ORGANIC PRODUCTION
AND THE
SPANISH CASE

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The organic production

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INTRODUCTION

In the last decades, the new techniques of production have been the cause of incredible harvests and control of the available resources; everything to increase to a maximum the performances by unit of surface area, and without taking care of the negative impacts that this form of agriculture have in the life.

Nowadays, the agriculture society is divided into two ways of acting: one of them follows the rules of the “Green Revolution”, which took place after the Second World War. This one was based on the single-crop farming of high performance varieties and helped by the massive use of chemical products and high technology. The other way has to be with a movement that wants to use a technology with alternative standards of culture, in order to combat the negative consequences of the conventional agriculture in the food and the environment. That’s why the ecological agriculture appeared.
**PROBLEMS OF INDUSTRIAL AGRICULTURE**

Cattle farming and agriculture are in general intensive; their objective is to obtain the maximum performance. The way to reach this aim is the exploitation of the land and of the animals as much as they can, not thinking about the consequences of this in the health of living beings and environment.

The consequences of this way of performance can already be noticed in our ecosystem:

- **High energetic cost**: the relationship between the energy obtained in form of food and the energy used in its production is getting lower. This fact is worrying because this energy comes from fossil combustibles that are not renewable and that are going to exhaust in the next decades. It’s also a problem because the fertilizers are products with a very high energy consumption.

- **Loss of fertility and land erosion**: the lack of humus is a real fact and has consequences for the fertility, the microbial life, the structure stability… Every year in Europe, 6,400 millions of tones of fertile ground disappear because of the erosion.

- **The problem of the monoculture**: the monoculture employs species and varieties of high performance, what drives to the impoverishment of the genetic wealth; reduce the rotations or simplify them; help to plagues apparition. The excess of mechanization has caused that the little farmers have being oust (displaced) by the big companies.

- **Contamination of natural resources**: water, air and ground are damaged because of the indiscriminate and massive employ of fertilizers. The increase of nutritive substances in continental waters and coast seas cause important and dangerous changes in the characteristics of the environment and deoxygenated of the deep waters.

- **Loss of the natural quality of the food**: our food has a high content of nitrate and sometimes also of heavy metals. That happens more in the case of the vegetables. The use of chemical fertilizers makes the products bigger, but causes retention of water in the plants. The existence of pesticides and herbicides in the food causes a lot of health problems. The food with residues is preserved less time and does not keep the correct equilibrium between the organic components and the minerals that constitute them.
- **The degradation of the environment:** the ecological diversity of fauna and flora are in big danger, because of the use of chemical products.

- **The problem of the cattle farming:** Since the last years the cattle farming is developing independently of agriculture. Nowadays the cattle farming is a set of “harmful interventions” focus to a massive production industry. A little vision of all the intensive practices of the cattle farming can be: the contamination of the superficial waters with organic residues of animal origin; the erosion of the ground because of the excess of cattle farming charge; the bad accommodation of the animals; the air pollution; the massive use of hormones, antibiotics and other alimentary additives…

- **The social impact:** The intensive cattle-farming has caused a decrease of the employment in agriculture. The main worry is the maximum production, which requires a lot of investment in machines, combustible and chemical products. We also cannot forget the intermediate costs. All this together with the high interest of bankers cause a constant damage of the real benefit for the farmers.
ECOLOGICAL AGRICULTURE: AN ALTERNATIV TO INDUSTRIAL AGRICULTURE

There are a set of agricultural actions that try to put at the same level the agronomy and the ecology, returning to the systems that allowed the support of life in the ground.

The ecological agriculture is a method that uses the practices and knowledge of the traditional farmers, and synchronizes them with the new techniques of the agronomy.

We can describe the organic production as: “A production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.” (US Department of Agriculture).

OBJETIVES OF THE ECOLOGICAL AGRICULTURE

The main objective of the ecological agriculture is not to maximize production and performance, but to make them compatibles with the stability of the ecosystem.

