



Environmental labelling and certification initiatives in the agri-food sector – a way of marketing agricultural sustainability

Proceedings of the JRC Summer Expert Meeting
Ranco, 1-3 July 2008

Edited by
Katarzyna Biala



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The EU systems for the protection of food names

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Abstract The EU systems for the protection of food names are firmly anchored in the EU quality policy for agricultural products and foodstuffs. This paper explores measures available to facilitate the production of quality agricultural products in the EU; the existing EU systems for the protection of food names; the implementation of these schemes and, as far as possible, their environmental impact. Finally, it mentions ongoing efforts by the European Commission to further reflect on agricultural product quality policy by way of a Green Paper as well as possible next steps.

Keywords agricultural product quality policy, protected designation of origin (PDO), protected geographical indication (PGI), traditional speciality guaranteed (TSG), European Union

Introduction The EU systems for the protection of food names are firmly anchored in the EU quality policy for agricultural products and foodstuffs.

Quality is about meeting consumer expectations. The quality debate concerns information – on product characteristics, on farming methods, and on origin – that a farmer or producer wants to communicate and a consumer wants to know. Quality is an issue for every farmer and every buyer, whether dealing with commodities produced to ‘baseline’ standards or high-end quality products.

Hygiene and safety are clearly very important quality parameters. According to a recent Eurobarometer survey (Special Eurobarometer, 2008), EU citizens list them right after price as their most important concern for EU agricultural policy. That being said, the European Commission considers that hygiene and safety are a non-negotiable must and that all food available on the EU market must reach the EU's high level of safety and hygiene, regardless of where it has been produced. While hygiene and safety play an important role in many public and private certification schemes operating in the private sector, these parameters should not be used in a misleading way, for example to advertise to the consumer that certified food is somehow "safer" than non-certified food.

EU quality policy for agricultural products EU quality policy for agricultural products consists of various parts and measures:

First of all, beyond food hygiene and safety matters, there are the basic production requirements that European farmers have to follow by law. This is an extensive set of rules in a wide range of areas such as animal health and welfare; plant health, environment; employment and labour requirements. Taken together, these rules ensure a baseline quality of agricultural production that is among the highest in the world.

Secondly, production and marketing standards included in Common Market Organisations and other vertical legislation define specific product qualities such as ‘extra-virgin’ for olive oil, ‘class I’ for fruits and vegetables and ‘free-range’ for eggs.

And finally there are special measures to support high-quality products. These are the EU systems for organic farming and for products from the outermost regions, as well as the EU systems for the protection of food names, namely the protected designations of origin (PDO), the protected geographical indications (PGI) and the traditional specialities guaranteed (TSG).

In addition to these measures which are regulated at EU level, numerous public and private certification schemes exist in the EU Member States. They range from compliance with compulsory production standards to additional requirements relating to environmental protection, animal welfare, organoleptic qualities, worker welfare, fair trade, climate change concerns, ethical, religious or cultural considerations, farming methods, and origin. While all of these certification schemes have to comply with general EU law, especially in the areas of competition, the internal market, consumer information and labelling requirements, as well as any specific legislation on the subject covered by the certification scheme, there is currently no legislation at EU level geared specifically to the functioning of these certification schemes.

The EU systems for geographical indications The main reasons for setting up EU systems for the protection of food names can be found in the recitals of Council Regulation (EC) No 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs. They are:

- To encourage the diversification of agricultural production
- To support less favoured or remote rural areas by promoting products with certain characteristics
- To enhance the income of farmers and retain the population in rural areas
- To satisfy consumer demand for agricultural products or foodstuffs coming from clearly identified geographical areas, and to give them clear information regarding the product origin
- And finally, to harmonise the various approaches that previously existed in different Member States regarding the protection of geographical indications by establishing a Community approach to these matters.

Coverage The products covered by Regulation (EC) No 510/2006 on PDO and PGI include:

- agricultural products intended for human consumption listed in Annex I to the Treaty of Rome (e.g. meat; fish; fruit; vegetables)
- foodstuffs (not necessarily agricultural products) referred to in Annex I of the Regulation such as: beer, bread, pastry, etc.
- agricultural products (not in Annex I of the Treaty) listed in Annex II of the Regulation such as: essential oils, hay

Products not covered by Regulation (EC) No 510/2006 are first and foremost wines and spirits, for which two separate regulatory frameworks to protect geographical indications identifying these products. None of these systems cover names of handicraft products, for which the necessary legal protection is provided a national level by Member States.

In May 2008, the scope of Regulation (EC) No 510/2006 was widened to include salt and cotton (which are now included in Annexes 1 and 2 of the Regulation, respectively). This addition does not alter the essentially agricultural nature of the products covered by Regulation (EC) No 510/2006.

Definitions Protected Designation of Origin means the name of a region, a specific place or, in exceptional cases, a country, used to describe an agricultural product or a foodstuff:

- originating in that region, specific place or country, and
- the quality or characteristics of which are **essentially or exclusively** due to a particular geographical environment with its inherent natural and human factors, and
- the **production, processing and preparation** of which take place in the defined geographical area

Protected Geographical Indication means the name of a region, a specific place or, in exceptional cases, a country, used to describe an agricultural product or a foodstuff:

- originating in that region, specific place or country, and
- which possesses a specific quality, reputation or other characteristics **attributable to** that geographical origin and
- the production **and/or** processing **and/or** preparation of which take place in the defined geographical area

The difference between the two concepts is not always apparent and there are indeed a number of common points. PDOs and PGIs are the same in relation to:

- the types of products covered
- the use of geographical names (or traditional geographical and non-geographical names)
- the need of the product to originate in the region of which it bears the name
- the registration procedure
- the type of protection afforded to the registered name

But there are also differences. The main ones relate to the nature of the link between the product and the geographical area, which for a PDO has to be essential or exclusive, while for a PGI it is sufficient if the characteristics of the product are attributable to the geographical area. In addition, for a PGI the link can be based on the reputation of the product.

And while for a PDO all steps from production over processing to preparation of the final product have to take place in the geographical area, for a PGI it is sufficient if one of these steps is in the area.

Examples Some examples of registered PDOs and PGIs are listed below.

| PDO | PGI |
|---|--|
| Prosciutto di Parma (ham, Italy) | Arbroath Smokies (smoked fish, UK) |
| Volaille de Bresse (poultry, France) | Lübecker Marzipan (confectionery, Germany) |
| Sitía Lasithi Kritis (olive oil Greece) | Westlandse Druif (grapes, Netherlands) |
| Szegedi Salami (sausage, Hungary) | Jambon d'Ardenne (ham, Belgium) |
| Queso Manchego (cheese, Spain) | Marchfeldspargel (asparagus, Austria) |

This is an arbitrary selection of registered names (for the full list, go to http://ec.europa.eu/agriculture/foodqual/quali1_en.htm). However, it shows that both processed and unprocessed products can be registered as either PDO or PGI, depending on their characteristics and the nature of the link with the geographical area. A good example for a PGI that could never qualify as a PDO is “Lübecker Marzipan” – a marzipan specialty from the German town of Lübeck, made mainly from ground almonds and sugar. It has special characteristics and a reputation in Germany and beyond, but it would be impossible to require (as would be necessary for the PDO status) that all the raw materials that are needed for making it come from the geographical area as there are no almond trees in northern Germany.

Protection Once a name has been registered as a PDO or PGI, it may only be used for products which are produced in accordance with the product specification. In addition, registered names are protected against misuse, imitation and evocation. Once registered as a PDO or PGI, a conflicting trademark application cannot be approved. Registered trademarks that were applied for in good faith prior to a PDO or PGI application (that is followed by registration) can continue to be used, while a well-known trademark pre-dating a PDO or PGI application will prevent registration of the PDO or PGI if registration could mislead consumers. This relation between trademarks and PDOs and PGIs is sometimes known as 'coexistence' and was expressly endorsed by the WTO in a Panel ruling that rejected claims by Australia and the United States that coexistence should not apply.

Application Procedures Applications can be received both from within the EU and from third countries, the latter still being the exception – at the time of writing, only one name from a third country had been registered (Café de Colombia), while 13 applications for registrations from third countries were received.

For a simple case of an application originating in an EU Member State, the essential steps in the procedure are as follows:

First of all, the producers of the product in question develop a specification. The product specification is the core element of an application. It contains the provisions that after registration of the name shall be observed by all producers wanting to use the protected name. The specification is developed by the producers themselves and needs to include the following elements, amongst others:

- (a) the name of the agricultural product or foodstuff
- (b) a description of the agricultural product or foodstuff
- (c) the definition of the geographical area
- (d) a description of the method of obtaining the agricultural product or foodstuff
- (e) details bearing out the link between the agricultural product or foodstuff and the geographical area
- (f) the name and address of the authorities or bodies verifying compliance with the provisions of the specification and their specific tasks
- (g) any specific labelling rule for the agricultural product or foodstuff in question

This specification is submitted to the competent authorities of the Member State, where it is examined, published and opened for objections. The Member State authorities then take a decision on whether they consider that the application meets the conditions of Regulation (EC) No 510/2006. In the positive case, they submit their decision together with the application to the European Commission, where it is again scrutinised to check that it is justified and meets the conditions laid down in the Regulation. If this is deemed to be the case, the application is published in the Official Journal of the European Union. This publication opens an objection period of 6 months for all interested parties outside of the Member State that lodged the application. If no such objections are received, the name is registered.

This procedure can be complicated by a number of factors, such as the need to ask additional information, or by the receipt of objections either at national or EU level.

Registrations At the end of June 2008, a total of 785 names had been registered as PDO or PGI. 443 (or 56%) of those are PDO, the remaining 342 (or 44%) are PGI.

Figure 1 shows that the southern European Member States are clearly dominant in the use of the system. Various explanations have been offered for this fact, including different political and institutional factors (Dimara et al., 2004); climate and weather (Lee & Rund, 2003); differing legal and administrative set-ups, and differing traditions of protecting food products under various types of laws (e.g., Folkeson, 2005); and socio-cultural determinants, including food culture (e.g., Ilbery & Kneafsey, 2000).

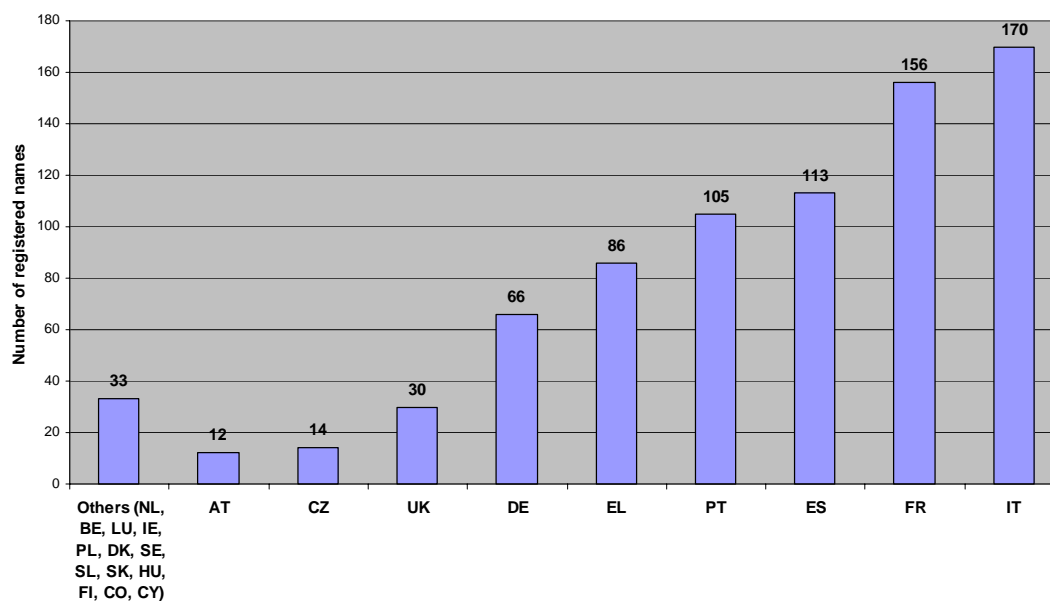


Figure 1 Registered PDO/PGI by country (June 2008)

In terms of product category, fruits and vegetables are first, just before cheeses. Taken together, these two groups of products account for 45% of all registered names. They are followed by fresh meat, oils and fats and meat-based products (hams, sausages, etc.).

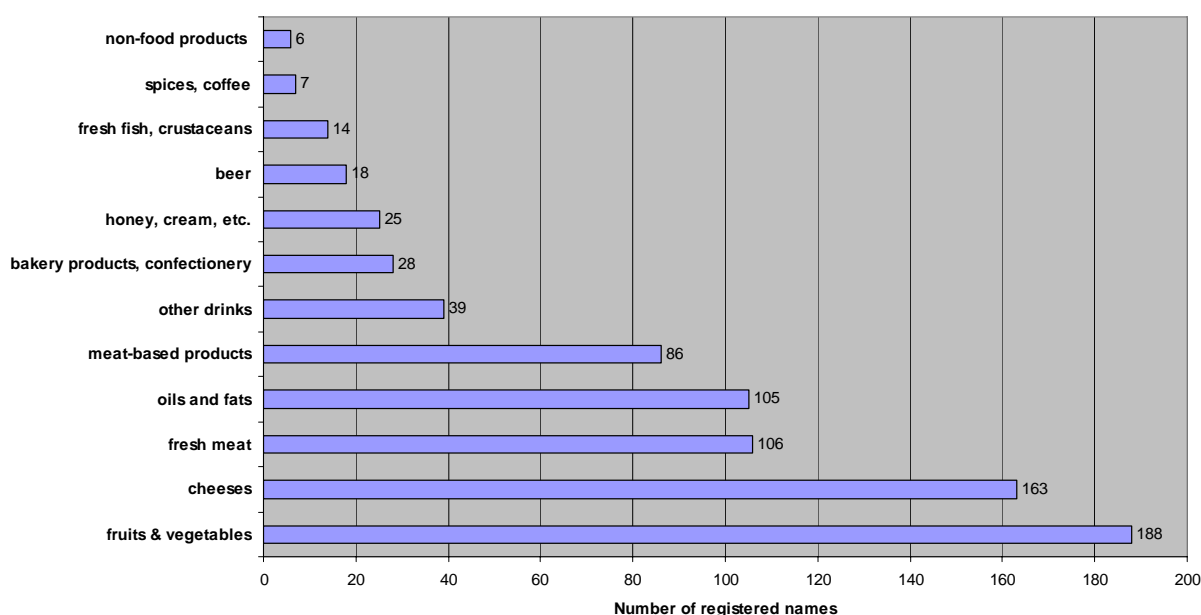


Figure 2 Registered PDO/PGI by product category (June 2008)

It may be interesting to know that some product groups have their preferred designation. For example, 93% of all cheeses and 87% of all oils and fats are registered as PDOs, while 100% of beers, 96% of bakery products, 77% of the fresh meat and 70% of the meat-based products are registered as PGIs. In the case of bakery products and beer this is probably due to the fact that they are significantly processed products and it is unlikely that the sourcing of ingredients from within the geographical area is requisite for the product, while for most cheeses and oils, which are produced at the first stage of processing, local sourcing of the raw materials is more likely. The predomination of PGI status in the fresh meat category appears to counter this trend but could at least partly be explained by the fact that animals are mobile and for a meat PDO, livestock feed has to be sourced as far as practicable from within the defined geographical area.

There are currently a total of 330 new applications pending at the level of the European Commission. Most of them come from those Member States that already have the highest number of registered names (Italy, Spain, France), but there are a number of pending applications from the new Member States as well (Poland, Czech Republic, Slovenia, Hungary).

There are also a few pending applications from third countries, most notably from China. In addition, negotiations are in train for the protection in the EU of geographical indications from Switzerland, Korea, and some other third countries.

In addition, about 110 requests are currently pending for amendment to already registered applications.

PDO/PGI policy review In March 2006, Regulation (EC) No 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs entered into force, replacing Regulation (EEC) No 2081/92. The new Regulation was drawn up to streamline procedures, clarify the role of Member States in developing applications and to take account of a WTO panel report that required the EU to make explicit in legislation the existing EU practice for dealing with applications from Third Countries. In addition, the new Regulation contains revisions pertaining to the labelling of PDO and PGI products and specific rules in relation to the control of compliance and enforcement activities.

The new Regulation was essentially a 'housekeeping' exercise, drawn up in a short period of time to meet the reasonable period of time agreed by the EU following the WTO panel. As a consequence, a number of policy areas were left unaddressed. At the time of adoption of the new Regulation, the Commission therefore issued a statement promising a future policy review covering all aspects of the policy that Member States, the Commission and stakeholders may wish to raise, including the following matters:

- identification of protected geographical indications and protected designations of origin as ingredients;
- use of alternative instruments such as trademarks to protect geographical indications and designations of origin;
- scope of products covered by the regulation with particular consideration to be given to salt, mixed herbs, wicker products, and condiments;
- identification of the origin of raw materials;
- criteria used to assess the generic status of a name;
- design of the Community symbols identifying geographical indications and protected designations of origin.

At the time of writing this article, two of the above issues have already been addressed. The scope of Regulation (EC) No. 510/2006 has been widened to include salt and cotton ⁽¹⁾.

All other issues listed above will be addressed in a Green Paper on agricultural product quality, to be published in October 2008 (see below).

¹ see Commission Regulation (EC) No 417/2008 of 8 May 2008 amending Annexes I and II to Council Regulation (EC) No 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs¹

Furthermore, the colours of the Community symbol for PDOs have been changed in order to distinguish it from the PGI symbol ²(.

Traditional Speciality Guaranteed (TSG) Council Regulation (EC) No 509/2006 on agricultural products and foodstuffs as traditional specialities guaranteed aims to promote traditional products with specific characteristics. Rather than protecting the name of a product linked with a geographical area, this system provides for registration of a traditional agricultural product or foodstuff recognised by the Community for its specific character.

The TSG logo is used for products with distinctive features which either have traditional ingredients or are made using traditional methods. Among the product names in this group are '*Kalakukko*' (bread, Finland), '*Jamón Serrano*' (ham, Spain) and '*Kriek*' (beer, Belgium). These have been registered following requests from Finland, Spain and Belgium respectively however they can be used by any producer in any country who follows the same specification. Their 'specific' character refers to the feature or set of features which distinguish them clearly from other similar products or foodstuffs belonging to the same category.

TSGs can be applied for with or without reservation of the name. If the name is not reserved, anybody can continue using it for their products, regardless of how they have been produced, subject to general legal rules, such as the need to not mislead consumers. Producers do not have to follow the specification. However, only those producers who follow the specification are entitled to use the name in connection with the words "traditional speciality guaranteed" or the abbreviation "TSG".

If the name is reserved, only producers who follow the specification are allowed to use the name.

Even though the TSG system was introduced at the same time as the PDO/PGI scheme, only 20 names have been registered so far. There are currently 22 pending applications and the system covers some important product names such as 'Jamon Serrano' and the traditional beers 'Kriek', 'Lambic' and 'Geuze'.

But this does not mask the fact that there has been very little use of the system altogether. There is therefore a need to reflect on the future development of the TSG scheme.

Non-EU certification schemes Recent years have seen a tremendous increase in the number of public and private certification schemes for agricultural products and foodstuffs, covering issues as diverse as compulsory production standards, additional requirements relating to environmental protection, animal welfare, organoleptic qualities, worker welfare, fair trade, climate change concerns, ethical, religious or cultural considerations, farming methods, and origin.

Certification schemes at the business-to-business level can be used by the food industry and retailers to obtain extra assurance about products supplied, thereby contributing to legal security and safeguarding the reputation of the retailer.

At the business-to-consumer level, certification schemes serve as a way to communicate different aspects of product and production method and thereby differentiate the products in the market.

Currently, certification schemes are subject to a range of rules at EU level, including the rules of the internal market, rules on competition, consumer information and labelling requirements as well as specific legislation on the subject covered by the certification scheme. However, it has been suggested that a set of guidelines specifically aimed at certification schemes should be drawn up at EU level to assist scheme-owners in developing and improving schemes.

Environmental aspects of food quality schemes Before going into the environmental aspects of food quality schemes implemented both at EU level and in the Member States, it should be mentioned that various environmental standards and measures exist for all agricultural production within the EU. Statutory EU management requirements (SMRs) in the field of environment include the Birds Directive; Groundwater Directive; Sewage Sludge Directive; Nitrates Directive; and Habitats Directive. In addition, farmers receiving the Single Farm Payment must comply with standards of good agricultural and environmental conditions

²see Commission Regulation (EC) No 628/2008 of 2 July 2008 amending Regulation (EC) No 1898/2006 laying down detailed rules of implementation of Council Regulation (EC) No 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs)

(GAEC) under the cross-compliance framework. Neither the SMRs nor the GAEC standards can be imposed on farmers in third countries producing goods for export to the EU. It has therefore been suggested that there is no level playing field for EU farmers who at a time of increasing market liberalisation have to compete with imports from countries with lower production costs and standards. Better communication on standards to consumers is certainly needed to enable them to make an informed choice.

While no explicit mention of the environment is made in Council Regulation (EC) No 510/2006 (other than the need for the product to be linked with and produced in a defined geographical area) or Council Regulation (EC) No 509/2006, there is some evidence that the systems have indirect beneficial effects on the environment. Recital (2) of Regulation (EC) No. 510/2006 states that *"The promotion of products having certain characteristics can be of considerable benefit to the rural economy, particularly in less favoured or remote areas, by improving the incomes of farmers and by retaining the rural population in these areas."* By adding value to products from less favoured or remote regions, registration as PDO or PGI can contribute to maintaining traditional landscapes in these regions, with the associated environmental benefits. However, very few studies exist that could substantiate this claim.

Also, registration can help to preserve traditional animal breeds or plant varieties and thereby maintain biodiversity (e.g., Scintu 2007).

Some studies (e.g., Mora 2007) find that PDO/PGI products are typically characterized by short production chains. To the extent that this is true, the PDO/PGI scheme contributes to localized food networks which could help saving resources for transport. Concepts such as food miles and carbon footprint suggest that buying local products is beneficial for the environment.

Finally, through synergies with other sectors such as tourism (some PDO/PGI products have associated events – special days, fiestas, etc.), there could be incentives for producers to preserve the environment in order to keep the visitors coming.

Each producer group is, of course, free to include environmental provisions in their product specification, and some have already done so, for example by defining extensive grazing regimes for cattle or by reducing or eliminating the use of pesticides in the production of fruits and vegetables.

It has been suggested that environmental considerations should become an integral part of the requirements for registration of a name as a PDO or PGI. While this may be feasible for some products (e.g. fresh meat; fruits and vegetables), it is certainly more difficult for products that are one or more steps removed from the primary production stage (e.g. bakery products; beer).

It goes without saying that the EU scheme for organic agriculture contains a whole range of environmental elements.

In terms of public and private certification schemes not regulated at EU level, a number of them include environmental criteria or are specifically aimed at environmental protection. An example is the LEAF marque ('Linking Environment and Farming') scheme in the UK. Other schemes contain environmental provisions that go beyond the required minimum standards.

Policy reflections and next steps As stated at the outset, the EU systems for the protection of food names are firmly anchored in the EU quality policy for agricultural products and foodstuffs. The preceding sections have shown that various measures of quality policy exist, but also that there is need to review them in a common context. Against this background the Commission has decided to launch a reflection on how to ensure the most suitable policy and regulatory framework to protect and promote quality of agricultural products, without creating additional unnecessary costs or burdens. This reflection includes the need to better communicate existing production standards to consumers; the further development of the PDO/PGI and TSG schemes; the question of whether and how the EU should get involved in regulating public and private certification schemes in the Member States; and finally the question of whether a new scheme at EU level is needed. As a first step the Commission intends to launch a wide consultation on whether the existing instruments are adequate, or how they could be improved and what new initiatives could be launched. This is done by means of a Green Paper, planned for adoption by the Commission and subsequent publication in October 2008. Following a public consultation until the end of 2008, a Communication will outline options for the further development of agricultural quality policy in a Communication, scheduled for May 2009.

Is there a need for a new EU scheme? Proposals have been made for new EU schemes for mountain products; for animal welfare; or for products from high nature value farmland. Other candidates for new schemes are likely to be voiced during the public consultation. However, schemes implemented at EU level carry a significant administrative cost. During a speech given to the Agriculture Committee of the European Parliament in Brussels on 6 May 2008, Commissioner Fischer-Boel therefore cautioned "*I am aware that there are some candidates for new EU-level certification schemes, for example covering animal welfare and environmental claims. I do not exclude new EU schemes for agricultural products and foodstuffs, but only where there are strong arguments and where existing certification schemes are not up to the task.*"

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Environmental labelling initiatives in the agri-food sector: evidence from developing countries

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Abstract Environmental labelling initiatives have gained much importance in the agri-food sector in the last decade. They cover almost any food and agricultural product and are widespread in developed as well as in developing countries. Many products may even be covered under different labelling programs. Four case studies have been chosen highlighting the impact of the labelling of fruits and nuts, rice, potatoes and sugar on producers and for coffee on biodiversity. The examples are taken from several developing countries of three continents (Africa, Asia, Latin America). All cases are based on primary data which has been analysed descriptively and with the help of econometric models. Major results indicate that environmental labelling leads mostly to benefits in terms of a price premium, increased market access and/or a more efficient management for producers. In addition, health and environmental benefits can often be gained. However, these benefits are contrasted with the costs of certification or with problems like the lack of information which can easily lead to the marginalization of especially small-scale farmers. These problems can be partially countered through technical and financial support from the private and public sectors. This ensures that the transparency of the market increases, information costs decrease and the credibility of eco-labels is increased. Otherwise, environmental labelling may contribute to the confusion of consumers, thus failing to transfer any benefits through a market-based process to the producers.

