occur on similar farms in the two analyzed farming systems: ecological and conventional, using a survey instrument, a questionnaire which, provided data necessary to analyze differences in costs for different agricultural production. Based on the results of the comparative study, it can be observed that there are significant differences in the variable production costs and gross margin of each culture, the lowest gross margin are recorded, mainly, for the farms on the conversion period, proving the necessity for supporting the ecological agriculture.

Keywords: organic agriculture, gross margin, variable production costs, potatoes

INTRODUCTION

Nevertheless, as a fashion or as a necessity, ecological agriculture is happening worldwide, both in terms of surfaces used and quantity produced and consumed (European Commission, 2012). At the end of 2010 it was practiced in over 160 countries spread over five continents (IFOAM, 2012) on 37.2 million hectares of land (remained stable compared with 2009) by 1.6 million producers – their number is decreasing compared to 2008 when were registered 1.8 million producers. The regions with the largest areas of ecological used farmland is Oceania with 12.1 million hectares representing 33\% of organically cultivated land worldwide, followed by Europe with 10 million hectares of cultivated land (27\% of worldwide ecological used land) and Latin America with 8.4 million hectares (23\%). Countries with the largest areas of ecological cultivated area are Australia (12 million hectares), Argentina (4.2 million hectares) and USA (1.9 million hectares), while the countries with the largest number of producers are India, Uganda and Mexico.

In fact, market research conducted by IFOAM shows that the rate of consumption of organic products in 2010 increased worldwide by 2 billion U.S. dollars, with 340 million in France and 300 million in Germany. Per capita consumption remains strong in central and northern Europe, 153 euros in Switzerland, 142 in Denmark, 127 in Luxembourg and $ 118 in Austria, while global per capita consumption reached only 6.5 euros. Germany is the second market of organic products in the world, amounting to 6 billion euros, followed by France, which has a value of 3.4 billion euros since in US were recorded in 2010 sales of organic products by 30 billion dollars.

In late 2010, over 10 million hectares in Europe were recorded in organic agricultural system, which is managed in nearly 280,000 farms. Ecological land area increased by 0.8 million hectares or 9\% in 2010 compared to 2009. The latest data provided by The Research Institute of Organic Agriculture released in 2012 a study indicating that organic farming is carried on 2.1\% of agricultural land in Europe and in European Union organic percentage reached 5.5\% of the total agricultural area (FiBL, 2012). States where the share of organic farmland is above the EU average are Finland, Estonia, Czech Republic, Austria, Switzerland,
Liechtenstein, Sweden, countries where the rate of organic agriculture is more than 10%. Across Europe, countries with the largest area of organic farming are Spain, with 1.45 million ha, Italy with 1.13 million ha and Germany with 990,000 ha, totaling 3,566,116 million, representing 35.6% of the organic land in Europe. The highest share of organic farmland is in the Falkland Islands (35.9%), Liechtenstein (27.3%) and Austria (19.7%) while some countries such as Turkey, Albania, Bosnia and Herzegovina share is below 1%. On the European continent 10% of agricultural land is managed used for ecological perennial fruit crops, grapes, olives, the area occupied by them has reached 864,000 ha.

Although Italy has the largest organic surface in Europe, the largest market for organic products is Germany, followed by Denmark, Luxembourg and Switzerland, where more than 140 euro per capita are spent on organic foods annually. Based on the annual increases in the recent 10 years in Europe, the European market has become the most important market of organic products, with a share of 50% of the world market. Global sales of organic products are concentrated to 95% in the Europe and North America (Organic World, 2012). In 2010 the fastest growing market for organic products is Austria, where the rate increased by 9% over the previous year. A favorable trend can be seen in other countries, like Belgium, Italy, Finland, while countries with a negative trend are Denmark, France, United Kingdom and specially Sweden where was registered the largest decrease, 10% compared to 2009.

MATERIALS AND METHODS

The Romanian National Rural Development Plan 2007-2013 indicated the significant potential of organic farming to help protect water and soil resources, biodiversity conservation and climate change, providing public goods and serving the increasing European organic products market (MADR, 2012). Although there is no clear information on domestic demand (Jitea, 2011), it is estimated that this was an important contribution to the overall growth of the sector, with existing demand in the European market. Number of operators (producers, processors, traders) registered in organic agriculture at the MARD in 2008 was 4191, which mean nearly twice the operators registered in 2004 and 12% more than in 2007. Their number reached 10,256 operators in 2011, increasing almost 3 times more than in 2010. It was registered a significant increase of the ecological surface, with more than 100000 hectares comparing with 2006.