All the techniques used in the ecological agriculture must be carried out with some objectives:

- **Construction and support of the ground fertility**: the ground is a live organism and must be nourished in the correct way: It has to be fed with organic matters which is the base of the fertilization.

- **Stop to the degradation of the ground structure**: it’s very important to preserve and take care of the ground. When the fertility decreases, the ground structure gets weaker and that makes the ground prone to the erosion. The organic matter is very important to preserve the structural stability of the ground.

- **The use of appropriated techniques of culture**: the ground is normally in a perfect equilibrium with his components and the ones of the environment where it is. In a cultivated ground this equilibrium tends to break down. The farmer has to serve some rules that compose production factors, quality of product and the environment.
- **Not use of toxic or contaminant products:** the ecologic agriculture doesn’t allow the use of weed killer or chemical pesticides, mineral fertilizer of synthesis, chemical alimentary additives and the use of hormones. All this, because of the effects that these products have in the environment and the health of living being.

- **Biological control of pests and diseases:** the plagues or illness of plants appear when there is a nutritional or environmental disequilibrium. In the ecological agriculture no weed killer of synthesis. To fight against the bad weeds they use preventive methods, weed systems and thermal methods. In the cases of parasites attacks they use methods of nothing or almost no toxicity for the man and environment.

- **Production of food with natural quality:** there is a correspondence between the health of the ground and the cultivation on it and between the health of animals and persons that consume these products. The ecological agriculture takes care of the ground, and the result is obtaining products absolutely natural and with a quality that the products of the traditional agriculture cannot have.

- **Optimum utilization of resources and local potential (power):** It’s very important that equilibrium between agriculture and cattle farming exists, because the animals help the diversification of the system of agrarian production.

  We must consider the socioeconomics possibilities of the region and its human potential, using the abundant resources and economizing the scant ones, and also using techniques that help to raise ground productivity using the resources locally available.
ORGANIC PRODUCTION IN SPAIN

Spain has excellent conditions because of his Mediterranean and continental climate to become one of the main organic producers. The $\frac{3}{4}$ part of the Spanish organic production has as its principal destiny the export to countries of the center and north of Europe.

According to data of 1999, the total amount of land with organic production was 11,773 (0.9% of the total) which represents a total area of 352,164 ha (1.4% of the national area). The average size of this kind of cultivation is bigger than the national average.

a. ORGANIC CULTIVATIONS IN SPAIN ACCORDING TO NUMBER AND AREA

Graph 1: Organic cultivations in Spain according to number and area

Of the total area meant for organic production, Extremadura with 6,743 organic cultivations is the region with more quantity of lands and concentrated superficies inside the country. After Extremadura we have Andalucía with 2,489 and then Murcia, Valencia, Cataluña and Aragón.

Source: CELARE, 2001
b. ORGANIC CULTIVATIONS IN SPAIN ACCORDING TO SURFACE AREA AND DISTRIBUTION

*Graph 2: Organic cultivations in Spain according to surface area and distribution*

![Graph showing organic cultivations in Spain according to surface area and distribution.]

*Source: CELARE, 2001*


c. ORGANIC SURFACE AREA IN SPAIN ACCORDING TO TYPES OF CULTIVATION

*Graph 3: Organic surface area in Spain according to types of cultivation*

![Graph showing organic surface area in Spain according to types of cultivation.]

*Source: CELARE, 2001*
d. SPANISH MARKET OF ORGANIC PRODUCTS

Some of the principal products that come from organic gardens are:
- Grain pulses
- Vegetables
- Citrus fruits
- Fruits
- Olives
- Wine
- Walnuts
- Subtropical plants
- Aromatic and medicinal plants
- Forrage for animals

Almost all the processor industries are producers of oil, packaging firms of canned food, where almost all the products are destined for foreign trade.