Keywords: *environmental labelling, agri-food products, developing countries*

Introduction The labelling or certification of products or even services has gained increasing popularity in the agri-food sector in the last decade. In the context of globalisation and trade liberalisation, it can be expected that this trend will also become more prevalent in the future, in response to the growing concern about environmental degradation, exploitation of employees and safety of food products. Although these concerns are shared by environmental and human rights groups and many consumers in industrialised and developing countries, strong polarisations can be identified in the debate. Many developing countries are worried about new protectionism through labelling, while industrialised countries are afraid of losing their competitiveness due to the costs associated with labelling. Indeed, it can be observed that in the context of the World Trade Organisation (WTO) traditional trade barriers like tariffs decrease, while regulations, standards and certification of agri-food products increase in importance and magnitude.

Nevertheless, environmental labelling is considered as an attractive policy measure because of its voluntary nature and market-driven approach to achieve environmental goals. Consumers can choose to purchase a relatively more expensive labelled agri-food product based on information about its impact on the environment, or can continue buying unlabelled products. Similarly, producers can choose to either invest into the production of environmentally friendlier goods which will be labelled as such, or to continue producing according to their current standards (Grote et al., 2007). The key elements of labelling are thus (1) standards or a set of environmental and/or social principles, criteria, and indicators, (2) auditors or certifying agencies who monitor and certify, and (3) an award, in form of a price premium or market access, to producers or traders acknowledging that they have achieved the standard.

A typical environmental claim on food and agricultural products ranges from the non-use of a certain inputs (e.g. pesticides) up to the description of a whole life-cycle including the production and process methods (PPMs) of a product. Organic products and those produced based on integrated pest management also are considered as labelled products. In addition to the environmental claims, other process attributes like animal welfare, biotechnology, social welfare are increasingly considered in labelling schemes. The labelling of products from the fishery and forestry sectors should also be mentioned in this context. However, opposed to the above, labelling in fisheries and forestry is aimed at solving global environmental externalities by introducing sustainable management systems. Open access to these resources has led to their overuse, known as the “tragedy of the commons” (Hardin, 1968). The criteria set under the newly established labelling schemes like the Marine Stewardship Council (MSC) or the Forest Stewardship Council (FSC) characterise sustainable production methods, trying to limit the catch size of the timber harvest.

Environmental labelling poses many challenges and has raised some concerns which can be summarised by the terms: label fatigue, fraudulent environmental claims on labels, unfair competition or green protectionism

(Grote, 2002). The multiplication process of labelling schemes has indeed resulted in decreased transparency, rising information cost, not only for the consumers but also for the producers. Little is still known about exact causes, motives and effects of labelling. More specifically, questions about costs and benefits of labelling for producers and consumers as well as about the effects of certification on the environment are raised.

This paper aims at shedding some light on the diverse impacts of labelling from the perspective of developing countries. Four recent case studies in which the Institute for Environmental Economics and World Trade has been involved, have been chosen, each from a different country selected from Latin America, Asia, and Africa: the first case study refers to the labelling of fruits and nuts in Brazil; the second example relates to different commodities in Thailand and the Philippines; the third case highlights the impact of labelling of forest coffee in Ethiopia and finally, Egyptian agri-food exports are investigated with respect to the impacts deriving from European standards. All commodities presented in the case studies are produced and labelled for export. While the objectives of labelling mostly aim at ensuring food safety, they may be also motivated by reasons such as increasing the access to export markets or, as in the case of Ethiopia, conserving biodiversity.

Organic labelling in the agri-food sector in Thailand and the Philippines Carambas (2005) provided an economic analysis of organic labelling in the agri-food sector. Her specific objectives were to estimate the costs and benefits of labelling, to assess the impact of labelling on the profits received by the farmers and other actors in the value chain, and to identify the determinants of farmers' decision to adopt labelling. She selected two Asian countries, namely Thailand and the Philippines for her primary research.

The development of organic agriculture in both countries started in the 1980s. In Thailand, the development was mainly driven by market factors like declining prices at the farm level but also by the increasing number of chemical poisoning. Panyakul (2002) noted that the number of people who suffered from chemical poisoning increased from 74 in 1971 to 2170 in 1981. Thus, in 1984, a national network of about 100 non governmental organisations (NGOs) and farmer organisations called Alternative Agriculture Network (AAN) was founded to promote alternative farming systems in Thailand. In 1995, AAN established the Alternative Agriculture Certification of Thailand (ACT) to provide standards and guarantee pesticide-free products. In 1998, it started to focus on certifying only organic products, and by 2002, the Organic ACT was already accredited to offer international organic certification services. The development of the organic movement in the Philippines was similar, though slower. The incentives towards organic agriculture were also connected with health problems related to chemical inputs. Local certification of organic products for local consumption has only started in 2002. The few organic agricultural commodities which are determined for export, are certified by a foreign certifying agency.

Methodologically, a cost/benefit analysis of labelling was conducted along with an assessment of profit distribution in the value chains. With the help of econometric models, determinants of adoption of certification and health benefits from converting from conventional to organic production systems were assessed. In addition, a contingent valuation model helped to estimate the farmers' willingness to pay for the health benefits. The data used was obtained from a survey conducted with 123 rice farmers in Thailand and 63 bananas and muscovado sugar producers in the Philippines in 2003. Certified and non-certified producers were included in the sample.

The results indicate that yields are generally lower for the labelled commodities except for rice where the yields are comparable with the non-labelled commodities. However, due to the price premia, the net revenues of the labelled farmers are generally higher than those of the non-labelled farmers although the costs involved may have the effect of a barrier to entry. This indicates that the farmers are better off when participating in a labelling program. However, the value chain analysis has revealed that the profit shares of the labelled farmers in the value chain are smaller than those of their conventional counterparts. Thus, the distribution of market power seems to differ in the marketing chain trading with labelled commodities as opposed to conventional products. This is also partly reflected by a relatively high profit share of exporters trading with labelled commodities which was found to be about 10 to 40 percent higher depending on the type of commodity. The private exporters of labelled rice have the highest share. Further related to the value chain, it was found that farmers tend to receive relatively higher profits when they sell to a trader being affiliated to a non-governmental organisation than to a private exporting company.

In Thailand, the adoption of certification was found to be mainly driven by the access to technical information about labelling, the perception of positive yield and environmental effects of organic farming, and whether the farmers experienced sickness in conventional farming in the past. In the Philippines, socio-economic factors like education, age or family size were found to be relevant, next to active promotion of the farmers' organisation for the adoption of organic farming systems. The willingness to pay for the health benefits associated with organic

farming has been found to be relatively higher for the labelled farmers with the income levels of the farmers determining the willingness to pay.

Labelling in the Brazilian fruit sector Dörr (2008) analysed the Brazilian fruit sector and the impact of different labelling schemes on producers. Brazil is the third largest producer of fruits among developing countries, after China and India. However, only around 2-3 percent of its total fruit production is exported. Thus, the potential to expand exports is large. In recent years, several certification schemes have been introduced to the fruit sector. These are especially the Integrated Fruit Production (PIF) Program, GlobalGAP, Fairtrade and organic certification schemes. It is not clear to what extent these certification schemes offer an opportunity to the farmers to increase their net benefits and their access to international markets or whether they might have the effect of non-tariff trade barriers. The following research questions are thus investigated: how do these different programs impact on certified versus non-certified producers, and are small-scale producers compared with medium-scale producers negatively impacted by the certification schemes?

The research draws on a survey of 303 mango and grapes farmers conducted in the region of Petrolina/Juazeiro in the Northeast of Brazil in 2006. In addition, 85 cashew nuts farmers were interviewed and six case studies with melon farmers in the relatively close by Serra do Mel/Mossoró region were conducted. The surveyed farmers are of small, medium or large size. Some of them have adopted certification a few years ago, and some are in the process of adopting. Non-certified farmers serve as a control group. To analyse the data, logit models have been run three times: first, for analysing the factors of the adoption decision for certification; second, for identifying the determinants for adopting two versus one certification scheme, and third, for testing the main factors that lead farmers to adopt specifically the PIF program.

A first comparison of the certification programs helps to find major differences between the programs. Dörr (2008) finds that while mango and grapes farmers have to comply with 115 requirements for the PIF program, the number of requirements for GlobalGAP amounts to 214. Most of the requirements from GlobalGAP are included in PIF. Bookkeeping is required from PIF-certified farmers, however not from GlobalGAP. Nevertheless, for farmers who are already PIF-certified it is easier to receive GlobalGAP certification. Fairtrade has a number of peculiarities: first, it focuses on small-scale producers, second, it puts a major emphasis on labor conditions, and third, it guarantees a minimum price for farmers in contrast to the other certification schemes. Organic certification focuses to a large extent on the production system itself having a total of 70 requirements. The monitoring is being carried out three times a year for PIF-certified farmers, twice a year for GlobalGAP and once for organic and Fairtrade certified farmers. However, it is difficult to compare the intensity of the monitoring as such.

The results indicate that certified mango and grapes farmers perform generally better in economic terms. They receive higher net income which partly derives from the price premium paid for the certified fruits. Comparing the prices the certified farmers received before and after the certification, it was found that farmers had a price increase of 58% per kg for mango and 28% per kg for grapes. Cashew nuts farmers received even higher premia opposed to melon farmers who did not receive any, but the latter managed to stay in the market due to certification. Other benefits refer particularly to environmental, health and food safety aspects. The costs of certification are found to be of minor importance, especially since financial support is provided by Brazilian governmental organizations like SEBRAE and EMBRAPA. Investments due to certification are partly considerable, but are outweighed by higher productivity and price premia. The price premia of small-scale farmers have been found to be lower compared to those of the medium-scale farmers, but the farmers are still able to compete.

The logistic estimates show that education and the years of experience mostly have a positive and significant effect on the decision to adopt certification. The chances to certify decrease, however, when farmers dependent on the income from non-agricultural activities are living in rural villages and not on the farm and trade with an individual buyer using a verbal trust-based arrangement. The estimates on separate grapes and mango models also find the size of the farms and the share of the current irrigated area to negatively contribute to the chances of adoption. The decision of mango and grapes farmers to adopt two instead of only one certificate was found to be influenced by whether the farmer can make use of the packing house from the group, cooperative or association. Variables such as 'years trading with the buyer' and 'living in the city' have negative and significant influence on the decision making.

Health and environmental standards in the Egyptian agri-food sector Mandour (2006) investigated the impact of European health and environmental standards on Egyptian agri-food exports. While there is a proliferation and increased stringency of health and environmental standards world-wide, little is known about

the impact of such standards on the exports of agri-food products, especially from developing countries. To shed some light on this, Egypt has been chosen as an example being an exporter of many agri-food products which are subject to different health and environmental standards imposed by the EU. In 2004, the agricultural sector accounted for 16 percent of the country's gross domestic product with agri-food exports having a relatively high percentage of total non-oil exports, and reaching relatively high growth rates of 17 percent for agricultural and 52 percent for processed food exports. The research therefore attempts to first understand to what extent Egyptian agri-food exports are subject to health and environmental standards, second to investigate the impact of the standards on the export performance of firms in Egypt and third, to understand whether the standards follow any protectionist purpose.

Mandour (2006) applied three different methodologies in her empirical research: an inventory approach, a firm-level survey and case studies. The firm-level survey conducted in 2004/2005 covered 34 exporters of fresh and processed food from Egypt. In addition, it was complemented by interviews with government officials. While a survey with such a small sample size cannot lead to any representative results, it can nevertheless help to reach a better understanding of the problems.

The inventory approach showed that a considerable proportion, amounting to around 40 percent, of the agri-food export value from Egypt to Europe is subject to health and environmental requirements. However, descriptive and econometric analyses further show that these requirements do not represent a threat to the exports since firms were able to adjust to these requirements and even to benefit from compliance. About 40 percent of the firms said that the health and environmental requirements had no impact on their exports, while around 30 percent even indicated that they had a positive impact. More than half of the surveyed firms indicated that the costs to meet health and environmental standards are between 0 to 10 percent of the total production costs, but they were not considered as major impediments. This was also confirmed by the econometric results showing that awareness, cost of compliance and market access restrictions faced by an exporter have a significant positive impact on the probability of the firm to export.

Two case studies were conducted which aim at analysing to what extent the specific sanitary and phytosanitary (SPS) standards act as a non tariff trade barrier. These were related to potatoes and to ground nuts. The case studies consider a number of different factors to assess whether a measure has a protectionist purpose or not. These factors include the relationship between domestic production in the country imposing the measure and the imported product, supply conditions in the exporting country, the frequency by which the measure is applied, the scientific basis for the measure, or the relationship between the intensity of the measure and the value of imports. However, very few of these factors indicated that a protectionist intention may be behind any of the health and environmental standards. This supports the view that the standards are mainly motivated by food safety and environmental concerns. Nevertheless, a number of domestic and external institutional factors were identified which deprive the farmers from achieving more benefits from complying with standards. At the domestic level, the quality infrastructure including laboratories or certifying bodies is rather weak in Egypt while externally, unexpected and sudden changes in regulations and lack of scientific risk assessment impede agri-food exports from Egypt.

Labelling in the coffee sector in Ethiopia The montane rainforests of Ethiopia, declared a biodiversity hotspot in January 2005, hold particularly high numbers of endemic species and have high plant and animal species diversity. However, they face extreme threats and have already lost a large share of their original natural vegetation. The major problem encountered in Ethiopia is deforestation. Increasingly, the montane rainforests are transformed into agricultural land. As a result, the coffee which grows in the forests disappears along with the forest. In Southwest Ethiopia, a total of 60 percent of the forest was destroyed or changed to a large extent during the last 30 years. Major causes are poverty, population pressure and institutional framework conditions like unclear user rights. But also the coffee production plays a role. Coffee (*Coffea arabica*) has always been Ethiopia's most important cash crop and largest export commodity. Today, with a production of about 250,000 tons, the country is one of the biggest coffee producers in Africa. Coffee export generates about 60% of the total export revenues of Ethiopia. With the transformation of the forests into agricultural area, also the forest coffee disappears (Stellmacher, 2008).

From the perspective of the coffee producers, the land transformation is a rational economic decision. But an assessment from the economics' perspective shows that the biodiversity of the forest has an economic value and that the costs for maintaining the economic value cannot only be covered by the local or regional population. Financial incentive systems are needed which transform the potential value of the forest coffee for the producer

in real income-related benefits. From this, a number of research questions³ arise: is labelling of coffee a suitable measure to increase producers' benefits and to contribute to the preservation of biodiversity at the same time? and more specifically: how does the production (collection) of coffee impact on the environment (biodiversity) in the rainforests of Ethiopia? And how does labelling impact on the producers and other actors in the value chain?

In order to find answers to these questions, a survey of 61 coffee producers was conducted in the Kaffa Zone and the Bench-Maji Zone in South-Western Ethiopia in 2007. The producers are either certified or non-certified, and all belong to cooperatives. Apart from the producer survey, a value chain analysis was conducted based on expert interviews with different actors. In addition, an inventory of retail prices for coffee from Ethiopia was done in Germany in 2007 to receive further information about the potential price premium existing for labelled coffee (Stellmacher, 2007, 2008).

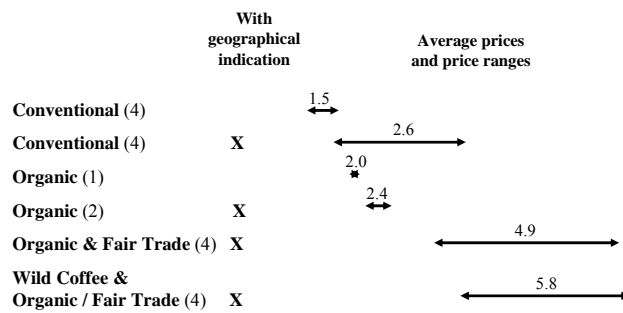
The labelling of coffee is already well established in some regions in Ethiopia and renowned amongst consumers from developed countries. Coffee labelling schemes include for example the Fair Trade coffee, organic coffee, Utz certified coffee, or the 4C Initiative (Common Code for the Coffee Community). The results of the research have shown that current certification programs which have been developed for plantation coffee are hardly suitable for forest coffee. Instead of certifying coffee cooperatives, it is suggested to certify the forest where the coffee is collected. For ensuring the sustainability of the production or the collection of the forest coffee it is also important that the coffee is traceable. Traceability means that it is possible to track back where the coffee comes from. If traceability is not ensured, then there is the danger that the price premium generally associated with the certification of coffee gives incentives to increase the collection of forest coffee. This again would impact negatively on the environment, leading to decreasing biodiversity.

However, it was also found that the producers in Ethiopia hardly receive a price premium for their coffee. Instead, certification is in practice rather implemented 'top-down' than participatory, and insufficiently communicated to the coffee producers. Members of the cooperatives were found to have neither knowledge nor an understanding about the underlying aim or the procedure of certification. Some associate the visit and the examinations of the certification inspector rather with the cooperatives' concern to increase coffee quality than with the monitoring of standards. This is coupled with the problem that the certified cooperatives do not necessarily pay higher prices to their members than local merchants do for non-certified coffee. These issues not only undermine the reliability of certifiers and the standards as such but contribute to discontent of cooperative members with the cooperative system as a whole. Instead the rents are kept by the cooperatives.

The inventory of 15 retail German prices shows that there is a price premium for labelled coffee from Ethiopia (Figure 1). While conventional coffee costs around 1.5 euro/250g, retail prices of organic and wild coffee amount to up to 8.50 euro/250g. Second, a duplication or even multiplication of labels can be found in the coffee market which seems to pay off: coffee labelled as organic achieves much lower retail prices than coffee certified as organic and fair trade and also compared with the more differentiated and scarce "wild" coffee. Thus, scarcity and labelling seem to play a role in determining the retail price. However, the multiple use of labels not only seems to have an effect on the price level but also increases the price variation. What can be also seen from this sample is that conventional and organic coffees always achieved higher prices if the country or region of origin was mentioned. This may indicate that geographical indications also play a role in determining the retail prices in Germany (Stellmacher, 2007; Grote, 2008).

³ This research is being financed by the German Ministry of Education and Research and conducted from the Institute for Environmental Economics and World Trade (IUW) of the Leibniz University Hannover in cooperation with the Center for Development Research (ZEF), University of Bonn in the context of the project called "The role of certification of wild coffee as an incentive for the conservation and sustainable use of coffee forests in the montane rainforests of Ethiopia (COCE II)".

Figure 1: Retail prices for selected Ethiopian coffee in Germany, 2007
(100% Arabica coffee; in €/250 g)



Source: Based on a survey by Stellmacher 2007.

Conclusions and policy implications Labelling as well as standards related to food safety and the environment are numerous and become increasingly complex. This was found for agri-food exports from Egypt. In some cases like the coffee sector in Ethiopia or the fruit sector in Brazil, even a duplication or multiplication of labels can be found. Overall, it seems that consumers are willing to pay price premia for labelled agri-food products which are reflected in the higher prices for labelled versus non-labelled products. This has been reflected in the increasing producer prices of the fruit producers in Brazil, the rice farmers in Thailand, and the banana and sugar producers in the Philippines but also in the relatively high retail prices for Ethiopian coffee. However, as can be seen in the latter two cases (Asia and Ethiopia), an unequal distribution of rents and power throughout the value chain exists. In Ethiopia, the producers hardly benefit from the labelling schemes due to the power of the cooperatives.

It has not been yet clearly established to what extent labelling schemes can achieve environmental goals like preserving biodiversity. There is for example the danger that producers receiving price premia have an incentive to collect more wild coffee. In such a case, traceability and monitoring play a major role. Another issue which has been raised as a problem is the costs of labelling. Sometimes, they may outweigh the benefits and thus have the effect of an entry barrier especially for small-scale producers. Indeed in the Brazilian case it was found that small fruit producers can be easily marginalized if the costs of certification are too high and no support is provided. This result was also supported by the Asian study. Furthermore, problems of labelling relate to the non availability of quality infrastructure including a certifying agency in the respective developing country. This was especially identified in the Egyptian case as a domestic impediment to increase exports, but the problem exists also in the Philippines and in Brazil.

The effects of standards as protectionist measures were explicitly tested in the Egyptian case study. However, the results indicated that this hypothesis cannot be supported. On the contrary, standards have been found to have no or even a positive impact. Another motivation for introducing labelling schemes is the increase of market access. This was found especially in the Brazilian but also in the Thai cases. In addition, it was found in all cases with the exception of the coffee producers in Ethiopia that labelling stimulates improved practices in production and processing, and increases efficiency (e.g. via record keeping, monitoring). Improved production practices are related to less use of agrochemical inputs but also to a more efficient use of water and energy. However, an increased support and more education and advice are needed to increase the awareness about standards and labelling schemes among all actors of the value chain. This is especially true in the case of Ethiopia and the Philippines but also to some extent in the other cases. Very often, labelling is also associated with improved working conditions and better access to social infrastructure or employment effects in the sector. However, these factors were not specifically investigated in the examples given.

There are number of lessons which can be learned from these case studies. Increased transparency is needed to sustain consumer trust. This also includes ensuring fair and trustworthy monitoring and certification. In order to avoid negative trade and development impacts, especially in developing countries, national environmental particularities need to be considered when setting standards for labelling. A consultative labelling design process must ensure that fairness at production level is achieved. In addition, participation of small and medium enterprises in certification schemes needs to be ensured to avoid their marginalisation. Overall, if used in a

voluntary and transparent manner, environmental labelling can be a valuable measure to promote sustainable agriculture.

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The future of agriculture, the balance between food and environmental security

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Abstract At a global scale the world is faced with two highly serious security challenges, that of feeding the fast expanding population and that of protecting and conserving the environment and natural resources. These two entwined security challenges are compounded by climate variation or change. European rural lands are mostly managed through the dedication and efforts of millions of private landowners and entrepreneurs. The demands placed by society on these farmers and foresters are fast increasing. They have the central role to play in delivering food and environmental security but there are extensive market failures surrounding most of these services. Can meaningful payments be made by consumers and sufficient income earned by producers to fund the delivery of these environmental goods? It is suggested that this is doubtful other than at a micro and intermittent level. It is therefore here that European Union (EU) policy correctly steps in to provide the support for these benefits to society. It is certain that the support required must remain an EU wide competence. Further evolution of the Common Agricultural Policy (CAP) is inevitable but this must be handled in a way that secures the multifunctional outputs of our countryside and gives fair levels of public payment made to those rural businesses supplying public benefits. Higher security and sustainability standards will best occur through a simple basic level of regulation, some niche market schemes but predominately through publicly financed incentives.

Keywords: food security, environmental security, public goods

Introduction It is worth explaining that I am a farmer and my own business has been awarded certification with products leaving the farm labelled for some 15 years. In addition I am the owners' representative on the standard setting committee for forestry certification in the UK. I am therefore no stranger to the practicalities of both ends of the certification process.

European Landowner's Organisation To first explain to you a little about the European Landowners' Organisation (ELO). It began in 1972 and is now a federation of the national landowning associations across all the 27 Member States. In fact there are 57 individual associations in the ELO federation. Many associations are small, Malta being an obvious case and some are still fledgling, for example in Cyprus and Romania. Some associations are substantial, Germany, Spain and in the United Kingdom. The important thing is that our representation on behalf of landowning interests is truly EU wide and through consensus within ELO we can take forward an immensely strong lobby. ELO is independent, non profit making and is recognised by the Commission as being of great importance as leaders in the countryside debate. We are accredited by the EU as a Green Organisation. You might well ask why should a landowner's organisation be accredited as a green organisation like WWF or Greenpeace? Well the truth is that landowners' are the ultimate stakeholders. In fact I would go so far as saying that they are not just stakeholders they are the resource holder, they are the people on whose land and through whose endeavours the stewardship of our countryside, its food production and its wildlife depends

Working closely with the Commission's Directorate Generals of Agriculture and Environment, ELO involves itself with many issues, from the complexities of the reforms of the Common Agricultural Policy, to forestry, to field sports, to environmental issues and designations but through all of this runs the core essential of private property ownership. You will appreciate and understand the importance of secure private property rights whether it is tangible property or intellectual property and that as the EU expands eastwards so secure ownership must remain high on the agenda. I just set this aspect as a base from which we need to work to achieve sustainability through agricultural production. ELO therefore promotes a prosperous countryside through dynamic and responsible use of property in private ownership.

It is interesting to note how the press is reacting to the debate on the question of food availability and price. Up to just 9 months ago most articles in the press were not about food but about the damage being done to the environment through habitat loss, pollution and diminishing resources. Suddenly the topic of interest has changed and food is the all important subject of the day. However the central theme of this paper is that neither food nor environment should dominate but that we must have a combination of both. The European farmer, landowner and manager is and has always been a producer of a combination of the outputs of land management, of Food and fibre, Forest products, Farm buildings, Fuels, Fun including the cultural heritage, Flora and Fauna, Farmed landscapes, Flood protection and water resources and finally Fixing carbon. These are the nine "F" words. Landmanagers continue to produce these outputs but an increase is now required of all these multifunctional benefits. So how are we to achieve not only the correct balance but an increase in these outputs?

While a market exists and therefore an income stream follows from food, fibre, forest products and fuel, it is obvious that a market does not exist for many of the public benefits further down this list. It is here that EU and government support rightly steps in to support the provision of these public benefits but can this also be supported through product quality labels and certification? Let me come back to this topic a little later.

In between the two primary objectives of food and environment comes the increasing complexity of climate change which will impact on the delivery of all these multifunctional outputs and to which the European Union must also respond.