Thus, it can be observed that the situation of Romanian agriculture has the premises for future development of organic farming (Bio Romania, 2012), but, like any other economic activity, the results expressed by the financial indicators are able to motivate or, conversely, to discourage potential actors in organic farming.

The main research hypothesis was the assumption that there are differences between the agricultural production costs and expenditures in conventional and organic production systems. For achieving the main objective of the research, there was conducted a comparative production cost analyzes between conventional and organic agriculture. In this regard there were pursued a number of complementary objectives: determining the differences between the two types of agriculture analyzed in terms of cultivated surfaces, determining the costs due to conversion to organic farming; determining the degree of knowledge on organic farms; determining the trend to move to organic agricultural production system for conventional farmers. Moreover, the research offered other valuable information, like the awareness of the principles promoted by organic farming; the degree of satisfaction of the converted farms and the variation in cultivated areas in the two agricultural systems listed above.

The preliminary statistical documentation was performed by indirect observation of statistical reports developed by third parties. Among the most significant sources of reports
could be mentioned: The Ministry of Agriculture and Rural Development; the Eurostat databases; the FiBL association databases and the IFOAM databases.

Prior documentation, carried out together with MADR, determined the characteristics of the 1127 organic producers or producers during conversion period, which became the target group of the research. There have been consulted databases and statistical bulletins of the Ministry of Agriculture and Rural Development and international statistical databases mentioned above, for observing the time series of relevant indicators for some indicators necessary for determining the structure and territorial distribution of producers. Those results were the base for distributing the questionnaires to each region, so that the data obtained is relevant to the study population, for a relative error limit of 6% at a confidence level of 95%. The sample of 92 distributed questionnaires was formed by randomly selection of subjects of the total population.

The investigative techniques used was individual investigation at the place, because of the advantages offered (Rotariu and Ilut, 1997), mainly because permits not only answers and opinions included an imposed form, but it can provide useful information to sustain the analysis (such as the desire to influence or the need to talk etc.). On the other hand, it allowed the integration of complex, interrelated questions.

RESULTS AND DISCUSSIONS

The first part of the questionnaire included questions that permitted to observe the particularities of the farms included in the survey. In terms of number of questionnaires the highest frequency of farms in the area are found in the following counties: Valcea County with a total of 22 farms, Mures County with 20 farms and Mehedinti County with 18 farms.

The most common juridical form type of farms was Self-employed Person (PFA), into the sample being included 45 entities like this, of the total sample of 92, completed by 29 households and just 4% of them are registered as are family associations. By type of farming, 41% of farms apply conventional culture techniques, and the rest of them are involved into ecological farming. When the level of knowledge regarding organic farming of the farmers applying conventional agricultural production methods was determined, it was revealed that 32% of respondent do not have the essential information necessary on this type of agriculture.

Regarding the farms where the production system is the conventional one, 24% of them did not express the interest of changing to organic farming, on the other hand farmers already registered as using ecological technologies of productions considered that the decision of shifting from a conventional approach proved to be a good one.

Among farms registered in the ecological culture, the answer to this type of farming practice was 100% that the change was beneficial. Of the 38 farms with conventional farming due to lack of information, in 5 of them is not known whether organic farming provides advantages.

The second part of the questionnaire focuses on collecting information on the types of crops included in the farm as well as surfaces cultivated. All the analysed farms are included into the categories of small and medium companies. Most of the ecological farms included into the sample occupy small surfaces (0.3-30 ha) and cultivates a maxim 3 different cultures, and, as result, a large share of the production is used for self-consumption, and only very little is produced for commercial use. It also noted that production obtained is not further processed into agricultural products; therefore there is no high return. The main crops of the analysed farms are grain (41%) and corn (26%), while non-agricultural surfaces included meadows, pastures and green fodder. Beekeeping is found in 52%, spread mainly on farms in the South part of Romania, the Valcea County, Mehedinti County and Olt County.
After processing the data on production costs recorded in the two agricultural systems: the ecological system and the conventional one, changes were identified by studying a group of ecological farms and by determining the average variable cost in RON per hectare and by comparing them with the ones of the farms that are practicing conventional agriculture. Data collected, analysed and processed provides basic information on perennial crop share at farms level, too. Their weight is very low, only 12%, and the surfaces occupied by these cultures vary between 0.3 and 70 ha, with an average of 9.5 ha.

Perennial crops farms use their surfaces for cultivating plum trees (a share of 53%, quite similar with the national share of 50%, Romania taking first place in the EU) followed by apple trees, which, inside of the sample, accounts for 27%. Generally, the fruits tree farms use their surfaces for other cultures, too, mainly cereals, maize or pastures and green fodder, avoiding the risk of a monoculture farm.