Other products that are not so important as exports are: bread, cereals, juices, derivated products or with soja, pastry for bread and baby food. Perishable products like milk are sold by little chains of establishments like “health shops” and not necessary by shops of organic products.

There are specific regulations that set the standard for biological or ecological organic products, and also the use of the terms “eco” and “bio”. In the last years in Spain there has been an important discussion in front of the court about the exclusive use of “bio” for organic products, and since some years only those products that have being cultivated according to the organical laws can have the prefix “bio”.

The role of the state has been developed according to the regulation 2078/92, that is responsible of the agricultural financial assistance, but not in the cases of Cataluña, Galicia and Madrid, where there is no financing. In 1993 was created the “Comisión Reguladora de la Agricultura Ecológica” (CREA). This organism is a reference for matters like standards, investigation, support and control of the organic production, and is also point of meeting for all the professions that make part of the market of organic products.
The service sector is not very developed, and the promotional campaigns and commercial chains are also very few. However there are a lot of publications, a good level and availability of training courses (in technical and professional level) that are given by private organizations.

e. FOREIGN TRADE

The domestic trade is orientated to the exportations. There is a very low support from the government to the process of promotion and diffusion of the organic production, and that’s why the internal channels of marketing are not very developed.

More or less 2,500 establishments inside the country are one of the principal ways of distribution of this kind of products. Other kinds of establishments are natural product wholesalers. They’re organized around 20 organizations and consumer cooperatives that have not a lot of sale points due to financial restrictions.

The existence of these products in supermarkets is marginal, in quantity and also in type and variety of products.
ORGANIC PRODUCTION OF OLIVE GROVES IN SPAIN

Spain and more specifically Andalucía, is one of the principal productive guidance of the ecological sector from the economical point of view. The number of olive producers that start the ecological transformation of theirs cultivations is increasing. They look for a higher economic profitability and also for a reduction of the negative impacts in the environment of the traditional agriculture. The sale of ecological olive oil is an encouragement to increase producer’s incomes and is an alternative of rural development in the areas where there is a lot of this kind of agriculture.

a. DISTRIBUTION OF THE OLIVE GROVE

The importance of the Andalusian olive grove had different stages: in 1996 it had a very big importance, it involved 78% of the total olive grove, but in 1998 it had decrease until 25% because of the boom of this kind of culture in Extremadura. Nowadays Andalucía has the largest ecological olive grove area in Spain with 40.868 ha cultivated (45,4% of the total). After Andalucía we have Extremadura with 33.462 ha and Castilla-La Mancha with 7.646 ha. For “otros”(others) we have Castilla y León, Baleares, Navarra, La Rioja and Madrid.

Graph 4: Distribution of the area of ecological olive grove in Spain in 2004 (%)
The agro industrial sector connected to ecological oil production has also increased in Spain in the last years. At the moment, there are 221 mills for making olive oil in the country. 96 of them are in Andalucía (43% of the total), and then 28 in Extremadura and 27 in Cataluña.

In the next table we can see the distribution of the ecological olive grove area and the number of mills for making olive in the andalusian provinces. More or less the 46% of the total area in Andalucia set in Córdoba and 19.8% in Sevilla. Jaén is the province where more olive oil is produced and has 3,940 ha of ecological olive grove.

Table 1: Distribution of olive groves and mills for making olive in Andalucía in 2004

<table>
<thead>
<tr>
<th></th>
<th>Olivar (ha)</th>
<th>Almazaras (N)</th>
<th>Sup./Almazara (ha/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almería</td>
<td>859</td>
<td>4</td>
<td>215</td>
</tr>
<tr>
<td>Cádiz</td>
<td>1,984</td>
<td>3</td>
<td>661</td>
</tr>
<tr>
<td>Córdoba</td>
<td>18,800</td>
<td>39</td>
<td>482</td>
</tr>
<tr>
<td>Granada</td>
<td>2,755</td>
<td>13</td>
<td>212</td>
</tr>
<tr>
<td>Huelva</td>
<td>2,883</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jaén</td>
<td>3,940</td>
<td>19</td>
<td>207</td>
</tr>
<tr>
<td>Málaga</td>
<td>1,566</td>
<td>6</td>
<td>261</td>
</tr>
<tr>
<td>Sevilla</td>
<td>8,081</td>
<td>12</td>
<td>673</td>
</tr>
<tr>
<td>Andalucia</td>
<td>40,868</td>
<td>96</td>
<td>426</td>
</tr>
</tbody>
</table>