The global food challenge. The global food challenge is simple to state: it is to feed the human population and preferably better than we are currently achieving. The most important underlying trend in the food challenge is population growth. The world's population is predicted to increase by 50% to over 9 billion in 2050. Total world grain production is still growing; however grain production per person peaked 20 years ago and has been stagnant or slowly declining ever since. Also, as countries grow richer their demand for livestock products, meat, milk, eggs etc increases which in turn means an even greater demand for feedgrains to support these livestock systems.

Three further critical factors which affect productivity emerge. These are soil degradation, land availability and water resource. The data on soil loss is not adequate. But the debate is not whether soil is being lost, but at what rate this is occurring. However most analysts of the global food situation agree that even more critical than the declining availability of agricultural land and soil loss is the availability of water. It is estimated that by 2025 nearly 2 billion people will be living in areas suffering absolute water scarcity and two thirds of the world's population will be experiencing water stressed conditions. Increasing the efficiency of water use in agriculture is therefore critically important. With its strong economic and political position the EU has a definite leadership role to play in demonstrating a sound response to the challenge of food security. All this implies that the intensity of farming through output per hectare will have to rise and that Europe cannot expect to rely on an increase of imported food.

The global environmental challenge. Turning to the global environmental challenge the success of economic development in the last two centuries in improving living standards and the health and longevity of a rapidly growing population has all come at considerable environmental cost.

The expansion of urban areas, the transport infrastructure, the exploitation of forests, then coal, oil, gas and minerals, together with the increase of the cultivated and grazed areas and the changes in agricultural technology substituting mechanisation, fertilisers and crop protection products for labour, have all literally dug into natural habitats and brought about a significant fall in biodiversity. Consequently we must react in order to halt this loss of biodiversity, of habitats and species and to protect our resources of soil, water and air.

Nearly all of these challenges are trans-national and we now have international action in the form of the Convention on Biodiversity to try to halt this loss by 2010. The EU takes this extremely seriously with its Habitats and Birds Directives under which some 18% of Europe's land area has been designated. Also a range of policies, including many under the Common Agricultural Policy, are in place.

The environment does not stop at biodiversity, the cultural heritage and landscape is also threatened by general economic development and changes in the technology and scale of farming. Landscapes vary greatly across Europe but differing societies treasure these landscapes, so that these "ownerships of place" become highly valued. They are also vital resources for the diversification of the rural economy of rural areas especially for recreation and tourism.

I would argue that the EU leads in determining tight standards for environmental protection and that we should be urging and expecting other countries to match our level of environmental stewardship. There is little point reducing European agricultural production only to increase the import of goods produced under lower health, employment and environmental standards.

There is now little merit in debating whether we could have achieved our current living standards with considerably less habitat and biodiversity loss. We are where we are.

Interaction between these two challenges. Agriculture is, of course, dependent on a healthy environment but certainly within Europe our biodiversity and landscape is in turn highly dependent on our agricultural management. However, before the agricultural and industrial revolutions, and given the far lower population pressure at that time, what we might call "first generation" or pre-industrial, agriculture" was much less intrusive on nature. The next, "second generation agriculture" turned to science and technology to increase productivity in order to cope with a soaring population, but we later discovered, at significant environmental cost. The challenge we now face is to devise a "third generation agriculture" to address the global food security challenge; to enable us to keep pace with the still growing population worldwide by maintaining and increasing productivity, and yet to do so in a dramatically

less environmentally intrusive way. We don't have a choice about which challenge has to be met. We have to rise to both.

We therefore need to search for technical solutions to provide for increased production yet with reduced environmental damage. This will require the right incentives both fiscal and practical to bring about the right result.

Now add climate change Now we need to add climate change predictions to our challenges. The overwhelming scientific consensus is that climate change is happening; it is man made; and, depending on the collective global response, it will significantly lift average temperatures during this century and in doing so will intensify both the food and the environmental challenge.

As far as the environmental impacts are concerned we can anticipate further competition for land from agriculture, increased species and habitat loss and increased pressure on the world's natural forestry systems. Inevitably more water will be required to achieve greater food production and this coupled with climate change will see more wetland ecosystems threatened.

What is clear for food production is that the vulnerability to climate change will be uneven. Indeed, certain mid latitude countries may actually enjoy greater outputs from higher temperatures where water is not the limiting factor. However, in the tropics and in the many areas where non-irrigated dry-land agriculture predominates, yields will decrease. Large numbers of people inhabit these affected regions and inevitably demographic instability will result.

It is ironic that despite being the major contributors to the increases in atmospheric carbon, the developed countries, in particular the mid latitude countries of North America, Europe and Japan, seem relatively less negatively affected by climate change predictions than most other parts of the world. These developed countries also have the wealth, the industrial structure, the technology and the research capability to enable their food supplies and their natural resources to adapt. It could be argued that these countries have the moral responsibility to actually increase their net exports of food.

The case for an European food and environmental security policy Having outlined the two challenges, their interactions and how they are affected by climate change. Let us now consider the responses needed.

Why should we assume that these challenges should be tackled through the European Union and the use of EU funds? The last half century has seen the development of the single market, a raft of pan EU policies and directives together with an evolving Common Agricultural Policy (CAP) and the various treaties including now the Lisbon Treaty. These agreements have delivered an effective single market able to maintain influence in the face of the USA and now the new economies of China and India. Europe's natural and cultural environment crosses boundaries and policies needed to protect and enhance these essentials must also cross boundaries.

The policy objective and challenge is to turn the whole mindset of the public, politicians, and land managers to create a new rural policy fit for the 21st Century. This is the sort of vision a European food and environmental security policy could grasp – with food security and the preservation of our natural environment at its core.

To put it another way the objective should be to “incentivise private sector rural resource managers to produce the socially optimal quantities of high quality food, fibre, renewable energy, biodiversity, landscape, heritage and soil, water and air management”. Quite a challenge but now we have to motivate all abilities including EU and national government leadership and funding.

How do we decide on the mix of these outputs? Can we decide on how we should secure this mix? For the market goods, the food and fibre etc the market will guide demand and therefore production. The CAP and its various reforms have and will continue to move us in that direction with decoupling and the cross compliance, under the Pillar I of the Single Farm Payment Scheme imposing a sensible level of environmental base standard.

However for the non-market goods, who will pay for the delivery of these benefits? What quantum of these services do we require? Can they or should they be funded or part funded by a user charge, a product price enhancement or label charge, or should they be funded through indirect taxation at national and EU level? Almost inevitably it will be a mix, but how secure are these organic, regional labels and assurance schemes before they lose their niche market higher return status? How secure are they in this world of increasing food prices and greater demands for statutory higher environmental, food safety and animal welfare standards?

Despite several decades of quality marks aimed at showing protection for the environment, we only see 5% of the market supporting this type of production. The willingness to pay for these quality marks is limited to the very top end of the market so what really is the maximum return that this can provide? Is it down to education, consumer income or society's affluence?

Certification is necessary to demonstrate this premium end of the market but resistance is seen from the consumer when price is the determining factor and resistance also comes from the producer where a balance has to be struck between the cost and bureaucracy of certification and the likely increased returns. To give you an example from the forestry industry, the assurance protocols have been so stringent that the cost of certification has stifled the widespread adoption of certification of forests particularly with the smaller forest businesses. The certification of forest has brought no price advantage to the marketed timber; it has only eased the marketability of the output of the forest. Owners and foresters have therefore had to accept higher production costs and standards purely to secure their markets.

Internalise, regulate or incentivise? To internalise environmental benefits into production raises the question of which benefits can be successfully sold through this method and will such a process provide the geographical coverage needed. Is it possible to market Natura 2000 site products and obtain returns which really fund improved environmental management? Cork production from the beautiful Montado areas of Portugal is struggling in the face of competition from screw and plastic top wine bottles. Geographical indicators, local designation and assured methods of production can provide some price and marketability advantage but will this provide meaningful return to ensure environmental gain?

Regulation has a poor record of success in the more advanced levels of environmental provision. Generally the negative approach of regulation lifts only a negative response. It is positive interest and enthusiasm which is needed from landmanagers to ensure ongoing and positive conservation management. However, I accept, there is a fair case for a cross-compliance level of regulation to provide a base to environmental management.

Incentives may be more effective enabling the targeting of environmental benefits, giving wider application and responding to regional or local conditions. Much experience has been gained on the use of incentives and the take up of agri-environmental schemes has a fairly good record.

The best solution may well be a basic application of Cross-Compliance with custom built environmental schemes through Pillar 2 of the CAP. The Health Check has introduced the idea of environmental schemes within Pillar 1 by way of Article 68 but that raises many new issues.

Food security To bring together some conclusions, the long run aim of the policy is to feed the European population and contribute appropriately to feeding parts of the rest of the world too. The core of the food security policy is to protect the long run food production capacity of the EU. This refers of course to conserving its agricultural land, particularly the most fertile land, but also to the knowledge, skills and commitment of its farmers, to research, including biotechnologies and to an active extension service. It goes without saying that if farm businesses are not profitable then those land managers will not be there and in a position to deliver the required environmental benefits.

The measures needed embrace productivity and competitiveness, research and development, and its application onto our farms, to better integrate farming and environmental management, cooperative working both in size of holdings and in purchasing and marketing, ensuring food safety and devising ways to manage volatility in markets, climate and pest and disease uncertainty.

Environmental security The aims of an environmental security policy are to achieve the food security goals but to do so while enhancing the environment. There are unavoidable and uncomfortable trade-offs to be managed between ensuring acceptable living standards and the conservation of environmental capital. But Europe can confidently claim to have confronted this trade-off more seriously than other parts of the world but now we have more to do and Europe must show leadership to the less developed countries.

To achieve all this demands precision agriculture and precision environmental land management. The elements of an environmental security policy must address the protection and enhancement of biodiversity, habitats and species, landscape including heritage, soils, water quality and quantity, carbon management, and land based renewable energy. In arranging the provision of these services it will be essential to pay special attention to the needs of remote, mountainous and marginal areas.

The EU does not start from scratch in developing practicable ideas and instruments to tackle these challenges. We have over three decades of experience of trying to deal with environmental market failures and stimulating rural development.

The real target is the EU budget I would suggest that rising to the food and environment challenge is a far greater task for the next half century than that addressed by the EU over the last 50 years. It may well involve increased funds from the EU. Currently 53 billion euro is spent each year under the EU budget heading number 2 which largely covers the CAP. To put this expenditure into context it amounts to only 1% of the total public expenditure of the 27 member states, yet it supports management across 80% of the territory of the EU where 40% of the population live.

We must first decide on policy objectives and then agree the resources needed. Unfortunately there are certain politicians who think of budgets first before they consider the objectives. It is highly probable that to provide society with its required benefits from our countryside then the overall budget may well have to expand. But to achieve this we desperately need a meaningful partnership between landmanagers and the conservation and environmental groups to make the case for an adequate budget and see our way to a sustainable future.

ELO is working hard on this subject and is very much in the forefront of the debate with the intention to bring about this mindset change so that we have a real food and environmental security policy fit to take us forward with confidence into the next decade or hopefully longer.

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Soil Association organic case study

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Abstract Organic agriculture is a long established, defined and regulated system of food production. In the UK, the environmental and organic organisation, Soil Association, has for 60 years been promoting the benefits of organic agriculture and food production and in later years, established a set of organic standards and a robust inspection and certification system. Agriculture and food production have a significant impact on the environment, particularly through emissions from mineral fertiliser production, gases from ruminant livestock and energy use by farming, processing and transport. Organic agriculture offers a more sustainable system of food production due to its use of renewable nitrogen sources from animal and green manures. Despite lower yields, organic agriculture can produce more food per unit of energy used. To promote the benefits, the Soil Association has used a number of industry and consumer focussed initiatives. These include education, events, publications and demonstration farms to reconnect people with food production. Additionally, the Soil Association has run many campaigns, and lobbies government to increase support for organic agriculture and highlight some of the problems with intensive food production. Using a comprehensive system of standards setting and review, the Soil Association ensures its organic standards meet regulatory and consumer expectations. Its subsidiary, Soil Association Certification Ltd, delivers consumer trust via a robust system of inspection. The combined organisations have supported sustained growth of organic agriculture and retail market value, and there is a strong consumer recognition of the company's organic logo. Future concerns lie with the proposed compulsory use of a European wide organic logo which may cause private logos to be removed from labels and loss of regional identity. Based on the growth of the organic sector in the UK, it is concluded that this range of labelling and certification initiatives, successfully markets a defined and regulated system of sustainable agriculture.

Keywords: organic Certification, labelling, sustainability, marketing

Introduction Organic agriculture and food processing is a long established, worldwide system of food production. In the United Kingdom, the organically registered agricultural area (organic and in-conversion) represents 3.5% of the total agricultural area (Soil Association, 2007). This case study discusses the environment and the impact that agriculture and food production has on the environment and describes the role that organic agriculture has in providing a holistic system of food production that may reduce environmental impact and provide a more sustainable method of food supply. It summarises organic production standards and explains the role of certification to ensure integrity of the system. It will also explore Soil Association's labelling, marketing and education initiatives that promote and raise awareness of the benefits of organic food.

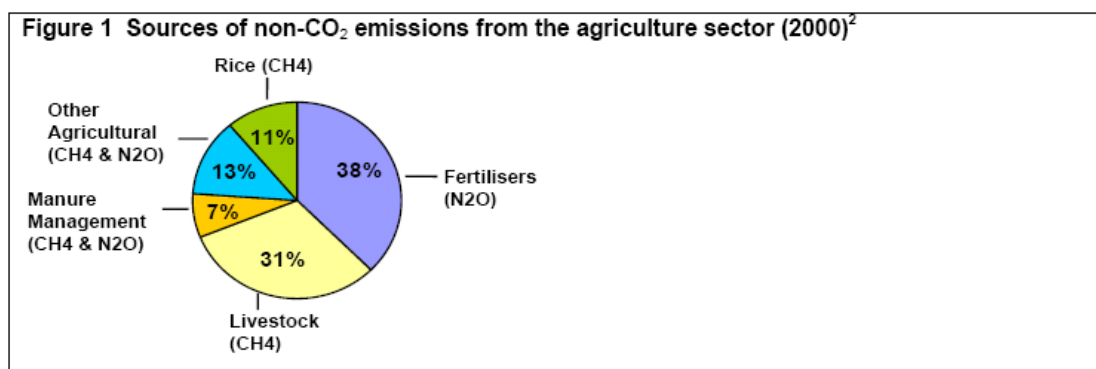
The study is mainly limited to food production and supply and related products such as feed and seed. Other organic non-food products such as textile products (cotton, wool, leather) and health and body care products (soaps, skin creams, tinctures, cleaning materials) are briefly discussed.

The Soil Association is a leading UK environmental charity campaigning for people & planet-friendly, organic food, farming and non-foods. It was founded in 1946 by Lady Eve Balfour and has developed into a UK wide public interest organisation. Their aim is to connect people with the health of the soil, plants, animals, humans and the wider environment and the critical importance this plays in terms of securing a healthy and sustainable future. It currently has 26000 members worldwide and employs around 130 people.

The Soil Association undertakes a wide range of functions such as: developing organic standards; providing education, support and training opportunities for farmers and growers; forming policy; lobbying government; campaigning to raise awareness of the benefits of organic food and farming and commissioning and publishing a wide range of reports. The Soil Association also offers an organic inspection and certification service via its wholly owned subsidiary Soil Association Certification Ltd. This is a commercial operation and surpluses made during its certification work are passed back to the charity to further support the work of the charity to promote the benefits of organic food and farming. Soil Association Certification Ltd undertakes around 6000 inspections per year and certifies around 85% of organic products sold in the UK (Soil Association, 2007).

The case study describes current environmental concerns, the origins of organic agriculture, a brief overview of organic standards, how the standards are communicated, how they are implemented and regulated, and what benefits organic food production has on the environment.

Agriculture and the environment Agriculture and food production has a large impact on the environment worldwide representing about 14% of greenhouse gas (GHG) emissions (Stern, 2007). The majority of the non-CO₂ GHG emissions (38%) come from the production of nitrogen based fertiliser (Figure 1). The remainder coming mainly from gas releases from ruminant livestock and manure management. Additional to this are the emissions from energy use for cropping, transport and processing and from packaging production and disposal of waste products, thus one can begin to see that food production is one of the key areas for targeting emissions reductions.



(Source – Stern 2007)

Nitrous oxide NO₂ is the major product of fertiliser production (see Fig 2) estimated to be 300 times more potent than CO₂ as a green house gas and is released in large quantities as part of the fertiliser manufacturing process.

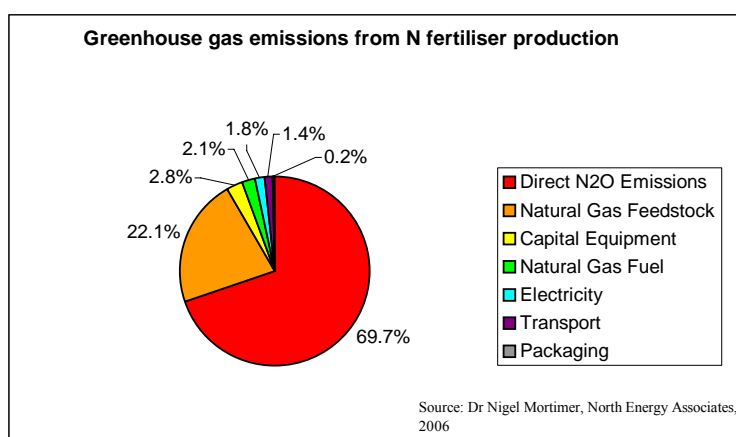


Figure 2 Greenhouse gas emissions from nitrogen fertiliser production.

It is seen that the requirement for nitrogen based fertiliser by non-organic agriculture is releasing high levels of GHGs into the environment. One of the main raw materials for fertiliser production is the non-renewable resource, natural gas, which is actually used as part of the process, rather than just an energy source. This means that one of the key inputs into non-organic agriculture is produced using non-sustainable raw materials. The production of nitrogen fertiliser and its role in agriculture is described in more detail in understanding nitrogen and its use in agriculture (EFMA, no date). The main sources of nitrogen in organic agriculture come from the recycling of animal manures, from use of nitrogen fixing leguminous crops and from green manures that minimizes nitrogen leaching during fallow periods.

In the UK, food production represents 18% of the total greenhouse gas emissions of which 9% is from agriculture and 9% is from distribution, processing, retail and consumption.

Organic agriculture, with its prohibition of chemically synthesised nitrogen based fertiliser, has been demonstrated to be a more energy efficient system of food production, despite some reduction in yields. Overall, UK organic farming is 26% more energy efficient per tonne of food produced than non-organic agriculture.

It is more efficient for the production of green vegetables, wheat, milk, lamb and pigs, but it is less efficient in a few sectors, in particular poultry. Table 1 summarises the findings of MAFF and Defra studies on organic farming energy use.

Table 1 Energy requirements of various food products in GJ/tonne (Energy Use and Organic Farming, Soil Association 2007)

| | Wheat | Potatoes | Carrots | Cabbage | Onion | Broccoli | Leeks | Beef | Lamb | Pork | Milk | Eggs | Poultry meat |
|-------------|-------|----------|---------|---------|-------|----------|-------|-------|-------|-------|------|-------|--------------|
| Organic | 2.02 | 1.71 | 0.45 | 0.25 | 1.05 | 1.9 | 0.4 | 15.56 | 10.79 | 14.28 | 1.83 | 15 | 16.89 |
| Non-organic | 2.4 | 1.49 | 0.6 | 0.9 | 1.25 | 3.7 | 0.95 | 26.54 | 24.99 | 21.97 | 2.55 | 13.66 | 15.17 |

Of the fifteen sectors analysed, cabbages, leeks and carrots are the least energy demanding foods (i.e. traditional British vegetables, using around or less than 1GJ/t), arable crops and milk are next, then meat and eggs (10-30 GJ/t), while heated glasshouse vegetables are highly energy intensive (over 100 GJ/t), an order of magnitude greater than other foods. For example, non-organic 'long-season' glasshouse tomatoes require 136 times more energy as cabbages per tonne, and several times more energy even than red meat.

Tomatoes have been excluded from this average, as the data is only for 'long-season' tomatoes which are little grown in the UK organic sector. If tomatoes are included and it is assumed that all production is 'long season', then the overall energy efficiency of organic farming would be 22% less than non-organic.

The average energy efficiency of the sectors where organic farming is more energy efficient is 40% less than non-organic production. Organic farming makes the greatest national contribution to reducing national energy use in the milk and beef sectors. The four sectors where it is less energy efficient are: potatoes (14% less efficient); poultry (11% less efficient); eggs (10% less efficient); and long season heated glasshouse tomatoes (30% less efficient).

Further benefits of organic agriculture to the environment are outlined by Soil Association 2005 policy document: Stern Review of the Economics of Climate Change, Soil Association evidence to HM Treasury 2005.

Another main area where non-organic agriculture is damaging to the environment is in the use of pesticides to control weeds and crop disease. In the UK, over 31000 tonnes of pesticides are applied annually to crops. Many of these chemicals are persistent, with residues of DDT still being found in foodstuffs despite its use being banned in Europe over 30 years ago. Many of these chemicals leach into water systems (Figure 3), damage the environment and require large amounts of energy to produce. Annual clean up costs to the UK water industry amount to some £125M.

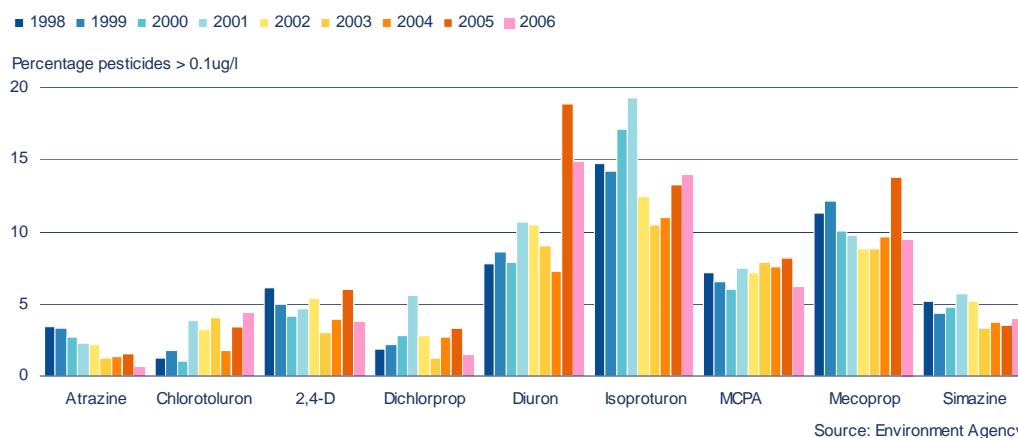


Figure 3 Top nine pesticides most frequently exceeding 0.1µg/L in surface freshwaters in England and Wales (% samples).

Other areas where non-organic intensive agriculture is considered to be harmful are the widespread use of veterinary medicines, organophosphate based parasite controls and antibiotics, which are used as growth

promoters in pork and poultry production. All of these chemicals are released into the environment, where resistance, particularly to antibiotics is building up in environmental microbial fauna.

The latest threat to the environment, with potentially serious consequences for food production, is the development of genetically modified crops, where the genetic material is artificially altered to give plants properties that they would not normally develop in natural breeding programmes. The early crops have been developed to withstand use of certain herbicides, which have little benefit for the consumer. One of the main concerns of releasing GM organisms into the environment is that there is a loss of control, for example by cross breeding, pollen drift and crop losses caused by volunteer plants and transport leakage. The pros and cons of GM technology are discussed by FAO (2003).

Because organic agriculture is not dependant on chemically synthesised nitrogen fertiliser, and only has minimal usage of natural pesticides, it is considered that organic farming is a more sustainable, less polluting, environmentally friendly system of production. So given the concerns and problems associated with non-organic agriculture, the requirements of organic agriculture are discussed.

Organic standards and regulation The Soil Association published its first organic standards in 1967 with their origins based on work done by Steiner in the 1930s and Rodale in the 1950s. In 1991, organic standards in Europe were formalised in the European Organic Regulation 2092/91 which covered crop products and laid down the rules for the certification of organic operators and specified requirements for inspection and certification. In 1999 the EU regulation was extended to cover livestock products. Many nations such as USA, Japan, Australia and India have national organic programmes which describe production methods and require control systems, typically meeting the requirements of ISO65 for inspection and certification systems. The standards are too lengthy to describe in this paper, but the Soil Association organic standards can be found on www.soilassociation.org and other examples of standards can be found in EU2092/91, Codex Alimentarius CAC/GL32 guidelines for the production, processing, labelling and marketing of organically produced foods 2001, and the principles of organic food being defined in the International Federation of Organic Agriculture Movements (IFOAM).

The organic standards offer real environmental benefits by prohibiting use of inorganic nitrogen based fertilisers, severely limiting the use of pesticides (6 natural pesticides currently permitted), requiring responsible management and use of manures and limiting antibiotic usage.

The organic standards cover the entire production chain, from primary production through to processing, including feed production, agricultural inputs and control of imports from outside of the EU making it a truly 'farm to fork' system. The EU regulation requires any operator who is making organic claims to be certified by an approved (by the competent authority in the member state) certification body. This makes it the only system of agricultural production to be defined and controlled by regulation, rather than by industry standards such as farm assurance, integrated cropping and other non-regulated systems that typically only encourage responsible use of chemical inputs, rather than having any particular positive environmental benefits. Other schemes, which have regulatory backing, such as the geographical schemes of Protected Designation of Origin (PDO) and Protected Geographical Indicator (PGI), offer traceability and regional identification for various products, but have no requirements for specific environmental benefits. Organic agriculture is summarized by Schmid et al (2007) and described in more detail by Lampkin (2002).