### Tab. 1

Average variable cost differences in conventional and organic production system (RON/ha)

<table>
<thead>
<tr>
<th></th>
<th>Conventional agriculture</th>
<th>Ecological agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds / seedlings</td>
<td>67</td>
<td>50</td>
</tr>
<tr>
<td>Chemical fertilisers</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Natural fertilisers</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Irrigation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Plants protection</td>
<td>75</td>
<td>103</td>
</tr>
<tr>
<td>Other costs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mechanisation</td>
<td>100</td>
<td>83</td>
</tr>
<tr>
<td>Labour</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Total variable costs</td>
<td>442</td>
<td>286</td>
</tr>
</tbody>
</table>

The percentage of potatoes in the surveyed farms is 9%, the main cause is the large number of farms located in the South where mainly cereals are grown. Potato crops are widespread in central and northern Romania, in counties such as Cluj, Salaj, Mures, Alba, Maramures and Bistrita Nasaud.

Plots for growing potatoes are very small, these ranging between 0.3 and 1 ha, while the production is designated mainly for domestic consumption. In addition to potato cultivation, farms have plots cultivated with vegetables, fruit trees, but hay and corn, too.

After analysing the variable costs of production of potatoes per hectare, were observed differences between the expenditure required to obtain organic production and the conventional one. Higher costs occur in conventional agriculture, with an increase of more than one third. The 35.3% increase of costs is generated by use of chemical fertilisers and the expenditures generated by their use (mechanisation and labour work), even if the cost of plants protection per hectares is lower for conventional agriculture, as result of using natural insecticides, which is more expensive.

Regarding the result, it was observed an increase of 23% when applying conventional farming techniques, which is of 5.97 tons / ha, with production of 4.6 tons / ha obtained in the ecological system of production. The difference with almost a quarter of the production is normal for the case and is a direct effect of not using chemicals in the process of production.

Fortunately, the reduced production is compensated by the quality and healthiness of final product, reflected in selling price, which, at the gate level, is increased with 48.9%. Consequently, the gross margin, as indicator of profitability (Ilea and Pătărlăgeanu, 2010), is
higher with a quarter for ecological agriculture, demonstrating that farmers were right not to regret the decision of choosing to produce ecologically.

Comparative gross margin for potatoes

<table>
<thead>
<tr>
<th>Potatoes</th>
<th>Conventional</th>
<th>Ecologic</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (kg/ha)</td>
<td>5975</td>
<td>4600</td>
<td>-23.01</td>
</tr>
<tr>
<td>Price (RON/kg)</td>
<td>0.45</td>
<td>0.67</td>
<td>48.89</td>
</tr>
<tr>
<td>Revenue (RON/ha)</td>
<td>2,688.75</td>
<td>3,082</td>
<td>14.63</td>
</tr>
<tr>
<td>Variable costs (RON/ha)</td>
<td>442</td>
<td>286</td>
<td>-35.29</td>
</tr>
<tr>
<td>Gross margin (RON/ha)</td>
<td>2,246.75</td>
<td>2,796</td>
<td>24.45</td>
</tr>
<tr>
<td>Difference of Gross margin (RON/ha)</td>
<td>0</td>
<td>549.25</td>
<td></td>
</tr>
</tbody>
</table>

The results prove a doubling of gross margin from the conventional to organic production. The main causes are the selling price by almost 50% higher and the production costs lower than the one in conventional system and the decrease of variable cost, previously discussed.

CONCLUSION

The development of organic farming in Europe was led by a solid perception of the producers, consumers, authorities and large public about the environmental and social benefits of organic agriculture methods. This type of agriculture continues to develop dynamically in Europe. This positive track is also due to a series of policy support measures such as financing rural development programs, legal protection of terms used to indicate organic action plans, programs and support for researches.

Romania has the potential to become an important player on ecological farming due to natural conditions and local traditions of farming, but only by the effort of organisms involved in organizing this important sector. Farmers who decide to give up their conventional crop production must be aware of a possible loss of productivity by a quarter during the period of conversion. Because of the small size of farms and of agricultural production methods in Romania, the reduced productivity is not so high as in the case of industrial agriculture. Organic production is mostly exported to markets in Europe and North America, as raw material, so it shows lack of Romanians’ farms to process raw materials for producing processed organic food products.

The analyze of the data highlights large number of households with subsistence agricultural activities on one hand, and, on the other hand, the weight of organic certified production is below the EU average, even if can be seen an increasing trend. But, as the information about the advantages of ecological certified agriculture are limited on rural area, there are necessary to be adopted specific agricultural policies measures for extension so the farmers can make the decision of conversion to ecological agriculture based on correct information on costs, production and prices.

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REFERENCES