Córdoba has 39 of the 96 mills for making oil in Andalucía, and then we have Jaén, Sevilla and Granada. The hectares of ecological olive groves that supply each mill are very small, especially for Jaén and Almería.

Some olive producers have to move their ecological olives to mills in other provinces, which raise the cost. Some others move them to mills in provinces that are more close to their cultures. This happens because the nearby mills where producers used to move their olives don’t want to open grinding lines and ecological sales. That’s a very limiting fact for the growth of ecological olive oil production in Andalucía.
b. PRODUCTIVES AND ECONOMICS ASPECTS OF THE ECOLOGICAL OLIVE GROVE

About performances and prices

Normally the performance of the ecological production is less than the conventional one, but not always because there are a lot of factors that influence on it. A drop of performance can take place more frequently during the transition process. This drop can be more emphasized if the processing and the farm work previous to transformation have been intensive, because the ground can have a decrease of its fertility level.

In the next graph we can see the performances (kilograms by hectares) of ecological olive groves with regard to traditional one. Values higher than 100 show, that the ecological olive groves have better performances than traditional ones.

The studies are from different areas: (1) Greece, (2 and 8) the region of Los Pedroches in Córdoba, (3 and 4) the region of Iznalloz in Granada, (5) the province of Granada, (6 and 7) the region of Sierra Mágina, and (9 and 10) the region of Sierra Segura in Jaén.

*Graph 5: Performances of ecological olive groves with reference to conventional olive grove percentage*

*Source: 1 of Haniotakis (1997); 2 of Alonso (2003); 3 of Guzmán et al. (2002b); 4 of Guzmán et al. (2002a); 5 of Guzmán and Alonso (2004); 6 and 7 of Alonso et al. (2002); 8 of Sánchez (2003); 9 of Hurtado (2003); 10 of Conde (2003)*
The first thing that is important to point out is that the differences of performance between both systems are relatively small and are neither related to the area of production nor to the application of risk. The extremes stand out; on one hand, the 20% higher of performance of the ecological olive grove in the first case 1 and, in other one, the 13% lower performance of the ecological olive grove in the cases 2 and 8. Then the productivity of the ecological olive grove is influenced by the intensity of management before the transformation and, principally, by the accomplishment of suitable practices. The influence of the previous intensity of managing can be notice in the studies 2, 8 and 10, where it splits with some olive groves in which basically the pruning and the compilation is realized, low performances are obtained.

Definitively, the performance depends on multiple factors which control is going to determine the differences of the ecological managing with regard to the conventional one.

The development of this differentiated market is allowing the producers to obtain major prices for their products. The next graph represents the prices - prizes (difference between the price of the ecological and conventional olive in €/kg) perceived by the ecological olive growers as percentage of the conventional prices of reference. In all the cases the ecological olive growers obtain a major price for their olive that the conventional ones.

*Graph 6: Prices prize perceived by the ecological olive growers as percentage of the prices of the conventional olive (%)*

Sources: 1 of Haniotakis (1997); 2 of Alonso (2003); 3 of Alonso et al. (2002); 4 of Sánchez (2003); and 5 of Hurtado and Ayanz (1998)
An important part of the success in obtaining better prices for the ecological oil is due to the establishment of good structures of marketing. The existence of mills for making olive oil well endowed technically assures a suitable sale of this product in most cases.