Soil Association standards incorporate the European baseline standards but also have additional standards, particularly in: pig and poultry production; animal health and welfare; conservation and water management; genetic modification; processing and packaging. Soil Association is a private standards body and has developed a range of additional organic standards in aquaculture, wild harvesting, forestry, textiles, health and beauty products, the latter three being outside of the scope of the EU regulation. Standards were developed in these areas as the market for non-food products wanted some formal industry standard and recognition. The non-food standards follow the same organic principles as for food products, but do not enjoy the same level of regulatory protection as food products. Organic cotton growing worldwide is a major consumer of global pesticide usage and the wool, tannery and dyeing industries release large quantities of environmentally damaging products during their processing. It is for environmental protection reasons that standards have been developed in these areas.

To address concerns over the level of food packaging waste generated each year, around 4.8 M tonnes in the UK (WRAP) of which two thirds of packaging is used for food, organic packaging standards have been developed

which prohibit certain materials and require operators to undertake regular packaging use reviews with the aim of reducing packaging waste within the organic processing industry.

Standards are set by the Soil Association standards board and reviewed by various standards committees for the main organic areas (e.g. agriculture, horticulture, processing), the setting process is summarised in figure 4.

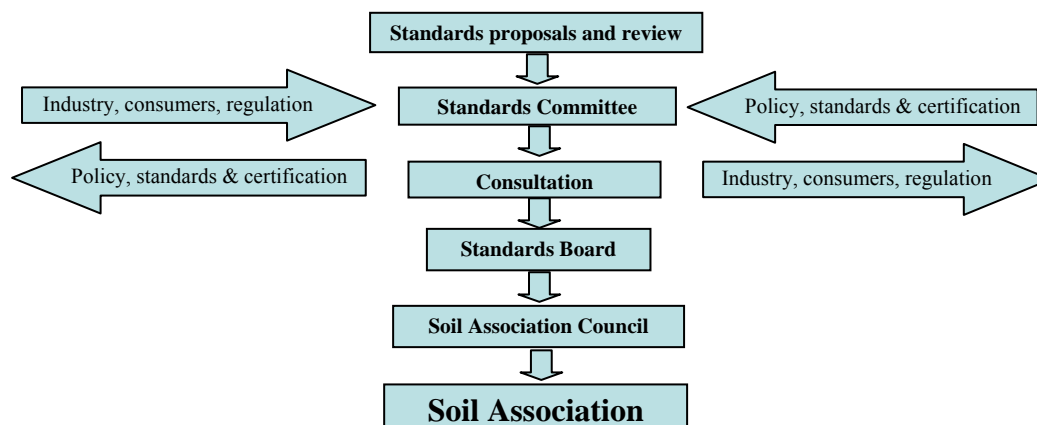


Figure 4 Soil Association organic standards setting process

One of the key strengths of Soil Association organic standards is the ability for both industry and consumer input which means our standards more closely match consumer expectations, and can adapt to new technical challenges. In addition to the standards committees, there are also specialist working groups and industry forums such as the multiple retailer working group, fresh produce working group, processor liaison group and the certification body technical working group. Current standards developments are in the areas of airfreight and shellfish production. These areas have been identified as having particular impact on the environment. The standards will also be updated to incorporate the new EU organic regulation 834/2007 although the GM threshold will remain at 0.1% (0.9% in the EU regulation). The compulsory use of the EU organic logo is being resisted (this is discussed later).

The Soil Association standards are applied and monitored by its subsidiary organisation, Soil Association Certification Ltd, who operate an inspection and certification service to EN45011 accredited standards. The system of organic inspection and certification is described by Parslow & Troth (2001). Operators, who make organic claims and do not have appropriate certification, can be prosecuted by Local Authority Trading Standards. Products produced by certified operators must bear a code number of the relevant certification body, for example, for Soil Association Certification Ltd; this is 'Organic Certification UK5'. This code number identifies that products are appropriately certified and gives the consumer guarantees of the authenticity of organic produce.

How we market sustainable agriculture To help promote the benefits of organic agriculture and food, the Soil Association runs a wide range of campaigns, publishes promotional literature, reports and studies targeted at both consumers and industry. 'Organic' is more than just a word on a label, it is a philosophy, a set of principles and standards that consumers want and industry can follow. To help consumers recognise products that are produced to Soil Association organic standards, operators are encouraged to use the Soil Association symbol on products certified by Soil Association Certification Ltd.



The charity uses a wide range of initiatives to develop, support and raise awareness of organic food and farming in the UK:

Consumer focussed:

- Membership charity – 26000 members
- Quarterly consumer publications
- Local food links – to encourage development of local food networks

- Annual ‘organic fortnight’ campaign and Europe’s largest organic food festival in Bristol (40000 visitors and 300 exhibitors).
- Masterclasses – cookery and rural skills classes such as keeping domestic poultry
- Consumer websites such as www.whyorganic.org
- Organic directory of products and services
- Demonstration farm network – to encourage visits to organic farms (750000 visitors/yr)
- Organic information line typically handling 500 enquiries per month

Industry focussed:

- Food and farming division providing technical support and guidance for producers
- Practical training events and farm walks
- Technical guides
- Provision of packaging
- An apprenticeship scheme to encourage young entrants into organic farming
- Organic awards for food, textile and beauty products
- Annual conference – which has assisted places for smaller producers
- Quarterly organic farming magazine
- An organic market place and ingredient sourcing database
- Reduced cost exhibitor space at events such as BioFach and organic and natural products Europe

Campaigns and reports

- Food for life – a £17M campaign to transform school food culture
- Soil not oil – to highlight the dependency of non-organic agriculture on fossil fuels
- Silent invasion – highlighting the GM content of non-organic livestock feeds
- Batteries not included – highlighting the welfare benefits of organic agriculture
- UK and EU government lobbying, for example for increased conversion payments to farmers
- Regular press releases
- Annual organic market report – a detailed report of the organic industry.

The key aim of the charity is reconnect people with where their food comes from and how it is produced. Using this approach, the Soil Association has helped the UK organic industry to grow consistently over the last 10 years both in terms of production and consumer demand. Coupled with the certification income and donations, this has enabled the charity to inform consumers and raise awareness of farming issues. In addition to the initiatives discussed above, the certification business also offers a range of initiatives to encourage and support the industry. Examples include: reduced fees for under 30yr olds; local abattoir scheme, technical support and guidance, and by offering a range of organic and non-organic inspection schemes such as National Organic Programme (NOP), SA Ethical, farm assurance and British Retail Consortium inspections. The operators can save costs by combining inspections. Other inspection schemes that are offered are composting and farmer’s markets.

In terms of marketing, the Soil Association has a negligible advertising budget, with virtually all its media exposure being the form of editorial and press releases. The Soil Association issues on average, 2 press releases per week and has over 200 media enquiries per month. There is regular press and media exposure, particularly via the BBC’s longest running radio series, ‘The Archers’, which is about a farming family in a fictitious village in England, where one of the family members is fully organic farmer and processor.

The charity benefits from a number of high profile connections, most notably His Royal Highness, Prince Charles, who is royal patron and passionate organic farmer. Other high profile licensees include pop stars, radio and TV presenters, top chefs and former racing car drivers. These all help to ensure that the Soil Association is regularly featured in the media, ensuring the organic message is regularly heard.

Measuring the benefits of organic food and farming In terms of measuring the success of Soil Association in marketing agricultural sustainability, the best measures are growth in sales, growth in people’s awareness and understanding of organic issues, growth of organically managed area, growth of number of licensed operators (farmers and processors), growth of the organisation and environmental measures such as increased biodiversity. In some areas, it is very difficult to measure the environmental benefits of organic food and farming due to it operating side by side with non-organic agriculture. For example, an organic farm may avoid polluting ground water by not using sprays and fertilisers, but if surrounding farms are using these products, then any benefit is difficult to measure in isolation.

A wide range of studies and literature reviews have been undertaken on environmental benefits, but one study into the biodiversity benefits of organic farming was commissioned by Soil Association (2000) with support of the World Wildlife Fund (WWF). This established that organic farms generally have 5 times as many plants in arable land, 57% more species, 25% more birds on field margins and 44% more in fields during autumn/winter and 1.6 times as many arthropods that comprise bird food. Many of the benefits are brought about by organic farming tending to be more mixed cropping, varied rotations, use of green manures and no use of herbicides or synthetic pesticides. However, the biodiversity benefits of organic farming can be difficult to measure and may also be limited due to the fact that organic farms are often separated by non-organic, although in certain parts of the UK, there are areas where a number of organic farms border each other. The UK Environment Secretary, David Milliband (2007), has accepted that 'organic farming methods are more favourable for wildlife than non-organic farming.

In terms of agricultural area, the Soil Association organic market report (2007) states there is currently around 613,470 Ha of land managed organically in UK, which represents about 3.5% of total agricultural area. In conversion area grew by 40% over 2005 although the total fully organic area decreased by 7% from 2005 levels. This will increase again as the conversion area becomes organic over the next 2 years.

In terms of market growth, the Soil Association publishes an annual report which reviews organic agriculture data and market analysis. The 2007 annual report shows consistent market growth over the last 10 years. Globally, organic sales are £19.3 billion. Figure 5 illustrates growth of retail sales value, particularly between 2005 & 6 which was 21%, this compares with non-organic retail growth for the same period of 3%.

The current value of retail organic sales in the UK is £1.94 billion, and is the second largest retail market in Europe after Germany. Of this, £1.45 billion is via the major multiples, which demonstrates the maturity of the market, but also influence and power they have in the organic sector.

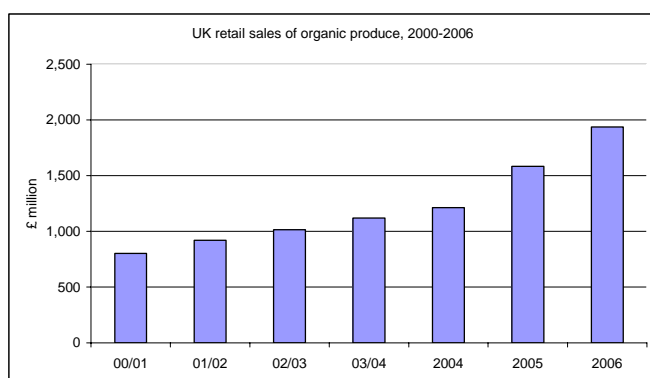


Figure 5 UK retail sales of organic produce 2000 – 2006

Production has grown steadily, but is still unable to meet demand, with the UK still requiring a wide range of organic imports, as illustrated in Figure 6. The UK is largely self-sufficient in dairy and meat, but fresh produce and fruit are still imported in large quantities.

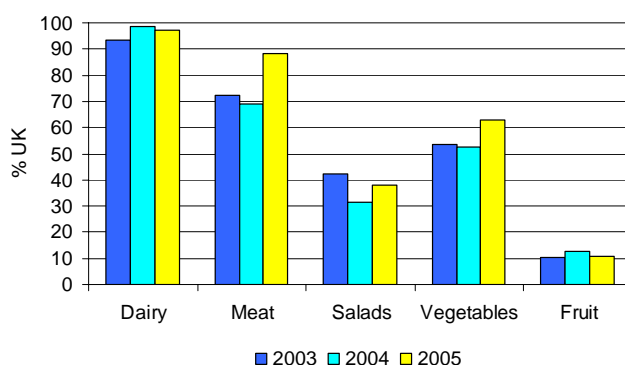


Figure 6 Quantity of organic product sourced from the UK by sector (Soil Association 2007).

One of the main areas of work for Soil Association is to encourage more local food supply systems and direct marketing. This has three main benefits, firstly to cut down on ‘food miles’ and carbon emissions from transport, secondly to enable producers to benefit from the ‘retail price’ giving them a better return for their products, but thirdly, it also offers an alternative outlet for producers who for many years have been commodity producers relying on the major multiples to market their products.

One of the big success stories of the organic sector has been the rise of the ‘box scheme’. Box schemes were founded initially as a direct marketing outlet for vegetables whereby a box of ‘seasonal produce’ is delivered on a weekly basis to consumers. The consumer usually has no choice in the selection, but relies on the grower to provide a varied choice of seasonal vegetables. The boxes usually contain weekly ‘staples’ such as potatoes, onions and carrots with other vegetables and fruit added to a preset ‘value’ or number of items. Sizes of box can vary, with some producers offering typically 2 – 4 different sizes, although the more successful operators now offer a wide range of different box formats, including fruit only, meat boxes and the option to add or subtract one or two ‘likes or dislikes’. The main advantage of this system is that waste is minimised, as it is the grower, rather than the consumer, that chooses what goes in, although the quality of the produce must meet good quality criteria, as this ensures repeat custom. It also helps even out gluts and shortages as the quantity of each product can be varied week to week. One major box scheme grower and producer states that they can supply a box of organic vegetables delivered to the door for the same price or cheaper than buying the same quantity and type of produce from a multiple retailer.

Other direct marketing initiatives of the Soil Association was a campaign to increase the access of local food producers to local authority and public catering outlets such as hospitals and schools, which are often tied up by a few national contract catering suppliers. Many producers are given support in terms of technical guides and low cost certification charges for on-farm processing operations. Although direct organic sales are still a very small part of the total organic retail market, they are growing more rapidly than the mainstream sales, with a 50% growth in value of box scheme/mail order sales between 2005 and 2006 and 23% growth of farm shop/farm gates sales (Figure 7).

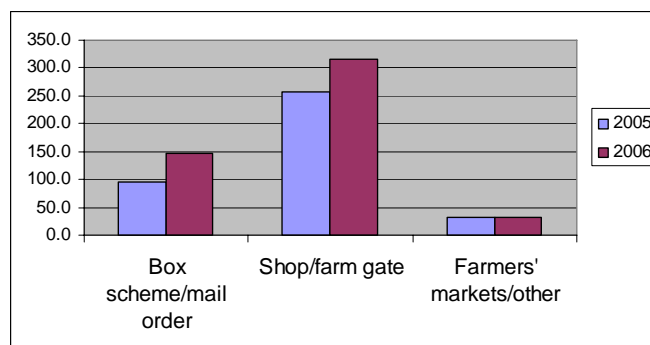


Figure 7 Non-multiple retailer organic sales in the UK (Soil Association 2007)

In terms of consumer attitudes and awareness of organic, Mintel (2007) highlight that more and more people are knowingly buying organic food. Previous consumer research suggested that many organic purchases were made by accident, but this research suggests that 2 in 3 UK shoppers knowingly buy organic produce. The research also highlights that the old stereotype of organic being the preserve of the more affluent is outdated with over 50% of people in the most disadvantaged social groups (C2, D and E) now buying organic food and drink. In the Mintel survey, more than half of respondents had purchased organic fruit and vegetables in previous year, 25% had bought organic meat or dairy produce and 15% had bought organic packaged foods. Organic baby food, poultry meat and milk sales continue to grow rapidly

After media coverage of issues surrounding food miles, it is not surprising that consumers prefer to buy local rather than imported organic food. This preference has manifested itself in the continuing demand for produce direct from producers.

Organic food is often criticised for its price, but nearly 2/3 of organic consumers, believe that it is worth paying extra for, and 90% of organic consumers believe that organic should also mean ethical. In terms of consumers

reasons for buying organic, Figure 8 illustrates the various motivational factors for buying organic food, with environmental benefits of organic food being the statement most agreed with by consumers.

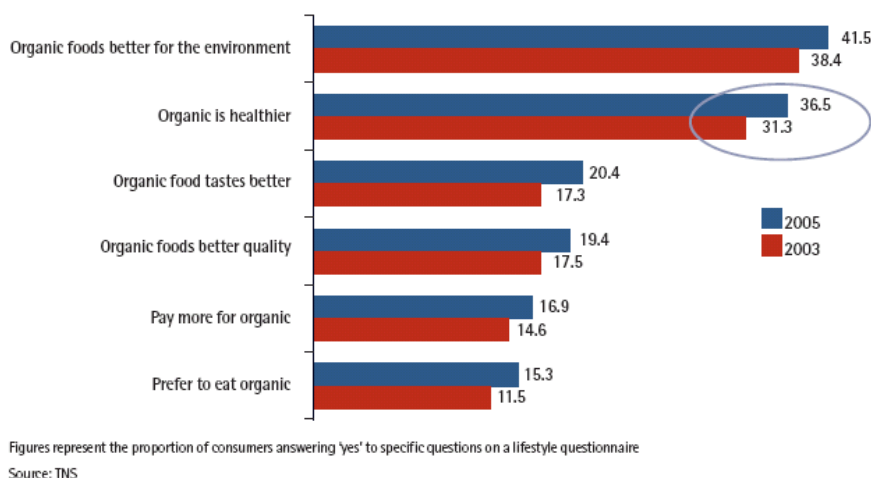


Figure 8 Percentage of individuals agreeing to statements (RMIF 2006)

In terms of growth, the charity continues to recruit new members who are concerned about how their food is produced and in supporting the environmental work. Soil Association is seen as one of the UK's leading environmental charities. Rate of membership growth doubled in 2007 with over 4000 new members joining the organisation representing a net growth of 9%. The certification business continues to grow as well with 300 new licensees in 2007 and a 10% increase in turnover. Although starting from a small base, the continued growth of the organic retail market and of the Soil Association, is quite remarkable, given there is little or no support from the government agricultural department DEFRA, and an apparent opposition to the benefits of organic food and farming by the government Food Standards Agency (FSA).

The Soil Association symbol continues to be more widely recognised, and appears on an increasing number of new products. However one of the concerns over the new EU Organic regulation is the requirement for compulsory use of the EU organic logo, which due to often limited labelling space, may cause removal of the Soil Association symbol indicating products produced to Soil Association standards. The European organic logo (Figure 9) has been available since the regulation first came into operation, but its use is voluntary and uptake has been low, especially where there are local and well recognised private certifiers' logos, whose standards are often higher than the EU regulation. Its use has been limited mainly to products where there is no local certifier's symbol or products are routinely exported.



Figure 9 European organic logo

One concern with the existing symbol, was its similarity to the geographical indication logos of PDO and PGI, (Figure 10), which on quick glance, as is often the case when shopping, could be mistaken for the organic logo.



Figure 10 PDO logo

To overcome this problem, a new EU organic logo was designed, but it was withdrawn soon after due to its similarity to a European retailer's organic branding logo. The requirement for compulsory use of the EU organic logo has, at the time of writing, been postponed to 2010, pending design of a new logo. Other problems with the

proposed logo, was the use of the wording 'bio', which is understood as meaning 'organic' in many European countries, but has little or no meaning in English speaking nations and is more likely to be confused with 'biotechnology' meaning genetically modified produce.



Figure 11 Proposed EU 'bio' logo

One of the key principles of organic production is ensuring traceability and regional food identity, the use of a pan European logo would cause local and regional products to lose identity. The Soil Association has worked hard to ensure that consumers recognise the Soil Association symbol and associate what it represents with supporting UK organic agriculture and the associated environmental benefits. Because of often limited space on product labels, private organic logos may be replaced by the compulsory EU logo. There is concern that far from providing 'assurances', the bio logo would only confuse people. It goes against the trend for more local, regionally distinctive produce, which could lead to the dilution of organic standards as it may also be more difficult for consumers to make an informed choice based on which organic standards a product was produced to.

Concern has also been raised that there would be insufficient funding made available to raise consumer awareness of the logo and what it represents. EU marketing support of €3M across the 27 member states has been proposed. Compared to the \$1Billion Coca Cola spend annually on advertising one product, it is feared that €3M would have little effect, and would cause a decline in European wide organic sales due to loss of consumer recognition caused by the removal of known and trusted regional logos.

Conclusion Organic production systems are clearly defined and regulated both across the EU and in the majority of cases, worldwide. Due to the more sustainable nature of organic agriculture, and its non-reliance on fossil fuel dependant chemically synthesised nitrogen fertiliser, organic farming has demonstrated it can deliver a wide range of environmental benefits.

As an internationally recognised public interest organisation, Soil Association has over 60 years experience of developing initiatives, labelling and certification systems to successfully market and support agricultural sustainability.

The Soil Association organic standards are regularly reviewed and able to constantly evolve to meet changing environmental challenges and consumer requirements. The charity knows that it is important to communicate the standards and the outcomes clearly. We educate and inform consumers and industry so both understand what it means to produce and consume organic products. Organic products meeting our standards are easily identifiable by use of a recognisable environmental label – the organic symbol.

The campaigns and promotion of the environmental and health benefits of organic food and farming, combined with robust inspection and certification systems, ensures Soil Association maintains consumer and industry trust in the symbol. Income from certification allows them to remain financially sustainable so the benefits of organic food and farming can be further promoted. This helps to achieve greater environmental benefit by expansion of organic agriculture and food purchase. This leads to continued recognition of the environmental label and consumer trust and knowledge in what it represents

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Environmental considerations of pig production in the dehesa – are they incorporated in the PDO label “Dehesa de Extremadura”?

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Abstract The EU Protected Designation of Origin (PDO) label is intended for “foodstuffs which are produced, processed and prepared in a given geographical area using recognised know-how” (EU Regulation 510/2006). The implication is that the designated areas from which the PDO products originate are in some way special, and that this gives particular qualities to the products. This paper raises the question: in order for a food product to carry one of these EU labels, is the farming system required to follow particular practices, to ensure that it is in harmony with the special environment in which it is produced? The paper examines, on the basis of a brief desk study, the case of ham produced under the PDO label Dehesa de Extremadura.

Keywords: dehesa, environment, livestock, labelling requirements

Introduction The EU operates a labelling system which enables producers and consumers to differentiate products that come from certain geographical areas, and from certain production systems. The Protected Designation of Origin (PDO) label is intended for “foodstuffs which are produced, processed and prepared in a given geographical area using recognised know-how” (EU Regulation 510/2006). The implication is that the designated areas from which the PDO products originate are in some way special, and that this gives particular qualities to the products.

Indeed, many PDO areas are found within Less Favoured Areas and areas with a high proportion of High Nature Value farming. These areas have fragile environments and particular values that may be conserved by appropriate farming practices, but that also may be seriously degraded when farming is intensified. This paper examines whether, in order for a food product to carry the EU PDO label, the farming system is required to follow particular practices that favour the conservation of these special environments.

Overview of livestock production in the dehesa Dehesas are wooded pastures typically found in the west and south-west of the Iberian Peninsula, consisting of semi-natural grassland and scrub with an open canopy of Holm and/or cork oaks. Dehesas are designated as habitats of European importance in Annex 1 of the EU Habitats Directive, and large areas of these habitats are included in Natura 2000 sites. Extremadura is the region with the largest area of land under dehesa, amounting to approximately 1.43 million ha (Junta de Extremadura, 2006).

Human activity is an integral part of the dehesa system, particularly extensive grazing of sheep, cattle, goats and pigs. Occasional cereal cropping is practised in some dehesas, partly for forage and partly as a means of scrub control. Trees are managed by pruning and in some cases replanting. Cork forest may be managed only for cork production, but usually some form of grazing is present, and scrub is usually cleared to improve access for cork harvesting. Some holdings are managed primarily for red deer and other game shooting.

Extensive pig raising is perhaps the most emblematic dehesa activity, since the native Iberian pig is especially well suited to exploiting the forage provided in the form of acorns by the Holm oak tree canopy. Under the traditional system, Iberian pigs are raised largely outdoors in the dehesa, at low stocking densities. They forage for acorns in Autumn-Winter, and graze the grass in Spring.

The key product of this pig-raising system is cured ham, which is a high-value product, particularly when it comes from Iberian, acorn-fed pigs. Many dehesa farms producing Iberian pigs also raise other types of livestock (cattle, sheep, goats) which depend to a considerable degree on CAP support payments for economic viability. In contrast, pig production is driven almost exclusively by market demand and, especially in recent years, this demand has been strong. Pig production in Extremadura has expanded dramatically as a result (see below).

Issues of environmental sustainability The dehesa harbours exceptional biodiversity and landscape values, and low-intensity livestock raising is integral to the maintenance of these values (see for example Díaz et al., 1997). However, depending on the practices followed, this activity can also cause an erosion of environmental values and of the long-term sustainability of the system.

The biodiversity and landscape values of the dehesa depend on a diversity of structural elements. The key elements can be summarised as follows:

- Tree canopy primarily of evergreen oaks
- Semi-natural pasture (grassland and scrubland)
- Streams and ponds
- Dry-stone walls

The way in which these elements are used and managed for livestock production is critical to their long-term conservation. In particular, consideration should be given to:

- What is the combined grazing pressure of livestock on forage resources, including the timing of grazing, livestock types and density?
- Is there adequate regeneration of the dehesa tree cover? Is this achieved through grazing management to allow natural succession, or by planting?
- How does livestock pressure affect the condition as wildlife habitats of ponds and streams?
- How much manure is deposited on pastures, particularly manure disposal from housed livestock?
- Are dry-stone walls and other man-made features maintained? Neglected? Cleared?
- Are wildlife species and their habitats protected effectively during farming and forestry operations?

One of the main issues affecting the dehesa as a wildlife habitat and a farming resource is the lack of natural tree regeneration, as evidenced by the even and advanced age of many tree stands. The situation is widely documented and is the main dehesa issue highlighted by successive regional and rural development programmes in the region since the early 1990s, including the 2007-13 Rural Development Programme (RDP) (Junta de Extremadura, 2006).

The regeneration problem indicates that the habitat in many cases is in a process of degradation and therefore does not enjoy a Favourable Conservation Status (the aim of the EU Habitats Directive). The problem also puts into question the sustainability of the current farming system.

The factors contributing to the species decline and to the lack of regeneration are many and quite complex. One important factor is the die-off of oak trees (“la seca”) for reasons that are not understood entirely but probably are a mixture of disease and stress factors. Other factors concern farming practices, particularly grazing pressure. Although stocking densities are extremely low by European standards, due to low forage productivity, excessive grazing pressure is a key factor in limiting regeneration (see for example Olea & San Miguel, 2006).

With the exception of goats, numbers of all the main livestock types increased very considerably in Extremadura in the period 1996-2005 (Caja de Badajoz, 2006). Cattle numbers increased by almost 50%, to a total of 826,000. Sheep numbers increased by around 18%, to a total of 4.5 million. The biggest increases were in pig numbers. The number of pigs raised outdoors (extensive raising in dehesas) increased by 200%, to a total of 1.2 million. Indoor pig numbers increased by 140%, to a total of 1.7 million. See Table 1.

Table 1: Livestock numbers in Extremadura, 1996-2005

| | 1996 | 1998 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Sheep | 3,804,125 | 3,840,045 | 4,513,042 | 4,381,159 | 4,376,568 | 4,424,187 | 4,575,592 | 4,545,955 |
| Pigs (outdoor) | 396,475 | 555,064 | 864,445 | 1,087,730 | 960,096 | 963,754 | 1,247,879 | 1,175,283 |
| Pigs (indoor) | 696,669 | 1,126,024 | 1,342,982 | 1,476,129 | 1,297,801 | 1,277,786 | 1,669,812 | 1,682,492 |
| Cattle | 557,290 | 432,705 | 689,141 | 703,248 | 714,498 | 720,211 | 790,613 | 826,094 |
| Goats | 229,716 | 296,585 | 282,800 | 307,694 | 281,703 | 278,365 | 289,460 | 295,689 |

Source: Caja de Badajoz, 2006

These figures indicate a very considerable overall increase in livestock numbers in the ten years before 2005. The official environmental assessment for the RDP 2007-13 refers to stocking densities increasing from around 0.2 to 0.4 LU/ha, and highlights this as an environmental issue (Junta de Extremadura, 2006).

Already in 1999, Vargas et al, (1999) were reporting that pigs in dehesa have lost their extensive characteristics and the carrying capacity of the environment has been exceeded.

The Dehesa de Extremadura PDO label The PDO dates from 1990 and applies to the whole of Extremadura, not only to dehesas (DOE, 1990). Basic rules for all product carrying the label are that:

- Pigs must be Iberian breed *cerdo ibérico* (or 75% cross with Duroc-Jersey).
- Pigs must be kept outdoors.

There are three labels covered by the PDO:

- Red label *de bellota* = acorn fed
- Green label *de recebo* = partly acorn-fed, but finished with cereals and concentrates
- Beige label *de cebo* or *de campo* = fed with cereals, concentrates and grazing.

The main production rules for the Red label (acorn fed) and Beige label (fed with purchased feeds) are summarised below.

The production rules for Red label acorn fed state that:

- Pigs must feed only on acorns in period before slaughter.
- Pigs must spend a minimum period of 60 days foraging for acorns in the dehesa.
- Pigs must put on minimum 46 kg weight.
- Inspectors check that stocking density is within “carrying capacity” of the dehesa (i.e. that the acorn production is sufficient for the stock numbers).

The production rules for Beige label *de cebo* state:

- No requirement to forage for acorns in the dehesa (so acorns can be fed to pigs in other locations).
- Pigs must be kept outdoors, with maximum stocking density 10 pigs/ha
- Minimum distances are stipulated between feeding and watering points.

Thus for the acorn-fed ham, production rules make a link to the dehesa. At the most basic level, sustainability is addressed, in the sense that pig stocking must be within the limits of acorn production. However, the rules do not address wider sustainability concerns. There is no reference to total density of livestock, or to management of tree regeneration in the dehesa. There are no rules concerning the conservation of landscape elements, water bodies or wildlife species and habitats.

For the intensively-fed ham, production rules do not make the link to dehesa. Pigs can be raised on any land and in quite intensive conditions, although they must be predominantly outdoors.

Do the PDO production rules incorporate issues of environmental sustainability? Clearly in the case of Dehesa de Extremadura ham, the production rules do not incorporate issues of environmental sustainability, other than at an extremely basic level in the case of the Red label. The rules do not attempt to ensure that pig production is harmonised with the conservation of the dehesa and its particular environmental values.

This should not be surprising, as the EU Regulation governing the PDO labels does not make any explicit links to the environmental conditions of farm production. Primarily, these labels are telling the consumer that at least some stage in the production process has taken place in a particular geographical area.

The only reference to the environment is in Article 2 of Regulation 510/2006, which states that these are products “*the quality or characteristics of which are essentially or exclusively due to a particular geographical environment with its inherent natural and human factors*”.

The Regulation says very little about production rules for the products carrying the PDO label. The minimal requirement is for “*a description of the method of obtaining the agricultural product or foodstuff and, if appropriate, the authentic and unvarying local methods*”.

Yet although the EU labelling system itself makes no claims about environmental quality, there is an implication that the environment from which the product comes is somehow special, and that the production system is more “traditional”, and perhaps more in-tune with the environment. The illustrations and wording used on PDO packaging often imply that these products are in some way linked to attractive landscapes, and to nature.

Thus, whereas the labelling system is intended to ensure a certain quality of *product*, in the mind of the consumer and of the marketeer, this product quality tends to be linked with *environmental* quality in a general sense.

In practice, there is considerable variation between PDO labels in the specification of production rules (Beaufoy, 2007). In the case of many labels, the requirements are more vague than those of Dehesa de Extremadura ham, and are stated only in very general terms. On the other hand, some PDO products are required to comply with quite detailed rules, including limitations to livestock densities in the case of some French cheeses, for example. This degree of variation in the requirements of labels is a potential source of confusion (obviously such detailed information is not displayed on the label itself), especially for the consumer who is concerned with the environmental aspects of the farming system, and who might assume that a product from an apparently more “natural” geographical area is produced with particular respect for the nature of the area.

Conclusions As with many PDO labels, the Dehesa de Extremadura projects image of the dehesa as a model of sustainability, and with special natural values. The ham carrying this label may indeed come from a dehesa which fits this model; on the other hand, it may equally well come from a dehesa that is suffering from long-term environmental degradation as a result of inappropriate grazing and management practices; or from a farm that has no dehesa, in the case of the Beige label.

At present then, the EU PDO labelling system supports products from certain geographical areas that often have special environmental values, but it does not specifically favour the farming systems that conserve these values. This does not *prevent* individual PDO labels from setting more stringent production requirements within the EU framework, as already occurs in some cases, but neither does it ensure a common high standard across the EU.

Policy makers might argue that all farming in the EU must comply with minimum legal standards on environmental protection. Furthermore, if a consumer has particular environmental concerns, are these not addressed by the organic farming label? The reality is that farming can comply with minimum environmental standards and organic standards without meeting the specific needs of a fragile and exceptionally valuable ecosystem such as the dehesa.

The concepts at the heart of the PDO system date from a previous era, when there was less clarity about the environmental effects of different farming systems: PDO was first developed for wine in the 1930s, and later applied to cheese in the 1970s. It may be time for the EU labelling regulations to make a stronger link between geographical areas, and the farming systems that maintain the particular nature or landscape values of these areas.

By making it obligatory for labels to be linked to a detailed specification of farming systems that maintain particular environmental values, the EU labelling system would reflect better the modern concerns of consumers, and our improved knowledge and understanding of the way in which farming systems interact with nature and landscape. For producers and consumers, special products would be linked not only to special areas, but also to the special values of these areas, and the special farming systems that conserve them.

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Uelije olive oil: a trans-boundary case study to support environmental labelling systems

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Abstract The paper presents the results of the ‘Ue-li-je’ project, a cooperation between the Friuli Venezia Giulia Region in Italy and Slovenia. The project analysed the relationships between the preservation or restitution of traditional landscape with olive trees and small scale olive oil production and the economic value of rural landscape. The Contingent Valuation method used to evaluate environmental and social benefits provided by this landscape showed the Willingness to Pay of 25.59 € per family per year. This case study shows that the conditions for profitability of a regional labelling scheme involve to a large extent the favourable circumstances for ‘short chain’ farmer to consumer marketing and local traditions which encourage the appreciation of quality food and / or initiatives to educate consumers about added environmental value of sustainably produced foodstuffs.

Introduction. Agricultural activity must become progressively less harmful to the environment to induce a sustainable and durable development. This may be achieved if farmers’ profits become more dependent on the environmental performance of their farms.

Environmental labelling programs and environmental certification schemes are two important tools to be used to promote environmental responsibility within agriculture. There are many voluntary programs that provide consumers with information about environmental impacts, helping them, to choose more environmentally friendly products.

With globalisation there is an increasing focus on policies that support the “triple win” scenario i.e. environmental protection, economic development and the protection of international trade. These three aspects are very difficult to couple if local food products must be profitable for farmers.

The quality of agricultural products and foodstuffs are linked to their geographical origin. Two council regulations to raise consumer awareness of the producers’ efforts to improve the quality of their products: Community system for the protection of geographical indications (PGI) and System of protection of designation of origin (PDO) (Reg. 510/2006).

A specific regulation lays down rules on definition, description, presentation and labelling of spirit drinks (Reg. 110/2008).

Another specific regulation concerns also organic products labelling on agricultural products and foodstuffs (Reg. 384/2007).

Relationships between food quality and environmental quality may be found at territorial, farmers and consumers level. At territorial level there is a joint production of final quality food products and environmental services (e.g. oil and landscape), at farmers level a simultaneous production of quality food products and environmental goods (e.g. positive externalities and reduction of negative externalities) and a demand of quality food and protection of the environment at consumers level. The Europeans cherish their traditions, cultural identity and territories, so there are some places (e.g. the mount Triglav for the Slovenians), some buildings (e.g. wooden churches for the Slovaks) or some plants (e.g. cornflower for the Estonians) with a particular traditional, cultural and historical meaning. The presence in the landscape of these elements brings emotional well-being and helps to combat stress.

The paper presents evidence of direct links between quality olive oil production and environmental quality are very evident.

In the Friuli Venezia Giulia Region the olive tree cultivation is situated mostly in the eastern hilly areas, along the Italian and Slovenian border and in the sheltered area in the western hills at the foot of the mountains Cansiglio-Cavallo.

The environmental context of olive tree cultivation is typical of the highly specialized agriculture, where the most profitable cultures (vineyards, cereals etc.) are cultivated as monoculture; in those areas, a lack of woodlands, orchards, edges or grasslands makes the landscape monotonous (Viganò, 2006).

The olive tree cultivation is a traditional element of the Friulian agricultural landscape. In the eastern part of the region the Middle ages chronicles recorded the presence of olive oil production already in the Longobard Age and, through the centuries, until our times. The Region Friuli Venezia Giulia is situated near the north cultivation border of olive tree and is characterized by a high quality production made with typical varieties (Parmegiani, 2006; Reho, 1997).

In Friuli Venezia Giulia, olive tree is recognized in the rural landscape as an element with cultural – historical heritage and human well-being by the local population. In view of this, it is possible to find an economic meaning of the rural landscape.

In the last years, a renewed interest in the olive tree cultivation was recorded, with an increasing rate of 20-25 ha per year of new cultivation. In the whole region the cultivation area is of about 300 ha (Marangon *et al.*, 2007).

In the Ue-li-je cooperation project between Italy and Slovenija, the research staff analyzed the relationships between landscape, cultural heritage, olive tree and economic value of rural landscape.

Materials and methods. The research staff of the Ue-li-je project made a market research based on 400 interviews distributed along the border: 200 in Italy, 200 in Slovenia, each made respecting the real population distribution in order to permit the statistical analysis and the extension of the results all over the project area. The sample describes the social situation in the region: a small rate of people is employed in agriculture (2%, which increases to 4% with part-time farmers) and a great part of population is represented by employees (38%) and pensioners (25%).

| Job | Number | Percentage |
|-----------------------|---------------|-------------------|
| Agriculture | 10 | 2% |
| Agriculture part-time | 7 | 2% |
| Employed | 152 | 38% |
| Businessman | 76 | 19% |
| Free lance | 14 | 4% |
| Housewife / Student | 41 | 10% |
| Pensioner | 99 | 25% |
| TOTAL AMOUNT | 399 | 100% |

Although a small rate of people works in agriculture or knows the rural life, the majority of the interviewed recognizes as very important the landscape protection in rural areas (91%),

| Area | Very important | Quite important | Not much important |
|------------------------|-----------------------|------------------------|---------------------------|
| Eastern Friulan Hills | 96% | 4% | - |
| Collio (Gorizia Hills) | 92% | 8% | - |
| Brda | 87% | 13% | 1% |
| TOTAL AMOUNT | 91% | 9% | 1% |

even if only a part of the interviewed (57%) carry out their free-time activities (e.g.. walking, jogging etc.) in rural areas.

| Area | Very often | Often | Rarely | Never |
|------------------------|-------------------|--------------|---------------|--------------|
| Eastern Friulan Hills | 16% | 35% | 32% | 17% |
| Collio (Gorizia Hills) | 26% | 33% | 33% | 7% |
| Brda | 20% | 40% | 30% | 11% |
| TOTAL AMOUNT | 20% | 37% | 31% | 12% |

The rural landscape is perceived as an important element of life quality by most of the population of the areas, independently of the job held or the knowledge of agricultural activities.

The analysis of the sample permits to identify the elements that characterize the rural landscape.

| | Very important | Quite important | Not important | much important | Not important |
|---------------------------------|---------------------------|----------------------------|--------------------------|---------------------------|--------------------------|
| Hedges | 46% | 43% | 11% | | 1% |
| Woodland | 70% | 26% | 4% | | 1% |
| Poplar cultivation | 22% | 29% | 36% | | 14% |
| Streams | 75% | 23% | 2% | | |
| Ditches | 56% | 24% | 14% | | 7% |
| Grassland | 76% | 22% | 3% | | |
| Orchards | 59% | 35% | 6% | | |
| Vineyards | 51% | 36% | 11% | | 2% |
| Olive cultivations | 52% | 39% | 8% | | 2% |
| Olive trees (single tree) | 47% | 40% | 12% | | 2% |
| Olive cultivations (industrial) | 39% | 34% | 23% | | 5% |
| Historical buildings | 59% | 32% | 7% | | 2% |
| Country tracks | 30% | 35% | 27% | | 9% |

Looking through the numbers carefully, we can notice that the olive cultivation is recognized as an important element only in the traditional small cultivation; the extended industrial olive tree cultivations, as well as the poplar cultivation are not considered equally important.

It should also be noted that the interviewed acknowledge a great importance of the elements that enhance biodiversity in the environment (e.g. woodlands, streams, grasslands, etc.).

The biodiversity and the olive tree cultivation, recognized as important, should be translated into an economic value of olive tree in the rural landscape.

The estimation method is based on market research with parameters allowing to extract the information about the social benefit of the rural landscape perceived by society (Cordara, 1994).

The information collected by the market research, is translated through complex mathematical-statistical valuation systems, into an estimated monetary flow extended all over the area population.

The analysis method used is known as Contingent Value (CV), based on the possibility to create a market where environment, landscape and cultural heritage are recognized as factors with economic value and as elements of choice by the consumers. The analysis researched the Willingness to Pay (WTP) of the population in the project area. The WTP is the economic translation of the social benefits of olive tree cultivation as an element of the rural landscape.

The CV is frequently used to estimate the monetary value of goods and services without a real exchange market and is based on interviews with consumers (Bishop & Romano, 1998; Mitchell & Caron, 1989)..

To analyze the potential consumers choices, the referendum system is usually used: the reference scenario (the landscape preservation or the environmental development) for the economic contribution is explained to each consumer.

The interviewers ask about the willingness to provide the economic contribution to enjoy the use of the rural environment, in a dichotomy/referendary mode: I accept/ I do not accept proposal. The analysis of a dichotomy dependent variable needs complex statistical technique, based on two different methods (Harrison & Kristöm, 1995):

- parametric evaluation: the probability function of answers is taken a priori (logistic) and the parameters extracted from the sample information are estimated.
- nonparametric evaluation: does not take a priori any probability function (Kristöm, 1990).

The statistically most significant method for this research is the parametrical evaluation: the probability function $F_{\eta}(\cdot)$ is defined as the function of logistic cumulated distribution:

$$\Lambda(\Delta v) = \frac{1}{1 + e^{-\Delta v}}$$

The probability expressions to obtain Yes/No (as answer of the consumers to the proposal of economic contribution) become:

$$p_{yes} = 1 - F_h(-\Delta v) = 1 - \Lambda(-\Delta v) = \Lambda(\Delta v) = \frac{1}{1 + e^{-\Delta v}}$$

$$p_{no} = F_h(-\Delta v) = \Lambda(-\Delta v) = 1 - \Lambda(\Delta v) = \frac{e^{-\Delta v}}{1 + e^{-\Delta v}}$$

If the indirect benefit is taken as a linear function of covariant, i.e. of an independent variable, it becomes:

$$p_{yes} = \frac{1}{1 + e^{-a-bt-\tilde{a}'z}}$$

$$p_{no} = \frac{e^{-a-bt-\tilde{a}'z}}{1 + e^{-a-bt-\tilde{a}'z}}$$

To estimate the parameters α and β and determine exactly the probability functions π_{yes} and π_{no} the sample log-verisimilitude is maximised with the equation:

$$l = \sum_{i=1}^N \{I_i hp_{yes} + (1 - I_i) hp_{no}\}$$

with i is the i th person ($i=1, \dots, N$), that wants to pay for the scenario presented.

After estimating the probability function, $\Pr(yes)$ and verifying the accuracy of the statistical model, the analysis determines the WTP.

The WTP is not represented by a singular number, but is a random variable defined with a probability distribution. To summarize the distribution in order to obtain a useful measure of the monetary value in this research, it is possible to use:

the sample mean (C^+);

the median of distribution (C^*).

In the linear model the sample mean and the median coincide and are in function of the α and β parameters:

$$C^+ = C^* = -\frac{\alpha}{\beta}$$

The application of this statistical system, allow the parametrical evaluation of the sample. The test applied to verify the correct specification of the model is the global model test *likelihood ratio test* (-2LL) used to verify the model functional form as not-linear logistic function. The test does not verify if the parameters evaluated are zero or non-zero. To allow for this consideration, in the analysis the specific *Wald test* was applied to each parameter to guarantee that the estimated coefficients are statistically non-zero.

The data collected are correctly described with a logistic, and the χ^2 test has a significance of 0.0000 and, in general, the model has a provisional capacity of 65.75%.

The application of the statistical method allows the determination of the WTP mean/median=-0.4709/-0.0184= € 25.59.

Results and discussion. The research was carried out in the project area analyzing three sub-samples: Eastern Friulan Hills, Collio and Brda, to take into account the social, economic and cultural differences. The application of the general model to the specific evaluation for each sub-sample give significant results only for the sub-sample Eastern Friulan Hills with a WTP mean/median=-0.9389/-0.0258= € 36.39. The parameters for Collio and Brda are non-significant; the χ^2 test is 0.0031 for Collio and 0.0035 for Brda. The research analyze the sub-samples with the non-parametrical evaluation method, but the small dimension of the sample does not allow a good application, so the social benefits perceived by the population are evaluated with the general most significantly statistical model in a WTP mean/median= € 25.59.

Italy

| Municipality | Families | Sample |
|-------------------------------|-----------------|---------------|
| Attimis | 846 | 4 |
| Buttrio | 1.643 | 7 |
| Cividale del Friuli | 4.866 | 22 |
| Corno di Rosazzo | 1.306 | 6 |
| Faedis | 1.283 | 6 |
| Manzano | 2.871 | 12 |
| Nimis | 1.204 | 5 |
| Povoletto | 2.173 | 10 |
| Premariacco | 1.567 | 7 |
| Prepotto | 358 | 2 |
| San Giovanni al Natisone | 2.397 | 10 |
| Tarcento | 3.895 | 17 |
| Torreano | 962 | 4 |
| Eastern Friulian Hills | 25.371 | 110 |
| Capriva del Friuli | 701 | 10 |
| Cormons | 3.271 | 10 |
| Dolegna del Collio | 164 | 4 |
| Gorizia | 16.884 | 50 |
| Mossa | 688 | 5 |
| San Floriano del Collio | 312 | 6 |
| San Lorenzo Isontino | 614 | 5 |
| Collio | 22.634 | 90 |
| Total Italian area | 48.005 | 200 |

Slovenia

| Municipality | Families | Sample |
|------------------------|-----------------|---------------|
| Brda | 1.884 | 21 |
| Kanal | 2.128 | 22 |
| Miren-Kostanjevica | 1.620 | 18 |
| Nova Gorica | 12.702 | 116 |
| Šempeter-Vrtojba | 2.231 | 24 |
| Total Brda area | 20.565 | 200 |

The estimation determinates an average WTP per family of 36,39 € for the Eastern Friulian hills and of 25,59 € per family for Collio and Brda.

The statistically robust analysis model allows for the inference (the extension of the results) over all the population of the area and the evaluation of the landscape improved value.

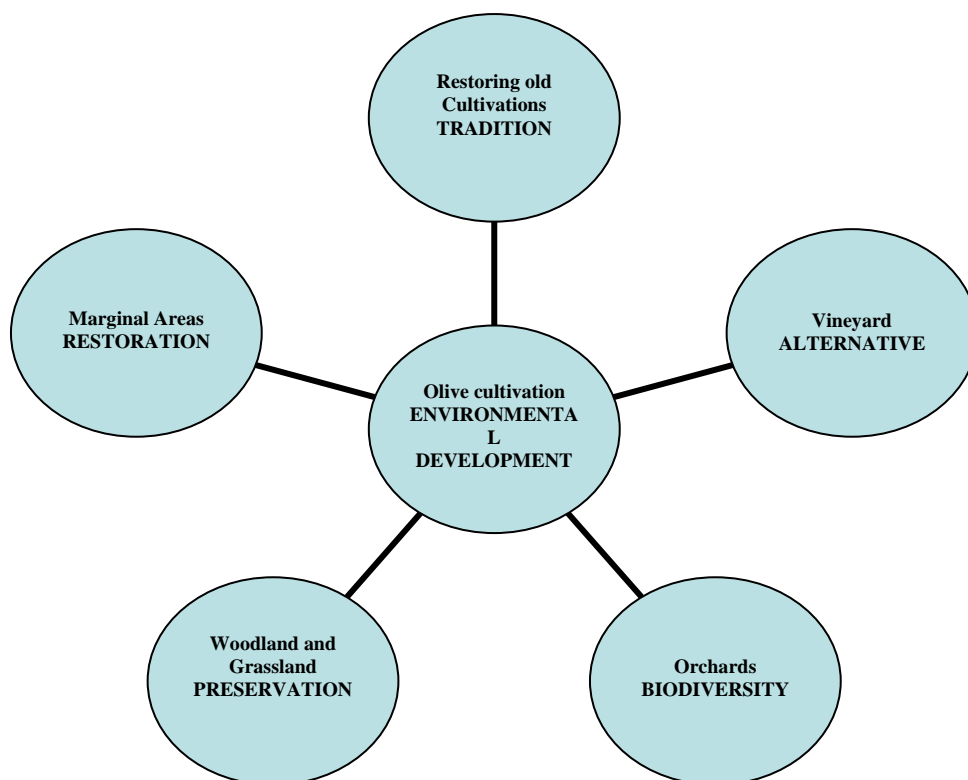
| Area | Families (lower bound) | Families (upper bound) | Lower surplus | Upper surplus |
|------------------------|-----------------------------------|-----------------------------------|----------------------|----------------------|
| Eastern Friulian Hills | 25.371 | 25.371 | 649.305 € | 649.305 € |
| Collio | 7.705 | 22.634 | 197.189 € | 579.258 € |
| Brda | 20.565 | 20.565 | 526.308 € | 526.308 € |
| TOTAL AMOUNT | 53.641 | 68.570 | 1.372.802 € | 1.754.871 € |

The results related to the “lower” and “upper” surplus for Collio are calculated excluding and considering the city of Gorizia, and maintain the significance of the analysis. In fact the market search was made only in the rural suburb of Lucinico and Piedimonte, and not in all the urban municipality of Gorizia.

The analysis of the results of the estimation model combined with the analysis of the market search, shows that people recognize biodiversity as an environmental benefit with economic value.

The environmental potential of olive tree as traditional cultivation is related to the most important rule of agriculture for land protection. The restoring of old cultivation, stonewalls and terracing in the marginal areas can be effective in reducing and preventing erosion, particularly in areas with heavy rainfalls. The olive tree could be introduced alongside vineyards reducing monoculture and in association with traditional orchards, improving biodiversity as a real economic alternative to vine production.

The olive tree cultivation could be introduced in marginal areas, using micro-climate areas, preserving grassland and woodland, which in turn would help preserving local flora and fauna.



The environmental development of olive cultivation could be realized through environmental labels, where customers can find information that the olive oil is produced in accordance with the correct landscape management and environmental protection.

This form of land management could be a real economic development possibility, capitalizing the multi function potential of farms (e.g.. agro-tourism, small farm shops etc.) that can take a good advantage of the landscape-environmental context.

The trans-border project based the development on the possibility to market the sustainability, with the creation of a name UE-LI-JE with bilingual meaning symbolizing the convergence of different people in a common European culture with a slogan “Goodness for soul and heart”. The labelling work for the development of a traditional cultivation, as olive tree, is based on local traditions. In fact, the four local olive tree varieties selected by the agronomical research staff are presented to consumers, as characters of an old local traditional fairy tale about three sisters and their cousin. The consumer can identify the variety through the character represented on the label, and the production system by the Ueliye logo.

Conclusions. The production of quality food is not necessarily associated with the production of environmental benefits. Therefore, the policy question is how to bring farmers to adopt environmental practices using market

mechanisms and consumer willingness to pay a price premium to get higher global quality products. Eco-labels may not constitute an efficient signal to consumer about farmers stewardship also because of a great increase in the number of official and non-official quality labels.