Nevertheless, the price of the olive oil is tending to reduce the differences with regard to the conventional one. This is principally due to the increase of the offer of this product, in Andalusia and Spain and in countries of the Mediterranean environment, and to the improvement of the efficiency of the distribution chain.

About the production costs

As it happens with the performances, the costs of the ecological production depend on multiple factors. In case of the ecological olive grove the costs can be similar to the conventional one, though they are very influenced by the managing of this culture. The costs of compilation depend on the obtained productivity and not on the type of managing.

In the ecological olive groves where they use to leave the ground without grasses, the costs of this control will increase over the conventional ones, due to the non utilization of herbicides and having make continued passes of machinery.

*Graph 7: Costs for hectare of the ecological olive grove like percentage of the conventional (%)*

Sources: 1 of Alonso (2003); 2 of Guzmán et al. (2002b); 3 of Guzmán et al. (2002a); 4 of Guzmán and Alonso (2004); 5 and 6 of Alonso et al. (2002); and 7 of Hurtado and Ayanz (1998)
The organic production

The costs of the control of plagues and diseases in the ecological olive grove present similarities and differences with the conventional one. The ecological control of the fly (Bactrocera oleae) is done with the OLIPE, is more economic that the chemical conventional treatments. For the rest of diseases the treatments are similar in both systems.

The fertilization of the ground is the labor which cost can present major differences between the ecological and conventional managing. The major costs in the ecological olive grove can be due to the major price of the ecological manure. The use of leguminous as green manure reduces in the cost of the ecological fertilization.

In consequence, one could say that there are not substantial differences between both types of managing with regard to the costs. It depends on the strategy of the producer during the period of transition, especially in relation to the fertilization and the managing of the ground.

About economic benefits

Graph 8: Benefit compared between ecological and conventional olive grove (%)

Sources: 1 of Haniotakis (1997); 2 of Alonso (2003); 3 of Guzmán et al. (2002b); 4 of Guzmán et al. (2002a); 5 and 6 of Alonso et al. (2002); and 7 of Hurtado and Ayanz (1998)
The organic production

This graph shows the extra benefit for hectare of the ecological olive grove with regard to the conventional one. It is possible to observe a great variability in the quantity, though in most cases it is major in the ecological olive grove. The only case in which the benefits of the ecological olive grove were lower than that of the conventional one is number 4, due to an excessive expense in working, fertilization and control of plagues, as well as to a deficient commercial structure. Case 2 shows the extra benefit obtained by the ecological olive grove. The application of cost reduction technologies and the consolidation of a suitable structure of marketing are allowing increases in agrarian revenue of the ecological olive growers.
CONCLUSION

The ecological olive agriculture is growing in Spain in the last years, Andalusia being at the head of this growth with near 41,000 hectares and 96 mills for making oil (45 % and 43 % of the total in Spanish, respectively). Nevertheless, the absence in a lot of occasions of managerial dynamism in the conventional oil-mills, establishing lines of grinding and ecological strategies of sale is one of the most important limitations that have been hindering the growth of the production of ecological olive oil in Andalusia. It is forcing a lot of ecological olive producers, to transport their products over big distances, raising this cost notably, or to grinding their olive in conventional nearby oil-mills not differing, or losing the value added of the product.

On the other hand, the performance of the ecological olive grove is not always less than that of the conventional one, because numerous influential factors exist.

The major prices obtained by the ecological oil are owed to the establishment of good structures of marketing. The existence of oil-mills endowed well technically allows assuring a suitable sale of this product in most cases. Nevertheless, there is an increased in the offer of ecological olive oil in all the countries of the Mediterranean zone, what makes necessary to consolidate associative models for the joint sale of this product.

The obtaining of top benefits in the ecological production with regard to the conventional one depends on two factors of big importance: the application of reduction costs technologies and the consolidation of a suitable structure of marketing (with important advances in the sale of ecological stiff oil), that are allowing the increase of agrarian revenue of the growers of the ecological olive.
LITERATURE


- www.delaterra.net