Biological and landscape diversity have a growing public appeal and in our case study consumers showed the WTP a modest price premium per family and per year (25,59 Euro). Eco-labels based on regional quality products are an incentive approach to help improve farmers' environmental stewardship. Nevertheless, the future of this approach depends on the CAP reforms and discussions within the WTO and TRIP agreement. Currently, this goal is not easy to achieve because of the divergences between the new world (USA, Australia, Latin America) and the old world (Europe) where the first condemns labels as trade barrier and the second recognizes commercial value of labels quality products linked to geographical origin. Since a large portion of food purchases are made in supermarkets, market signals alone are not sufficient to induce socially efficient levels of environmental quality of agricultural land of Europe. Payments to farmers under national agro-environmentally programs will be necessary to achieve the multi-functionality expectation placed on agriculture. In our case study we may foresee a solution for trans-boundary farmers in Friuli Venezia Giulia and Slovenia i.e. as they work in a favourable area where consumers are well educated to give the right value to agricultural products and their WTP is quite good. In this area there are also favourable conditions to sell their olive oil with the added environmental value through the so called 'short chain' i.e. directly from farmer to consumer.

In other less favourable conditions it probably will not be possible to profit from short chain and environmentally friendly products of high quality. Nevertheless, if we want to market agricultural sustainability it is not possible without the preservation of the landscape.

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“Genuss Regions” in Austria and the benefits for the environment

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Abstract In 2005 the project “Genuss Regions” (‘Gourmet Regions’), an initiative promoted by the Federal Ministry of Agriculture, Forestry, Environment and Water Management was started in order to make visible the efforts of food producers to produce regional, high quality foodstuffs., further to highlight the large variety of local agricultural systems, It was to consolidate consolidation the marketing of those products. Selected “Genuss Regions” from Styria are discussed as an example, and their beneficial impacts on the environment are analysed with regard to the farming practices associated with them.

Keywords: environment, foodstuff, sustainable agriculture

What is a “Genuss Region”?

The implementation of the so called “Genuss Regions” (‘Gourmet Regions’) is an Austrian initiative and a protected brand of the Federal Ministry of Agriculture, Forestry, Environment and Water Management, which was founded in 2005. The aim of this initiative is to force the marketing of regional Austrian food in order to make the efforts of the food producers visible and to point out the large variety of local agricultural systems..

The philosophy and idea of the “Genuss Regions” is focussed on the presentation and marketing of typical foodstuffs in selected special regions. Products with traditional origin as cereal varieties, breeds of cattle, ham, cheese fruit and vegetable varieties as well as the region, in which these products have to be produced, should be understood as one unit. The admission of a product within the “Genuss Region” project is bound on the condition that the raw product has its origin in the region and the processing has to be carried out in that region as well. Alcoholic products as wine, beer and spirits are excluded from admission.

The installation of the “Genuss Regions” emphasizes that foodstuff and the land cultivated by men are inseparably connected and that they are both responsible for the character of a region.

At the moment there are 112 “Genuss Regions” registered, spread over all nine federal states of Austria. The main product categories can be seen as follows:

| <i>product categories</i> | <i>number of regions</i> |
|---------------------------|--------------------------|
| vegetables, cereals | 25 |
| fruit and fruit products | 19 |
| cheeses | 14 |
| cattle | 13 |
| pigs | 7 |
| fish | 5 |
| lambs | 4 |
| deer | 4 |
| chicken | 3 |
| others | 11 |

In Styria, a region and a federal state in the southeast part of Austria, 12 “Genuss Regions” were installed the last 3 years. The denomination of a “Genuss Regions” always includes the local origin as well as the product category. In the following part, a few selected “Genuss Regions” from Styria will be discussed, particularly with regard to the benefits of the agricultural activities in these “Genuss Regions” for the environment.

As a preliminary remark it has to be pointed out that agricultural cultivation has not been fundamentally changed since the implementation of the “Genuss Regions”. The importance to sustainable, environmentally friendly agricultural management was already recognized before. There is no doubt, that there are benefits in these regions for the environment regarding cultivation and management, but with the installation of the “Genuss Regions” the efforts of the producers in these regions are more evident to the general public.

Selected “Genuss Regions” in Styria

| <i>Name of “Genuss Region”</i> | <i>product category</i> |
|---------------------------------|---------------------------|
| Steirisches Kürbiskernöl g.g.A. | oil |
| Weizer Berglamm | lamb, meat based products |
| Almenland Almochse | cattle, fresh meat |
| Südoststeirische Käferbohne | beans |
| Pöllauer Hirschbirne | pears |
| Oststeirischer Apfel | apples |
| Steirisches Teichland – Karpfen | fish |

To inform the consumers entering a „Genuss Region“, the main traffic routes are marked with large information boards, demonstrating the particular product.



Genuss Region “Steirisches Kürbiskernöl g.g.A.”

Pumpkin seed oil, considered a traditional culinary speciality, is one of the most famous signboards in Styria. This product not in vain is one of in total four PGI (Protected Designation of Origin) products from Austria. These products are produced, processed and prepared in a given geographical area using recognised know-how. Styrian pumpkin seed oil (Steirisches Kürbiskernöl) is a culinary speciality of south Styria. The oil is made by pressing roasted, skinless pumpkin seeds from a local variety of pumpkin, the so called “Styrian oil pumpkin” (*Cucurbita pepo* var. *styriaca*). The earliest record of pumpkin seed oil production dates from the end of the 17th century. The pumpkin production for oil increased intensively with mechanical harvesting, a method developed about 30 years ago. The colour of the pumpkin seed oil is typically dark green, it has an intense incomparable nutty taste.



Production data

| | |
|------------------|---|
| region: | southern part of Styria |
| cultivated area: | 12.000 ha, 2.300 producers |
| | pumpkin production: 3rd place after maize and cereals |
| processing: | 30 oilmills |
| seeds demand: | 2,5kg dried seeds/1l of oil (about 35 pumpkins) |

Benefits for the environment

Pumpkin cultivation in principle is carried out in crop rotation, therefore, comparing to maize, stress situations on soil and groundwater can be minimized. As a consequence of increasing pumpkin cultivation for the last 10 to 15 years, maize cultivation was decreasing at a similar rate. Small structured pumpkin cultivation forms a unique landscape especially the last two months before harvest. Pumpkin cultivation has developed as a typical agricultural signboard in the southern part of Styria.



Genuss Region “Weizer Berglamm”

In a mountain region about 30 km east of Graz sheep breeding has a long tradition. Sheep breeding is carried out exclusively in small herds in mountain pastures, where animals have a large range of grass and herbs. In winter the sheep are fed with hay. Close to nature feeding and sheep breeding appropriate to the species are the natural background for raw products of premium qualities.



Products

- meat
- sheep milk
- sheep milk products
- wool

Benefits for the environment

Small scale farming is forming the characteristic and unique landscape. Farmers in this “Genuss Region” are responsible for conserving and maintaining the natural landscape. The well and natural preserved landscape on the other hand is a fundamental basis for sustainable tourism. In spite of the ongoing process of concentration, Austrian farms are with an average of 18,4 ha of agricultural area per holding, small-sized compared to EU average, which brings about numerous advantages with respect to close-to-nature management.

Genuss Region “Almenland Almochse”

“Almenland Almochse”, a project started in 1988 describes a special autochthonal variety of oxen, held in the “Sommeralm – Teichalm” area northeast of Graz, representing the largest connected alpine pasture in Central Europe. Alpine pastures in this area range over an altitude between about 550 and 1.700 m sea level. Besides horses and sheep about 4.000 oxen are held on these pastures. On average 3 animals are sharing a pasture of a size of 2ha. Grazing on the mountain pastures takes place from May until September, in wintertime the oxen are



hey- and corn-fed. Feeding close to nature and outdoor animal breeding ensure the base for first class raw products.

Breeding this kind of animals has become a secure economic base of existence for a big number of farmers in this region the last decade.

The meat from this “Almenland Almochse” is particularly popular and favoured by the consumers. The quality of this meat is depending on the special feeding conditions leading to a slow growth of the animals.

Benefits for the environment

In the last 30 years the area of alpine pastures in Austria has been declining rapidly. The “Almenland Almochse” project is aimed to combat this trend, the participating farmers are responsible for the preservation and the maintenance of these pastures. In this natural scenery presenting the traditional man-made environment of this alpine region, sustainable tourism is of important significance. Moreover, farmers in this Genuss Region are making contributions to the preservation of traditional cattle breeds.

Genuss Region “Südoststeirische Käferbohne”

„Südoststeirische Käferbohne“ is a special variety of a bean which is mainly cultivated in the southeast part of Styria closed to the Slovenian border. The specific climatic conditions in this area do not only benefit wine growing but also cultivation of this bean.

On a cultivated area of about 300ha nearly 400t of beans are produced per year. This amount covers about 90% of the total Austrian production of this bean variety, which is exclusively used for culinary purpose.

It is mainly cultivated in combination with maize, where maize has the function of supporting the bean plants. Both crops are planted and harvested at the same time, after combined threshing in autumn beans are mechanically separated from the maize seeds.

Benefits for the environment

The cultivation of beans presents an attractive scenery and gives an added value to the landscape. When cultivated with maize, the bean is as an additional nitrogen consumer working as a nitrate inhibitor.



Genuss Region “Pöllauer Hirschbirne”

The hills and the climatic conditions in the eastern part of Styria represent the most favourable conditions for fruit-growing, in particular for pear-growing. “Pöllauer Hirschbirne” presents a very old autochthonal pear variety, which is used in many cases. Besides fruit juice and pear cider, this pear is a useful raw material for producing vinegar, spirit and dried fruit.

Pear-growing in this region is exclusively carried out in traditional cultivation, tree population in some cases is up to 200 years old.

Benefits for the environment

This old traditional pear variety was conserved by the farmers of this region. In this Genuss Region, pears are exclusively planted in traditional cultivation. Because of the attractive scenery this region was incorporated into the Nature Park “Pöllauer Tal”



Genuss Region “Oststeirischer Apfel”

Styria is Austria’s foremost apple growing region and apples are Styria’s most important orchard fruit produce. Apple growing has a long tradition in the region. Apples from Styria were in high demand throughout the Austro-Hungarian Empire and are also reported to have been held in high esteem by the Russian Tsars.

The centre of apple production is eastern Styria, a region in which the land rises gently to 600m above sea level, and with soils and climate that are ideally suited to apple cultivation. In the last two decades, many small family orchards have been bought by larger companies. Apple growing is an important driver of economic growth in the region. 1.500 apple growers produce about 170.000 tons of apples every year on an area of 5.000ha.



Beside direct consumption, dessert fruit apples are further processed into vinegar, juice, jam and distillates.

Benefits for the environment

Apple growing has always been the traditional fruit production in the region and formed the specific scenery of the landscape. Many years ago the wonderful diversity of apples was the regions’ hallmark. Consumer attitudes have changed and a preference for large, sweet and perfect looking apples is taking its toll on the old, local varieties. For this reason large areas of orchards are protected by nets in order to avoid damaging by hail which occurs very often in the summer months. Besides these large orchards more and more small orchards continue to produce the older varieties to make them into cider and distillates.

Genuss Region „Steirisches Teichland – Karpfen“

Fish farming has a long tradition in Styria, in particular breeding carps. In the southwest part of Styria generations ago morphological and geological conditions were created for constructing artificial ponds. Additionally, water quality and quantity in this area were the basis for fish breeding.

About 30% of the total Austrian fishpond area is situated in the southwest part of Styria.



| | |
|--------------------------------|---------|
| total fishpond area in Styria: | 1.000ha |
| medium pondsize: | 0,7ha |
| production per year | 600t |

Benefits for the environment

During flood events fishponds of a certain size are retention areas, equalizing flood peaks. Around fishpond zones specific microclimatic conditions are to be observed, fishpond areas further are presenting damp biotopes for animals and plants. Sport fishing has become a favoured recreational activity in this pond zones.

Conclusions

The “Genuss Regions” initiative was established mainly to promote regional quality foodstuffs and to give a clear and consistent message to consumers about farmers’ efforts to produce those foodstuffs. Moreover, due to great importance placed, since the beginning of the project, on maintaining traditional management practices the initiative has also resulted in delivering many environmental benefits.

Labelling system of Parco del Ticino

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Abstract

Parco Ticino was born more than 30 years ago, and two-third of his territory are destined to agriculture. It was very difficult to find the way to maintain environment without excessive limits for farms. The recipe is based on agro-environmental measures and technical assistance. To raise awareness of the consumers has been developed a labelling system, which permit to distinguish on the market that kind of products coming from sustainable ways, as organic or integrated agriculture.

Keywords

Environment, agriculture, sustainable development, labelling

Introduction The Natural Park of the Ticino Valley is one of the first established in Italy. It follows the stream of the Ticino River in the Italian part and represents a natural corridor which connects the Alps with the Po River. This river, which flows from east to west, forms the largest Italian plain, which is crossed by the Ticino River from north to south. The Park covers ca. 900 km² of natural (forests and wetlands), agricultural and urban areas and is managed in accordance with the Territorial Coordination Plan. About 200 km² are occupied by residential centres,



with artistic and architectural testimonies that are among the most important in the Italian history of the art as well as archaeological areas that date back to VII-VIII century B.C. More than half of the Park (500 km²) is under agricultural use.

The Ticino Park is one of the most important geographic areas for the Italian economy, with a population of about 450.000. It is cut perpendicularly by the motorway 'Turin-Milan' and by the new high capacity/high speed railroad lines. The Park is particularly well-known for its extensive preservation of the river course which, devoid of artificial barriers, is surrounded by a wide range of areas covered by autochthonous plains forest. In this context the large

cultivated surface assumes a high importance for the park.

Agriculture in Ticino Park Referring to the Italian agriculture census (2000), in the 47 municipalities in the Parco del Ticino, operate a total of 1580 farms, covering 52217.62 hectares, of which 40377.28 (77.3%) of UAA (Utilised Agricultural Area), used in main part as arable land. To rest portion of the territory is covered by forest (11.1%), productive wood (6.5%), unused land area (1.2%), portions of land usually used for different purposes (3.9%). The patterns of agriculture change according to the characteristics of the territory: small farmers and careful forest management in the area of hills moraine, cereal-growing area in the dry plains, corn and rice, dairy cattle herds and meat in the area of irrigated plains, highly productive. The 53.9% of farms not exceed 20 hectares, if instead consider the total extending, it refers only to UAA, this proportion rises to 64.7%. The UAA is largely devoted to arable land (91.9% with a peak for municipalities in province of Pavia 97,9%) and permanent grassland (7.8%).



| Municipalities | Farms | | | | |
|--|--------------|--------------------|---------------------------------|----------------------------|---|
| | Number | Total surface (ha) | Utilised agricultural area (ha) | Average total surface (ha) | Average total utilised agricultural area (ha) |
| Municipalities Parco (Province Varese) | 215 | 2.735,40 | 1.922,25 | 12,72 | 8,94 |
| Municipalities Parco (Province Milan) | 593 | 16.398,86 | 12.165,13 | 27,65 | 20,51 |
| Municipalities Parco (Province Pavia) | 772 | 33.083,36 | 26.289,90 | 42,85 | 34,05 |
| Parco Ticino | 1.580 | 52.217,62 | 40.377,28 | 33,05 | 25,56 |

Processing data from ISTAT (2000).

This area is important also about breeding, with pigs (62,851 head, with an average of 676 pigs per farm), poultry farms (49,045 head, with an average of 134 pigs per farm) and cattle (30,023 head, with an average of 80 head per farm). Of marginal importance are sheep, buffaloes, goats, horses, poultry).

So this is a dynamic and productive agricultural system, with some level of excellence in the national scene, such as dairy production in the province of Milan or rice production in the province of Pavia. Combining productivity

and environmental protection is certainly complex and requires a series of actions well coordinated among themselves. First is necessary a proper planning, that would graduate the limits to agriculture in proportion to the importance of surrounding environments. In the Territorial Coordination Plan of Parco del Ticino the choice of productive form and address are absolutely free. The limits for primary activities are related mainly to operations involving processing of agricultural land (such as land reclamation) which need assessment in terms of landscape or ecosystem impact. These limitations are higher in the areas of reserve and Natural Park and go backwards moving away from the river and forest, up to the so-called "farming areas" where the primary objective of the park is the defense of the agricultural system against urbanization.

Towards sustainable agriculture The agricultural territory of the Park cover more than half of the whole protected area. In the major part of Lombardy the agriculture was high input oriented agriculture: this orientation is also present in the plain part of the Ticino Park.

In the 1980s and in the early 90s, EU agricultural policies were production-oriented: the Park, in that moment, found itself in conflict with the agricultural world. Following modernisation, agriculture began to utilize higher rates of fertilizers and pesticides and to enlarge the cultivated surfaces to the detriment of hedges and hedgerow trees, which are essential elements of the landscape. Similarly, the historical cultivation systems, such as *marcite* (permanent meadows which are productive also over the winter period thanks to an ingenious irrigation system) became unutilised due to the introduction of the total mixed ration (*unifeed*) as a feeding method in dairy farms.

The first great change happened in 1992 because of the approval of the 'Mac Sharry reform' of the Common Agricultural Policy of the European Community. For the first time agriculture was seriously oriented towards quality and not towards quantity and environmental topics gained attention thanks to the Regulation No. 2078/92/EEC which introduced the agro-environmental measures. The Park became aware of the historical moment: agricultural policy perspectives based on sustainability, particularly corresponding the with Park's goals.

It was necessary to add new development activities, to the institutional activities (i.e. estimation of the faun decline, land reclamation authorisations etc.). First of all, the Park applied to the European Commission to join the rural Carrefour Network (Network of Rural Information and Animation Centres). Thanks to this new tool, the dialog with the farmers and with the public institutions has been strengthened throughout the whole regional



territory and reached in a short time a very advanced operational level. The main examples of these activities are:

- direct assistance to many farms to maintain or rebuild the agrarian landscape (hedges, hedgerow trees, meadows, *marcite*);
- continuous promotion of these topics to the technicians and farmers', resulting in a constant increase of the number of farmers who applied agro-environmental measures;

A new approach was adopted to involve more farmers; many of them had asked 'Why would I want to introduce sustainable agriculture?' and the answer was: "Because you could:

- improve your income (thanks to cost reduction and subsidies)
- achieve a product diversification on the market
- restore landscape more appreciated by consumers and tourists
- achieve multi-functionality
- and, last but not least, protect the environment.'

This constant dialogue with farmers was coupled with exchange of experiences with other technicians at local, national and international level, with the main goal to extend the knowledge of organic and low input agriculture and to address their critical points.

Ticino Park has been responsible for the creation of support services useful for farmers in their search of sustainable models, such as:

- promoting ways of reducing chemical inputs (e.g. adjusting sprayers for weeds control), editing manuals and leaflets, introducing the use of personal computer in the farm for fertilisation plans;
- setting up experimental fields (12) for growing maize under "low input" system, based on a substantial reduction of chemical inputs and a subsequent dissemination of the results;
- assistance to the application of EEC Regulations (2078/92, 1257/99) and coordination of application plans, with production of handbooks, distribution of native plants, cooperation with regional authorities with the aim of constant updating of application rules, data publication, dissemination of the results;
- creation of a logo for organic and "low input" products, based on a rule which provides farmers with technical assistance and other types of support for marketing (fairs, promotions) free of charge.

The results have been very positive: in 1995 not more than ten farms joined the agri-environmental scheme, whereas in 2007 more than 400 farms applied one or more agro-environmental measures (about 1/3 of all farms on the Park territory).

Low input and low impact The particularity of the Ticino Park area is based on a combination of rules and support which give the opportunity to clearly identify



different steps of efficiency for sustainable agriculture. Outside the Park we can find conventional agriculture, which can be considered the departure step. All the farms inside the boundaries of the park must respect the Territorial Coordination Plan, with rules for biodiversity protection, land reclamation limitation, no herbicide use outside arable lands, landscape conservation and restoring, defence against urbanisation.

The third is the designation of the part of the Park as a Natura 2000 site (20.566 hectares of Special Protection Areas and 17.045 hectares of Sites of Community Importance), where the rules of Territorial Coordination Plan are stricter and a special regime of cross compliance is operating.

The fourth step is linked to the agro-environmental measures application, with low input farming systems (integrated or organic), extensive crop growing such as meadows or *marcite*, landscape and biodiversity measures such as hedges, hedgerow trees, wetlands.

The highest step is based on a labelling farming system, where farms must follow organic or low input farming schemes and have to enter into voluntary agreements concerning landscape and biodiversity. This last step aims at involving consumers in shaping agriculture orientation, rewarding farmers for their efforts. In the long run, subsidies cannot substitute market rules: for this reason it is necessary to improve labelling system for these agricultural products which are obtained with a low impact on the environment, while giving the consumers the choice and the possibility to select them (since European Eco-labels are not currently available for food products).

The label “Parco Ticino – controlled production” The mark “Parco del Ticino-Controlled Production” is targeted to all individual or associate agricultural producers operating within the territorial boundaries of the park and to processors of food and agricultural products, exclusively for quantity obtained from raw materials coming from inside the protected area. With the right to use the mark, the Park guarantees the control on soil using and the adoption of a minor impact technical (integrated farming and organic farming) ensuring the protection of the environment and landscape. The label Park Ticino - Controlled Production on food products is intended for all companies in the Parco del Ticino adopting agricultural techniques with low environmental impact according to specific disciplines and respecting the specific use regulations. The farmer must take out two categories of disciplinary action, farm level and product level, representing contracts through which assume the commitment to the Park. After the start-up production, directed by the technical assistance available from the Park, following checks by the figures specifically in charge of supervision. The organic certification of the product speeds up the process by limiting the product controls through the acquisition of official documents of certifiers.

The label that identifies products can be:



Blue, when the products are obtained by integrated agriculture



Green, if the products are obtained from organic farming, regularly certified by a recognized

The information given on the label enables consumers to identify the farm of origin and production lot (traceability).

At the moment farmers participating in the project are 26. The farm productive addresses are quite different and allows a wide range of brand products (10 companies are addressed to the production of cereals, 4 to cereal-livestock (with beef cattle, dairy cattle, or pigs), 3 predominantly livestock (pigs, beef cattle and dairy cattle), 5 to honey productions, 2 to fruit and vegetables.

Table 1. Farm cultivated area, farm area devoted to Parco Ticino labelled production and products available in the 2007-2008 growing season.

| Principal production | Farms | Farm surface | Surface devoted to labelled production | Labelled products |
|----------------------|-------|--------------|--|---|
| | (n) | (ha) | (%) | |
| Cereal | 10 | 107 | 44% | rice, maize, wheat |
| Cereal-livestock | 4 | 53 | 23% | milk, cheese, beef meat, fresh and seasoned pork products, rice, maize, wheat, fruit and vegetables |
| Livestock | 3 | 34 | 97% | milk, cheese, yogurt, beef meat, pork meat, fresh and seasoned pork products, maize, wheat |

| | | | | |
|---------------|---|---------------------|------|------------|
| Honey | 5 | 60 productive units | 100% | honey |
| Horticultural | 2 | 5 | 100% | vegetables |

Is there also a cooperative with some milk producers operating within the territory of the park. Three producers follow the specifications of organic farming, all the others joined the agro environmental measures of the Rural Development Plan (Integrated Agriculture). The area covered by these farms is over 1600 hectares.

In table 2 are summarized the quantities of product produced in the 2007-2008 growing season and related gross marketable production (GMP). The value of agricultural production is around 0.65 million €, which become more than 4.3 million € of value of processed products.

Table 2. Yield and economic gross value of Parco Ticino labelled production in the 2007-2008 growing season.

| Products | Yield (Mg) | | Economic gross value (€) | |
|----------------------------------|-------------|------------------------|--------------------------|------------------------|
| | unprocessed | processed and labelled | unprocessed | processed and labelled |
| Rice | 2722 | 1089 | 95277 | 2177771 |
| Maize grain/flour | 43 | 37 | 862 | 36635 |
| Wheat grain/flour | 339 | 237 | 6780 | 237300 |
| Pork meat | 72 | - | 86400 | - |
| Fresh and seasoned pork products | - | 55 | - | 820800 |
| Milk | 1073 | 999 | 364854 | 999330 |
| Dairy products | - | 4 | - | 20850 |
| Fruit and vegetables | 17 | 17 | 25500 | 25500 |
| Honey | 11 | 11 | 57125 | 68550 |
| TOTAL | 4278 | 2449 | 636798 | 4386736 |

The products available are rice, flour, wheat flour, meats, cheeses, barley, milk, vegetables, honey, fresh and seasoned pork products.

Following the experience gained in recent years, changes made to the implementation of the Regional Rural Development Plan 2007-2013, the comparison with other interesting experiences on an international scale, has been initiated a review of procedures for granting use of a label Parco del Ticino. Many companies environmentally sustainable, often for the sake-bureaucratic organization, can not practice forms of certified agriculture integrated or biological, but still take interesting practice to protect the soil, environment and landscape. For this reason it will be adopt a scheme more suited to seek the commitment of these farms.

Processors The farms direct processing system is very interesting, but limits the number of farmers involved to adopt sustainable practices. For this reason it has been tested the involvement of an agro-processing industry of rice. The varieties sold are seven: Arborio, Carnaroli, Roma, Baldo, Ribe, St. Andrew, Originario. For the producers, all integrated agriculture producers, has been guaranteed a recognized premium for the Park logo. The distribution, mainly implemented through the Upscale Department Stores (UDS), can get the products in almost all Italian regions and major areas of international interest (United States, Norway, France, Greece). After in interesting beginning, this food-chain example is addressing some problems, due to reasons related solely to rice industry and independent from the project.

In this period a new salami food chain, based on Parco Ticino label, is emerging in this period.

Label valorisation, promotion, farmers direct sale Park argues the mark by producing information materials, participating in specialized fairs - local and national - and organizing events and informative seminars. Participation in fairs and exhibitions is designed especially to promotion, with special moments dedicated to tasting the products.

The costs of Parco Ticino label promoting are contained, thanks to the synergy with the institutional communication. For many years the high tourist flows within the park were positive only for restaurants, bar and rental outlets. The development of the label allowed to link tourism to agricultural development. To maximize this relationship was initiated an experimental project about didactic farms, with the creation of a network of 12 farms. In the meantime also nature guides have been formed to promote local products. The effect on tourism marketing has been successful as evidenced by the increase in recent years of the number of farm direct sales. In some cases were made substantial investments by farms to integrate the number of products and intensify communication efforts.



A research carried out by University of Parma - Faculty of Economics, on behalf of the Regional Research Institute of Lombardy (IRER) revealed that the brand has achieved levels of awareness and penetration among the highest in Lombardy. They showed a degree of recognition of the mark "Park Ticino – controlled production" equal to 44.4%, second only to mark Valtellina (64.2%). The index of conversion to purchase stands at 11.9% and 73% of respondents declared their interest in events and tastings of local products made by a Park.

The park has recently renewed its strategy to support the promotion of products, facilitating contact between companies producing, processing and distribution. In this context a selling experiment has been conducted Forno Cooperativo Ambrosiano in Magenta. The data on sales results in these initiative have been interesting, with a great exploits of salami and a success in terms of rice and honey.

The restaurants This kind of business perform two functions complementary: one part as "consumers" of the product and a second part in increasing of public awareness. Their role is crucial: they must be encouraged to purchase products with label by the opportunity to distinguish themselves on the market. With this objective has been defined and updated a "Regulations for the promotion of food products labelled by the Parco del Ticino in restaurants", by which is meant to give visibility to the restaurants who buy Parco Ticino products and introduce traditional recipes in their menu. Specifically, to use the trademark Ticino Park, the restaurant must:

- Buy food products from farms and / or from food industries regularly recorded at the register "Parco Ticino – controlled production";
- Insert into their menus at least a recipe typical or traditional of the territory of the Parco del Ticino based on raw materials labelled;

- Promote forms of sustainable agricultural through the distribution of material specially created by Park.

Cakes and bread On the occasion of Christmas 2005 and Christmas 2006 has experienced the creation of a panettone (typical Italian cake), contained in a special tin box. The product was appreciated by a considerable number of tasters and tin also sought other support.

This part of Lombardy needs a culinary identity, as it has lost many of the links with the local tradition. In particular, to support a tourist identity, has been assessed the design of a characteristic cake, which can be an interesting element of identification.

The wheat production is one of the features of the park, less widespread in recent years only because of market opportunities and common agricultural policy. Based on that has been achieved for desserts, it will be activate a similar initiative for the detection of a bread characteristic of the area for ingredients and for traditional links.

School caterings Also with an approach not only commercial but also educational, school caterings are very important. In this field two different experiments have been made, one with a small school catering in the direct management of a municipality (Boffalora Sopra Ticino), the other with the system of school with caterings in public management (Magenta).

In the case of Boffalora is being experienced a short-chain management by producers, with innovative ways of delivery and transportation of products suited to reduce the distance through sustainable techniques and have been defined moments and raising awareness of families.

In the case of Magenta the municipality has set a minimum standard of provision of quality products, also labelled by Parco Ticino. Also in this case, the project includes the activation of information and education services for families.

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Idiazabal Cheese, a case study

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Abstract The origins and distinctive character of Idiazabal Cheese are firmly rooted in nature, and are intrinsically linked to the verdant landscape of the Basque Country. In the green hills and valleys of this agriculturally rich region, shepherds have been rearing and tending latxa and carranzana sheep (indigenous breeds) in much the same way for over eight thousand years. It is an ancient farming method, whose respect for the environment has done much to preserve the great beauty of this stunning natural landscape.

Keywords: cheese, sheep, indigenous breeds, PDO

Nature, a sheep and a cheese The root of everything lies in nature, and this is even more true in the case of a product that is as genuine and spontaneous as Idiazabal Cheese.

In a process that has remained almost completely unchanged for over eight thousand years, from Neolithic times to the present day, shepherds and their sheep have followed the old routes determined by the seasons: high pastures in spring, summer and autumn, and low-lying valleys in winter, with the aim of taking full advantage of a natural food source that itself follows an unchanging cycle. Latxa sheep are a small, rustic breed whose milking ewes produce a limited quantity (around one hundred litres per season, mainly from February to June) of nevertheless extremely high quality milk. Latxas are sturdy creatures which breed excellent lambs are very good at processing pastureland.

However, in addition to producing high quality milk, Latxa (and Carranzana) sheep also offer added value in many other key areas. In this sense, the positive effect of their extensive farming on the environment and landscape of the Basque Country and Navarra, their importance with regard to maintaining active rural populations in our villages and their contribution to keeping the age-old farming and cheese-making culture alive, lend Idiazabal cheese a whole range of special characteristics, over and above its exquisite natural quality, that make it even more highly prized and valued.

The Denomination of Origin: a few facts and figures The Denomination of Origin was set up in 1987 to defend Latxa and Carranzana sheep farmers and authentic Idiazabal Cheese producers and to guarantee the origin and quality of the cheese sold to consumers.

The Denomination of Origin currently encompasses a total of 464 farmers and 107 cheese-making facilities, the majority of which use only the milk produced on their premises. The small size of these undertakings guarantees the optimum care expected of farmhouse cheeses both during production and in the maturing or refining processes. Both milk and cheese production is always carried out within the borders of the Basque Country and Navarra (Figure 1). Indeed, the only reason the Denomination bears the name Idiazabal is that this is the best-known name, although in fact, it was just one of various alternatives such as Urbia, Aralar and Gorbea, among others. Therefore, the name Idiazabal nowadays refers to all the cheese produced in the Basque Country that complies with a set of pre-established conditions. Together, all the undertakings encompassed by the label produce approximately 7,000,000 litres of milk each season, a quantity which is then turned into over 1,200 tons of Idiazabal cheese. In the last few years there has been an increment of the number of cheese and cheese producers (Figures 2 and 3).

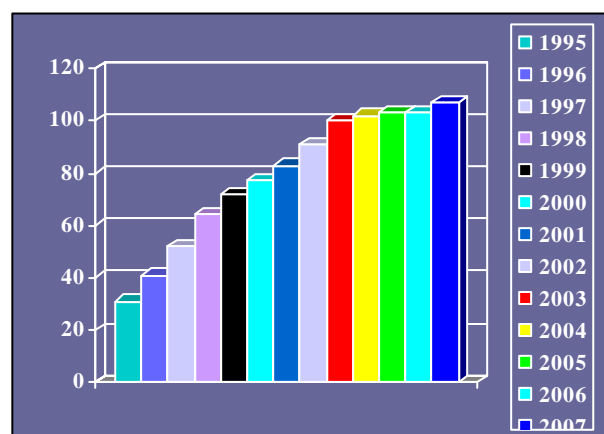
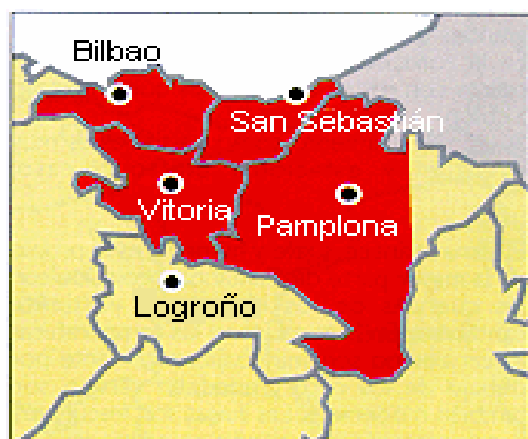


Figure 1: Idiazabal production area

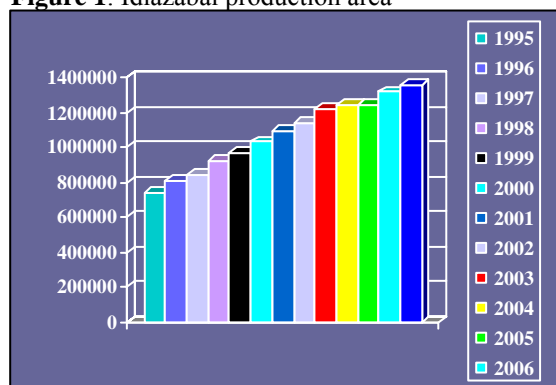


Figure 2 Number of cheese producers (1995-2007)

Figure 3 Idiazabal cheese production (1995-2007)

Some technical characteristics of Idiazabal cheese The cheese is:

- made from unprocessed milk
- obtained exclusively from Latxa and/or Carranzana breeds of sheep
- cured (minimum 2 months)
- small or medium (from one to three kilos), although it can also be sold in wedges
- uses enzymatic coagulation (rennet)
- not cooked (not exceeding 38° C)
- pressed, it is a hard cheese
- full fat (min. 45% of dry extract is fat)
- either smoked or unsmoked.

Guarantees of the Denomination of Origin The Protected Idiazabal Cheese Denomination of Origin Control Board has established an entire system of control activities that enable it to guarantee all the characteristics that an IDIAZABAL cheese must offer in order to be certified. To this end, the Denomination has developed and implemented the EN-45011 Standard for certified producers. These certification activities are supervised by an Advisory Committee, which is partly made up by consumer representatives with the aim of guaranteeing the impartiality of the decisions made in this area. The principal control activities carried out by the Denomination are as follows:

- Inspections. Livestock, collection routes, cheese-making plants and sales outlets are all inspected on a regular basis. These inspections enable the Denomination to check *in situ* that all the requirements established in the Regulations are complied with.
- Analyses. Once matured, the cheese is collected from the plants and subjected to three types of analysis. Firstly, the Denomination checks that its composition corresponds to that expected from Idiazabal cheese; secondly, it is analysed from a hygienic-health perspective in order to ensure that it poses no health risks; and finally, it is subjected to a rigorous sensorial analysis carried out by the Denomination of Origin's Official Tasting Committee.
- Administrative Control. Thanks to a complex data collection method that encompasses the entire Idiazabal cheese production chain, a specially designed computer system ensures that no type of fraud is perpetrated regarding the origin and type of the milk and cheese. Furthermore, each and every cheese produced is subject to a strict control process involving a unitary number being imprinted into the rind, providing information regarding the producer, the date of production and the milk used, etc.

Some of the principal guarantees offered by the Idiazabal Denomination of Origin are outlined in Figure 4:

GUARANTEES OFFERED BY THE DENOMINATION

- 1.- The milk was produced and the cheese made within the boundaries of the Basque Country and Navarra.
- 2.- The cheese was made using only pure unpasteurised milk from Latxa or Carranzana breeds of sheep.
- 3.- All IDIAZABAL cheese is matured for at least three months.
- 4.- The minimum F/DE content is 45%.
- 5.- The cheese has passed a series of both health and organoleptic tests.
- 6.- All cheeses have a serial number printed on their rind.

Figure 4: Main guarantees offered by the Denomination

Only if a cheese fulfils these requisites can it bear the D of O mark on its label, certifying it as a true Idiazabal cheese.

How the cheese is made The pure sheep's milk is, with no prior treatment (the milk is unprocessed and cannot therefore have been pasteurised), gently heated in stainless steel vats until it reaches a temperature of 30° C. Next, the rennet is added. The rennet usually comes from a suckling lamb and is cleaned, dried, chopped and mixed with salt. The milk curdles in around thirty minutes (depending on the acidity of the milk and the season), forming an elastic gel that is then cut into pieces more or less the size of a grain of corn. In order to facilitate the dripping process, the grains are gently shaken and the temperature in the vat is gradually raised to around 37° C. This enables the greatest possible amount of whey to be removed, leaving us with only the milk's nutritional substances: its fat and proteins. This is the reason cheese was invented. When, in the cheese maker's judgement, the grains have hardened sufficiently, the heating process is interrupted and the grains allowed to fall to the bottom of the vat, where they are totally covered by the whey. When the cheese is inserted into moulds, each round is marked with a unique number. This enables each individual cheese to be traced throughout the rest of the process. After being pressed, the cheeses are brined (soaked in a vat of salt water) and then refined in a maturing chamber at a temperature of around 10° C, with a relative humidity level of approximately 90%. The acidity of the cheese gradually increases throughout the refining process, thereby aiding conservation. The refining process lasts at least two months, with the optimum period for extracting the best qualities being between four and eight months, depending on personal taste. Although smoking is a common practice, contrary to popular belief it is not carried out as a general rule, and there are certain zones such as Urbasa and Entzia, for example, in which cheeses are not traditionally smoked. This is why Idiazabal cheese comes in two different varieties: smoked and unsmoked, although it is often (particularly outside the production zone) identified solely with the smoked variety, which is a well-known mark of its identity and the process that provides it with its distinct flavour and appearance. The production process varies very little from facility to facility, which means that all sheep's cheeses made in the Basque Country are more or less the same, although there may be some differences depending on the season, area of production and individual technique of the maker.

Together, the producers have created a cheese whose fine quality is unanimously acknowledged, as demonstrated in the many prizes it has won in diverse competitions. And it is important that we continue to place special emphasis on this quality in the future, especially in light of the fact that the product is an entirely natural foodstuff which contains no colourings or preservatives.

We urge you to make the most of the fact that in the Basque Country we have a cheese that can hold its own among the very best cheeses in Europe. A cheese that is both natural and genuine. A gastronomic jewel that is the product of the beautiful Urbia, Aralar and Gorbea mountain landscapes, a native breed of sheep perfectly adapted to its environment (Latxa), the skills of the cheese makers and the merging of tradition and know how.

Strategies for promotion of Idiazabal Cheese. We have classified these strategies in: internal strategies and strategies for Idiazabal label promotion. Starting with internal strategies, we will refer to the strategies that we develop for and with producers. It is very important to have a strong and homogeneous group of producers to have a social voice and to make decisions altogether. We think that the projects work if there is a high participation of the sector. In idiazabal producing area, producers are associated in different associations with different aims, so they have a culture of association which is very important for the communication between them. So, from the PDO we collaborate with these associations and we have lots of common projects. It is necessary for the producers to have good formation about different items (from sheepherding to commercialization, cheese producing problems, or even new technologies). Finally, there is another strategy: seriousness with the quality control. For producers, control and certification activities are really important and they try to have the very most quality control systems and technologies to ensure the quality and the origin of the product. The importance of these internal strategies is that participation, collaboration and formation give the farmers a high regard and a collective identity as shepherds. They have learnt to value their work, and that is the very first step for society to value it, and to preserve this way of living.

About strategies for Idiazabal label promotion, publicity is made from the PDO for the Idiazabal Cheese (magazines, TV...), but not too much, mainly because think that we should not promote only Idiazabal name but the sense of Idiazabal producing and the consequences of it (environmental, cultural, and so on), in order to get a good value of the product. We must remember that we produce quality, not quantity.

In that way, we are organizing lots of "collective tastes" in the producing area and also in the rest of Spain. There is a qualified tester who explains to a limited group of people how to taste Idiazabal, but also how is it produced, how to recognize it on the market, how to conserve... and so on. These groups could be consumers, journalists, kids, or staff from restaurants and shops. We have noticed that even though it is not a lot of people in each collective taste, they learn to value the product, they speak very well about it to their friends, and they agree of paying a good price for buying Idiazabal cheese.

Another example of this kind of strategies, very important in our area, is the local competitions and markets. Basque society has a big culture of visiting and buying at local markets. PDO collaborates on the organization of many of them because is a good promotion of direct sales, and because buying a product from the producer of it is a way of knowing how does he live, how is his work and which is the importance of that work.

Results. Measuring if these strategies are really successful is very difficult because the sector is affected by lots of variable. But, being optimistic, we can consider that the production increasing and cheese-producer increasing in the last years are positive indicators.

We can conclude that although it is not the very best of the situations, choosing production models with autochthonous breeds, respecting our environment and culture; and being protected by a PDO or others, seems to be the best way of producing in mountain areas. It is even better if the transformation of the milk to cheese is made inside the farm.

Union brewery in Ljubljana and bottling company of Droga-Kolinska d.d. in Rogaška slatina (Slovenia)

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Abstract Drinking and mineral waters are ranked among a fundamental food, therefore protection of groundwater resources is an important obligation of water management strategies. Two best management practices from Slovene beverage industry are presented that significantly contributed to environmental protection and also to regional developmental planning. Definition of geogenic components of natural (mineral) waters and determination of criteria for estimation their original purity are the basis for promotion of the Slovene natural mineral waters excellence and hence, a way of marketing agricultural sustainability.

Keywords: drinking water resources, best management practices, impacts on the environment

Introduction Drinking and mineral waters are ranked among a fundamental food, therefore the assurance of sufficient quantities of quality groundwater resources is one of principal tasks of national management. Groundwater resources contribute 90 % to the Slovene water supply. 44 % of groundwater resources are stored in porous aquifers, while the rest are stored in karst-fissured aquifers.

Protection of groundwater resources is an important obligation of water management strategies. Groundwater protection zones (GPZ) are directed with a) Slovene Waters Act (2002) adjusted with the EU Water Framework Directive and b) Regulations of criteria for planning and determination of protection zones of drinking water resources (2004). An adequate knowledge base of the current status of the groundwater resources, and understanding of the processes involved, provides the safeguarding and protection of mineral and drinking water resources, which assure the health and safety of people who depend on them, as well as their sustainable development and regional planning.

This paper presents two best management practices from Slovene beverage industry, Union brewery from Ljubljana and Bottling company of Droga-Kolinska d.d. from Rogaška Slatina (Figure 1) and their impacts on the environment. Both companies invested in environmental researches with the aim to assess the optimal balance between environmental protection and economic use of mineral and spring groundwater resources. Their socio-economics aims refer to protection of soil and groundwater, manufacture of food products and beverages.



Figure 1 Research area - ■

Best management practice - Union brewery Union brewery is a modern European brewery with a 143-year tradition. It is located within an urbanised and industrialised area near the centre of Ljubljana. In addition to its various beers, the brewery manufactures the Sola range of soft drinks and Zala natural spring water. Pleistocene gravel aquifer is an invaluable water resource for the brewery. It is unique in many ways: groundwater velocity could exceed 20 m/day; a big part of the aquifer recharge area is highly urbanized, the quality groundwater is exploited from the lower gravel aquifer that is bounded by lenses of impermeable layers from the upper gravel aquifer; the upper gravel aquifer is contaminated by the inorganic, organic and microbial pollution. Union supplies groundwater of the lower gravel aquifer from 4 wells. Fortunately, the contaminated groundwater does not influence the production wells, owing to their successful reconstruction during the last decade. Nevertheless, the brewery was aware that sustainable groundwater resources management should be assessed and improved. The extensive study of groundwater flow and solute/contaminant transport was conducted in the catchment area of the Union Brewery water body with the intention of a) assessing and predicting the movement of groundwater and urban contaminants through the unsaturated or/and saturated zone of the Pleistocene gravel aquifer and of b)

analysing the risk of contaminant transport to drinking-water resources in the lower Pleistocene gravel aquifer (Trcek & Juren 2006, 2007).

The comparison of parameters presence and concentrations at and between different observation points gave important information on the aquifer recharge area, solute/contaminant behaviour, mixing processes and groundwater residence times and with that on groundwater hydrodynamic. The most important research results refer to determination of main groundwater flow directions into the brewery area (Figure 2) and hence to possible directions of contaminant inflow into the study area. The main recharge area is in Polhograjski Dolomiti hills. Fortunately only 37 % of this region land is agricultural and for the most part not very fertile (Hribernik, 2006). Meadows and pastures prevail (85 %) and this points to a less intensive typically livestock oriented area with 96 % of the farms involved in this activity. A statistically processing of data enabled to define the geogenic background of sampled waters and to evaluate anthropogenic impacts. The most important results are summarized in Figure 3, which illustrates the anthropogenic impacts of urbanisation - particularly waste water (Factor 5) on sampled groundwater. Factor 5 demonstrates that piezometers of the upper gravel aquifer (OP-2, OP-3, OP-8) are significantly impacted by urban contamination. These impacts are very low in shallow production wells of the lower gravel aquifer (V-3 and V-4) and practically negligible in deep production wells (V-6, V-8). This information together with other results indicates that the vulnerability of brewery drinking water is low.

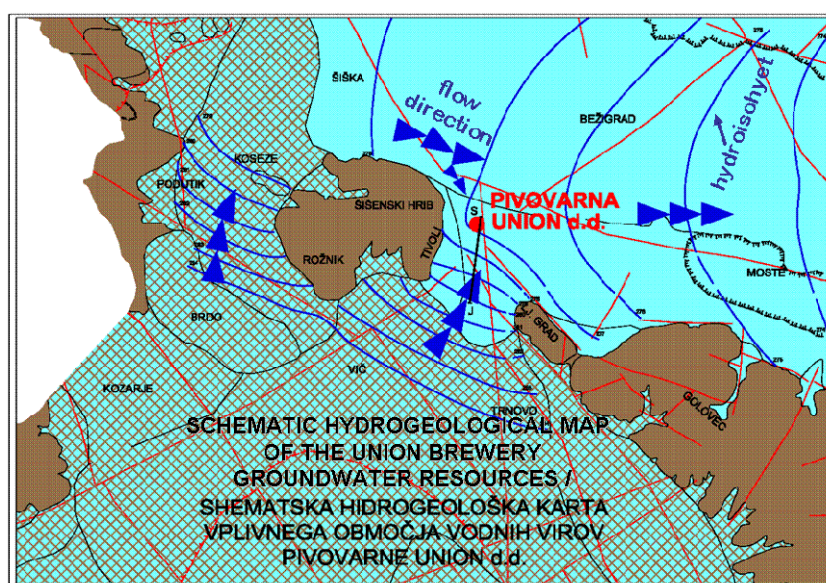


Figure 2 Main groundwater flow directions in the Union catchment area

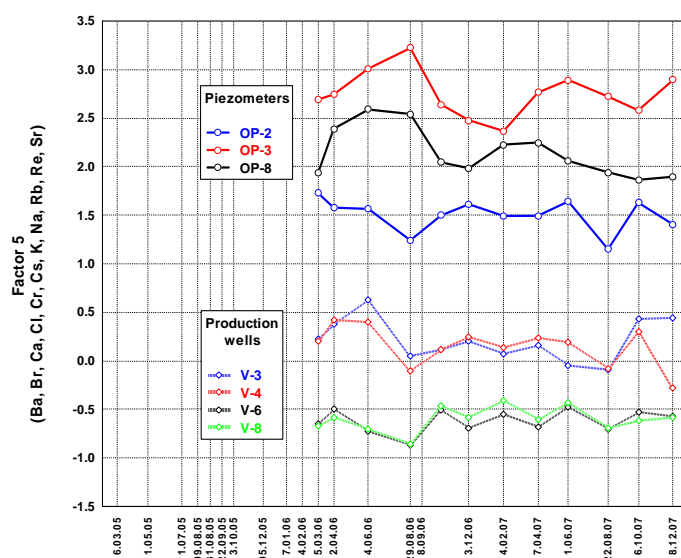


Figure 3 Distribution of Factor 5, reflecting anthropogenic impacts of urbanization on groundwater, sampled in piezometers and production wells of the Union brewery area

They research results served for vulnerability analyses of the urban porous aquifer system and contributed to criteria for management of groundwater resources of the discussed aquifer. If the mechanisms of flow and contaminant transport are adequately understood in the urban aquifer, then also efficacious monitoring and protection strategies for sustainable management of investigated groundwater resources could be recommended. The results could be applied for predicting the risk of contaminant transport to drinking water resources and for developing the protection plans, as well as for a long-term economical planning and spatial planning. Besides, the results were applied for improvement of methodology of quality and quantity control of brewery water resources and for planning the protection zones of Union drinking water resources.

In attaining its vision, the Union brewery intends to continue with the management improvement based on the ISO quality requisites, environmental standards as well as the modern technology that it has at its disposal. It is active in certification initiatives in the agri-food sector. Zala (Figure 4) has gained a considerable international reputation. For quite some years now it has received gold medals for quality awarded by the Monde Selection International Quality Institute in Brussels. Zala is also the first source water in Slovenia with a NSF certificate (awarded by American independent company for water quality control – NSF International).



Figure 4 Union beer and Zala natural spring water

Best management practice - Bottling company of Droga-Kolinska d.d. Droga Kolinska, d. d. is a company, which produces and markets food products of high quality under established brands to consumers all over the world. The bottling company in Rogaška Slatina is its important part for beverages production. Rogaška Slatina is famous by mineral water, which was discovered in this place in the time of Old Romans. In the middle of 19th century Rogaška Slatina was not only the worldwide known spa, but also the third largest world supplier of mineral water. The Bottling Company of Droga Kolinska d.d. is one of the powerful economic activities in Rogaška Slatina also this very day. It produces natural mineral waters (Donat Mg, Tempel and Edina), spring water (Tiha) and soft drinks. Donat Mg is totally unique mineral water (Figure 6), which celebrates 100th birthday and it is distributed all over the world (Figure 5).

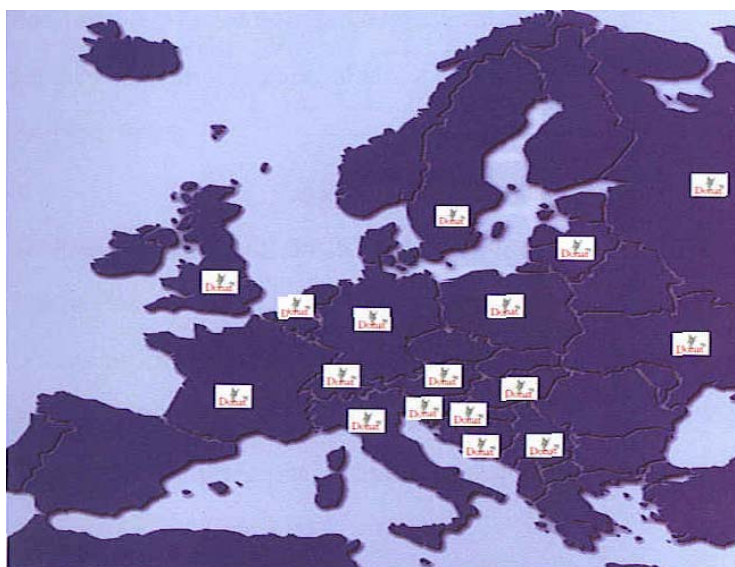


Figure 5 Sale of mineral water Donat Mg in Europe

Some interesting facts on this water should be listed (Coh & Coh, 2008):

- an extremely high mineral content - more than 13 gr/l of elements and compounds that benefit health (more than 1000 mg/l of Mg);
- the first written records date back to 1141;
- the first known alchemical analysis of the "holy cross water", as it was known then, was carried out in 1572;
- the Austrian empress Maria Theresa decreed in 1774 that every bottle from Rogaška must be marked with a label indicating the current year, including a symbol that was to be changed every year;
- in the first half of the 19th century, the bottled Rogaška Slatina mineral water was available across all of the Austrian Empire, Italy, Greece and even in Egypt;
- today Donat Mg is sold in many countries across Europe;
- the advertising campaigns, intended for European and non-European markets, were a regular practice of the Rogaška regional spa, from the beginning of the 19th century;
- the Rogaška sparkling mineral water was marked with characteristic labels and special seals on the stoppers that were only visible when looking through the bottom of the glass (Figure 6).



Figure 6 Mineral water Donat Mg and its characteristic labels (from Coh & Coh, 2008)

Rogaška Slatina is outstanding among Slovene minor cities by a particular activity orientation, connected with mineral water resources that are characterised as a natural heritage. Groundwater resources are invaluable for the planning of a sustainable spatial and economic development spatial and economic development of the Rogaška Slatina area, which requires a protection of this natural heritage. An integral research-developmental strategy is a real need, which is particularly emphasized in the Integral Developmental Programme of the Rogaška Slatina Community (Figure 7). The programme emphasizes that socio-economic development of the region is based upon traditions of mineral waters and spa tourism, which should be connected with other activities and ways of life. It is emphasised that systematic development of rural landscape as a complementary area to tourism should

be developed, while agriculture development should be directed to assure a sustainable food production on the basis of education programmes and development of supplementary activities, connected with tourism. However, there are some advantages and opportunities.

Advantages: possibilities for different types of agricultural production, intensive stockbreeding, perennial ecological plantations, ecological food production, home sale, farm tourism.

Opportunities: stimulation of product marketing, breakthrough of product with geographical origin (connected with tourism), farm tourisms (transitional, excursion), home sale, vegetable production, production of fruit and plants, vine growing and pig, cattle and poultry breeding.

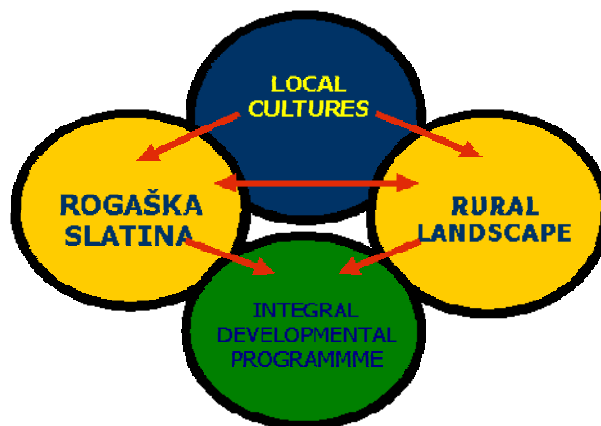


Figure 7 Scheme of the Integral developmental programme of the Rogaška slatina community (from Gerl, 2003)

Mineral water is stored in fractured layers of the Oligocene tuff, covered by the Upper Oligocene and Lower Miocene beds (Figure 8) while spring water is stored in fractured Triassic carbonates of the Boč massif. Aquifers with mineral water are exploited also for spa needs, while the local waterworks partly supplies aquifers with spring/drinking water.

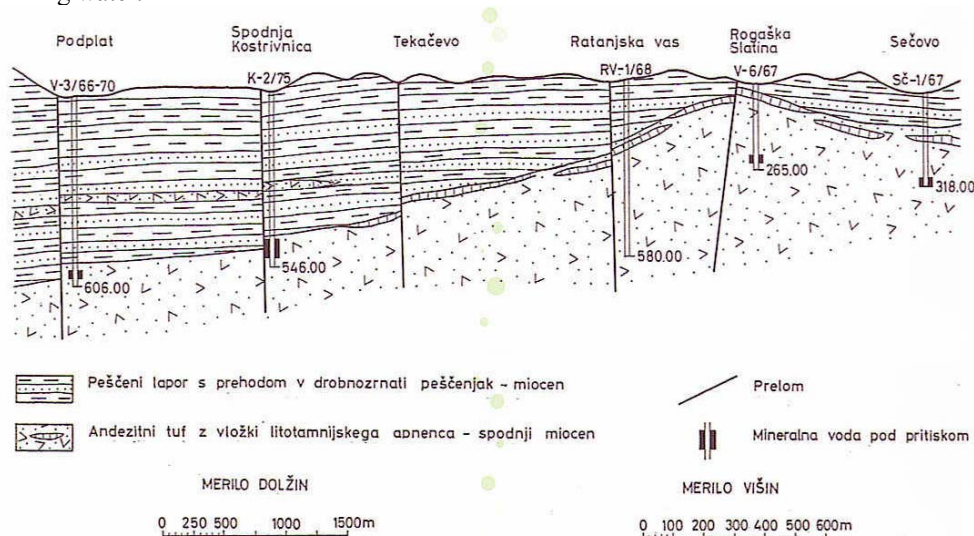


Figure 8 Schematic aquifer cross-section in the Rogaška slatina area (from Coh & Coh, 2008)

Numerous previous investigations of Rogaška groundwaters were subjects to balneology and to demands for larger exploitation quantities, that is why information are missing that are essential for definition of the Rogaška groundwater resources and their protection. The questions on the groundwater origin, genesis and dynamics, on hydrodynamic connections between individual aquifers and on solute transport have remained open, which is closely connected with the field geology and structure. The questions on the groundwater origin, genesis and dynamics, on hydrodynamic connections between individual aquifers and on solute transport have remained open, which is closely connected with the field geology and structure. The project should contribute to the Community integral developmental programme.

A long-term strategy for efficient management of Rogaška waters represents an important contribution to the developmental strategy of the Rogaška Saltina community. Hence, the project results will contribute to a long-term planning of a sustainable spatial and economic development of the Rogaška Slatina area.

Droga Kolinska d.d. will get directives for sustainable exploitation of their groundwater resources and for implementation of the quantity and quality monitoring, which will contribute to the development of a methodology for efficient management of mineral and drinking water resources and to the company long-term economic and investment planning.

Conclusions Best management practices pointed out that

- Environment is an important part of companies management vision;
- Environmental researches are invaluable for planning of a sustainable spatial and economic development,
- Recognizable labels and certificates on national and international levels could have important impacts on the environmental awareness – significant contribution to protection of groundwater resources;
- Definition of geogenic components of natural (mineral) waters and determination of criteria for estimation their original purity are the basis for promotion of the Slovene natural mineral waters excellence and hence, a way of marketing agricultural sustainability.

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The Farm Environmental Certification : The « French Grenelle de l'Environnement » Initiative

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Abstract The French Environmental Round Table held in 2007, called “*Grenelle de l’environnement*” has defined the key points of government policy on ecological and sustainable development issues for the next five years. This process has covered six major environmental themes. Different measures have been approved to support high environmental quality agriculture as support organic farming and low input farming, reduce the use of pesticides known to be dangerous and develop the certification of the High Environmental Value (HVE) farms. This certification will concern all the farming systems with the target of 10% of HEV products in 2013. 3 levels will be established, the third one corresponding to the HVE. Indicators are in discussion as the percentage of ecological infrastructures, energetic balance or the crop rotation.

Keywords: certification, High Environmental Value, indicator

Introduction Grenelle Environment refers to “*Les accords de Grenelle*”, a social deal negotiated the 25 and 26 of May 1968 during the greatest strike of the French History. Grenelle is the name of the street in Paris where Labour Ministry is located and where « *les Accords de Grenelle* » have been signed : increase of 35% of the minimum salary (SMIG) and 10 % of all salaries, creation of Union sections inside enterprises, week working time limited to 40 hours and earlier retirement.

The French Environmental Round Table initiated by President Nicolas Sarkozy held October 24 and 25, 2007, and defined the key points of government policy on ecological and sustainable development issues for the next five years. Grenelle Environment can be considered as a **New Ecological Deal** and a democratic process. It is a completely new approach to government decision-making. The round table has also confirmed the adoption of official recognition for NGOs as actors and partners in the social dialogue between governments, employers and workers.

One of the principles of the *Grenelle de l’environnement* is to take into account the climate and biodiversity costs, in all major public projects and public decisions. A project with an excessive environmental cost will be rejected.

A culmination of workgroup sessions held three months prior with five stakeholder groups: national and local government, labour unions, businesses and major environmental organizations which created proposals to eliminate the impasses surrounding environmental issues in France — from nuclear power to waste management and to energy efficiency.

The process can be sum up in 5 phases.

- Phase 1: Workshops drawing up proposals on the six themes, July to September 2007
- Phase 2: Public debate held in 19 cities, September 2008
- Phase 3: Round table discussions, October 2007
- Phase 4: working groups, operational committees (« COMOP »), November-June 2008
- Phase 5: Grenelle laws (Grenelle 1 law has been presented at the Ministry council of the 11th June 2008 and presented to the Parliament the 3 of October 2008).

Six workgroups were organized to develop proposals for these themes:

- Fight climate change and control energy demand
- Preserve biodiversity and natural resources
- Create an environment conducive to health while promoting economic growth
- Adopt sustainable modes of production and consumption
- Construct a green democracy
- Promote green development favouring employment and competitiveness

The 268 commitments were divided into 33 projects, each with an operating committee led by a member of parliament or a field expert.

Toward 100% of sustainable agriculture The Grenelle discussions have shown that it is now possible to make major strides toward the development of high environmental quality agriculture. The first priority is the protection of 500 water catchments under nitrate and pesticide pollution pressure. Reducing the use of pesticides known to be dangerous by 50% has been decided. Cover crops will be developed to prevent nitrogen leaching in winter and soil erosion. Farmers will be trained in agroecology. Organic farming will be supported to achieve the target of 6 % of the UAA by 2012 and 20% by 2020. And organic products will have to represent 20% of the menu of the public canteens by 2012. Low Input farming system will be supported with the target of 30% of the farms before 2012.

The support to sustainable agriculture will be completed by creating a green belt network (green corridors) and a blue belt network (waterways and bodies of water) before 2012 and by the public acquisition of 20.000 ha of wetlands.

The objective of the environmental certification of farming systems High environmental quality agriculture is characterised by his positive impact on natural habitats (water resources, biodiversity and landscapes) and his low input consumption.

The objective is to contribute to push French farms toward sustainable agriculture and to a faster integration of environmental goals in agriculture. Environmental certification will help to recognize farmers implementing good agricultural practices. The certification gives also an answer to the environmental demand of the society.

Experiences are coming from the World and European forest certification concerning sustainable forestry (Forest Stewardship Certification and Pan European Forest Stewardship) but also the French certification High Quality Environment (*Haute Qualité Environnementale – HQE*) focusing on building of high energy efficiency and taking into account environment at all the steps of the process.

The certification will concern all the farm types, specialized or mixed systems. The process will include 3 steps and will concern only environmental issues. The HEV level will be achieve only at the level 3 and based on indicators describing the state and the pressure of the farming system.

Grenelle has fixed the objective of 50% of the farms engaged for 2012 and to reach 10% of HEV products (not taking into account organic products) in 2013. Environmental rules will be included in the PDO and PGIs and quantitative objectives have been given to National Institute of Designation of Origin (INAO).

The environmental certification process started in 2008 with the elaboration of farming practice references for the different farming systems and territories. The standards will be composed of 3 steps, the higher level corresponding to the High Environmental Value (HEV) certification.

The definition and the production of references are still on going and decided with the different stakeholders, members of the *COMPOP 15-2*.

Conditions of success The conditions of success will depend of the final choices of the operational committee. The questions are : do HVE is a certification or a simple notation? Do the certification has to be done per farm or per product? How allow a progressive improvement? How to be simple and sound for the consumer?

The success will depend also of the capacity to integrate the existing process, private or on voluntary base, and managed by farmer groups, cooperatives or private food company, as « Sustainable agriculture (*agriculture durable*) “, integrated farming” (*agriculture raisonnée*).

Environmental issues 6 main environmental issues have been developed. Concerning **water** issue, the objective is to reduce input uses : divide by 2 pesticide uses, total N fertilisers limited to 140kg/ha, limitation to P fertilisers, implementation of cover crops and grassy strips along watercourses, save water from irrigation). **Biodiversity** is taking into account with the requirement of a minimum surface of Ecological Infrastructures : 4, 10, 15 % of the UAA depending of the levels. **Soil** issue is developed through different indicators as organic matter of the soil, rotation, part of reduce tillage or no-tillage. **Energy** issue will concern the eco-construction, the energetic balance of the farm, the energetic autonomy and the carbon balance. **Waste** management is also an environmental issue taking into account through the non-organic waste treatments and recycling. **Landscape** is

also considered as an environmental issue.

Levels and incentives 3 levels has been defined :

- Level 1 corresponding to cross-compliance rules and environmental requirements even for the farm which are not targeted by the cross compliance as the wine or fruit production. This level can be developed rapidly and be easily accessible to all farmers
- Level 2 corresponding to the articulation with existing process as integrated agriculture, sustainable agriculture, certification of products Phase 3: Round table discussions, October 2007
- Level 3 corresponding to the HEV certification will require to achieve the 6 environmental goals

Financial measures will support the farmers involved in the HVE as fiscal advantages or tax credit (see table 1).

Table 1 : Financial measures to support the farmers involved

| Level | Financial measures |
|--------------|--|
| First level | Reduce the CAP control |
| Second level | Fiscal advantages (premium on pollution taxes, priority access to investment supports) |
| Third level | Tax credit 2500 euros, payment of the certification costs – 1000 euros. Bonus to young farmers in HEV or organic farming. Payments through article 69. |

Selection of indicators For the first level it will be required to comply with the cross compliance and to provide a farm environmental record describing features and risk areas on a map. For the second and the third levels, different indicators are in process (see table 2).

Table 2 : Selection of relevant indicators to define the different levels of the certification (source : COMOP 15-2)

| Theme | Indicators | Threshold required in discussion |
|---------------------------|---|--|
| Biodiversity | Surface of ecological infrastructures (% of the UAA) | 6 to 10% |
| Crop diversity | % of permanent pastures, % of legumes, number of permanent crops, number of annual and temporary crops, parcel size | 4 crops minimum in the rotation |
| Water resource management | Water consumption per ha, irrigated surface (% of the UAA), water quantity/kg DM | Irrigated crops lower than 10% of the UAA, less than 1000m ³ /ha |
| Inputs | Nitrogen pressure (total N/ha UAA), nitrogen balance, number of pesticides treatment/ha, total energy consumption per ha | Between 100 to 200 Litre Equivalent of Fuel/ha UAA; zero to 2 pesticide treatments in average/ha |
| Autonomy | % of specific costs (energy, water, seeds, fertilizers, crop protection products, feed for animals, other livestock specific costs) on the total output minus direct payments | Less than 30% |

Some of these indicators have been tested per farm type through statistical data as the crop diversity indicators (see table 3) and the percentage of ecological infrastructures (see table 4)

Table 3: Indicators of crop diversity, average per farming system (source : FSS 2007 – SCEES)

| Farming system | UAA (ha) | Percentage of the UAA | | | Average number of crops | | | |
|--|-------------|-----------------------|--------------------|----------------------|-------------------------|------------|-----------------|-----------------|
| | | Main crop | Irrigated surfaces | Permanent grasslands | Legumes | Total | Crops < 5 years | Crops > 5 years |
| COP | 82.0 | 51.5 | 9.0 | 5.2 | 2.5 | 5.1 | 4.6 | 0.5 |
| General field cropping | 86.4 | 48.0 | 11.8 | 5.4 | 4.1 | 6.1 | 5.5 | 0.6 |
| Horticulture | 8.8 | 68.5 | 44.9 | 8.2 | 1.8 | 3.0 | 2.6 | 0.5 |
| Flowers and horticulture | 4.6 | 74.0 | 48.5 | 8.5 | 2.2 | 2.4 | 2.2 | 0.2 |
| Specialist vineyards PDO | 14.3 | 85.8 | 2.2 | 7.9 | 0.7 | 2.0 | 0.5 | 1.4 |
| Other vineyards | 17.3 | 38.5 | 5.8 | 3.2 | 0.5 | 2.6 | 0.9 | 1.6 |
| Various permanent crops combined | 14.9 | 69.5 | 35.1 | 8.7 | 1.5 | 3.1 | 0.9 | 2.3 |
| Specialist dairying | 69.7 | 56.5 | 1.0 | 43.1 | 1.3 | 4.8 | 3.6 | 1.2 |
| Specialist cattle | 59.3 | 79.2 | 0.6 | 69.3 | 1.0 | 3.0 | 1.8 | 1.2 |
| Specialist cattle | 102.6 | 55.8 | 1.2 | 45.1 | 0.8 | 5.5 | 4.3 | 1.2 |
| Sheep, goats and other | 31.6 | 86.1 | 1.3 | 70.1 | 3.1 | 2.1 | 0.9 | 1.2 |
| Specialist granivores | 28.0 | 68.2 | 5.7 | 18.0 | 0.7 | 3.1 | 2.3 | 0.8 |
| Mixed | 37.5 | 49.5 | 12.8 | 11.0 | 2.7 | 5.2 | 3.6 | 1.6 |
| Mixed livestock mainly grazing | 40.7 | 66.1 | 2.5 | 30.2 | 2.3 | 4.1 | 2.8 | 1.3 |
| Mixed livestock, mainly granivores | 54.1 | 55.6 | 2.0 | 25.4 | 1.2 | 4.6 | 3.5 | 1.1 |
| Field crops – grazing livestock combined | 100.0 | 42.7 | 3.1 | 28.4 | 2.3 | 6.8 | 5.7 | 1.1 |
| Others | 33.7 | 67.1 | 9.8 | 19.2 | 2.0 | 3.5 | 2.3 | 1.2 |
| TOTAL | 54.7 | 63.9 | 5.4 | 29.5 | 2.1 | 4.0 | 2.9 | 1.1 |

The protection and the implementation of ecological infrastructures is one of the indicators of HEV farms. 2 targets are discussed: 5 % of the UAA (as it is required for the standard of the integrated farming) or 10%. Table 2 shows that this objective is achieved in most of the regions dominated by grazing systems as *Basse-Normandie* or *Bourgogne*, but not in the most intensive regions dominated by cereals crops as the regions *Picardie* or *Centre*.

Table 4: Example of the percentage of ecological infrastructures in the UAA (source : Solagro, 2007)

| Region | Hedgerows | Farmland trees | Traditional orchards | Wood edges | Small woods | Rough grasslands | Permanent grasslands not fertilized | Grassy strips and ecological fallows | Total |
|--------------------|-----------|----------------|----------------------|------------|-------------|------------------|-------------------------------------|--------------------------------------|--------------|
| Ile de France | 0,06% | 0,50% | 0,00% | 0,13% | 1,04% | 0,08% | 0,63% | 2,39% | 4,83% |
| Picardie | 0,2% | 0,3 % | 0,0% | 0,2% | 0,8% | 0,2% | 1,7% | 2,1% | 5,5% |
| Haute Normandie | 0,5% | 0,3 % | 0,8% | 0,2% | 0,4% | 0,5% | 4,6% | 1,8% | 9,1% |
| Centre | 0,7% | 0,2% | 0,0% | 0,2% | 0,7% | 0,4% | 3,3% | 2,1% | 7,7% |
| Basse-Normandie | 2,2% | 0,5% | 1,2% | 0,1% | 0,8% | 0,4% | 8,9% | 1,1% | 15,1% |
| Bourgogne | 1,1% | 0,4% | 0,0% | 0,3% | 1,1% | 0,5% | 25,1% | 1,4% | 30,0% |
| Nord-Pas-De-Calais | 0,6% | 0,3% | 0,2% | 0,1% | 0,7% | 0,1% | 1,9% | 1,8% | 5,8% |
| Lorraine | 0,3% | 0,7% | 0,3% | 0,3% | 1,6% | 1,0% | 12,7% | 1,6% | 18,4% |
| Alsace | 0,3% | 0,6% | 0,6% | 0,3% | 2,3% | 1,8% | 12,3% | 1,8% | 20,0% |

| | | | | | | | | | |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| Franche-Comté | 1,2% | 0,9% | 0,1% | 0,5% | 3,7% | 4,0% | 22,7% | 0,9% | 33,9% |
| Pays-de-Loire | 1,9% | 0,6% | 0,1% | 0,1% | 1,2% | 1,1% | 5,7% | 1,3% | 12,0% |
| Bretagne | 2,0% | 0,8 % | 0,0% | 0,2% | 3,1% | 0,8% | 2,6% | 1,5% | 11,2% |
| Poitou-Charentes | 1,4% | 0,5% | 0,0% | 0,2% | 1,4% | 0,8% | 4,1% | 1,8% | 10,1% |
| Aquitaine | 1,4% | 1,2% | 0,0% | 0,5% | 3,0% | 4,3% | 6,5% | 1,3% | 18,2% |
| Midi-Pyrénées | 1,6% | 1,2% | 0,0% | 0,4% | 2,6% | 8,4% | 8,9% | 1,3% | 24,5% |
| Limousin | 3,0% | 2,7% | 0,0% | 0,5% | 2,6% | 6,4% | 23,7% | 0,4% | 39,3% |
| Rhône-Alpes | 1,7% | 1,3% | 0,2% | 0,6% | 3,4% | 14,9% | 18,1% | 0,8% | 41,0% |
| Auvergne | 2,0% | 1,2% | 0,0% | 0,3% | 2,5% | 5,2% | 18,8% | 0,6% | 30,5% |
| Languedoc-Roussillon | 0,9% | 1,2% | 0,4% | 0,5% | 3,2% | 29,5% | 7,5% | 0,5% | 43,6% |
| Provence-Alpes-Côte d'Azur | 1,3% | 1,3% | 1,3% | 0,8% | 3,5% | 37,0% | 7,2% | 0,5% | 53,0% |
| Corse | 0,5% | 7,5% | 3,6% | 0,9% | 14,3% | 64,6% | 18,4% | 0,0% | 109,8% |
| Total | 1,3% | 0,8% | 0,2% | 0,3% | 1,9% | 5,0% | 9,4% | 1,4% | 20,3% |

Conclusions The environmental certification is a new tool to push farmers to more friendly agricultural practices and complete the existing tools as cross compliance, National and European environmental legislation, agro-environmental measures, existing labellisation (organic farming or PDO) and control process.

The results will depend also of the level of the requirements and the thresholds of the chosen indicators. It is too early to measure the future impact of the HVE certification. The process involving the main stakeholders is maybe the main result of the Grenelle initiative.

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Viticultural zoning, an approach towards anchoring grape and wine characteristics to the environment of the production areas: the Piedmont experience

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Abstract Viticultural zoning is based on the detailed description of environmental variables within a grape growing area, and of the grape and wine compositional and sensory characteristics in vineyards located in the same area. It allows i) identification of the main relationships which connect these two groups of parameters and ii) mapping of the areas where desired quality characteristics can be obtained in grapes and wines. This technique has been applied in several grape producing areas and it has been used in Piedmont in three studies focused on the main grape varieties grown in the region, Barbera, Moscato, and Nebbiolo. The results of these studies show a large variability in the parameters measured in the different experimental vineyards, and highlight interesting relationships between environmental (geopedological and climatic) parameters and grape and wine quality traits. This technique allows a preliminary environmental characterization of the different wine productions. Furthermore, this approach allows fine tuning of the existing legislation on the delimitation of quality wine production areas, and it represents a first step towards environmental certification of the wine industry products in this region.

Keywords wine quality, soil, climate, soluble sugars, anthocyanins, environmental certification.

Introduction Grapevine is a major fruit crop and its cultivation is spread over all continents, Europe being historically and as concerns cultivated surfaces the most important grape producing region. The main product of grapevine transformation is wine, and winemaking is one of the most important branches of the agrofood sector in several European countries, for instance covering about 8% of the total food production sector in Italy. Although several grape (*Vitis spp.*) species are cultivated worldwide, practically all wine production is based on the European species *Vitis vinifera* L. Thousands of years of exploitation of this species have produced a very strong genetic differentiation and the species is now reckoned to encompass more than 10000 genotypes. Hundreds among them are cultivated and wines from each genotype have particular chemical and sensory characteristics.

Wine is no more an indispensable food for human diet but it is more a dispensable commodity to accompany other foods. For this reason wine quality – as sensed by the consumer – is a key factor in deciding its request by the market. Since historical times it is well known that grapes yield high quality wines only in particular conditions and that a more or less strict relationship exists between the *Vitis* genotype and the cultivation environment (often called “terroir”) as concerns the sensory quality of the outcoming wine. This relationship has been documented in detail especially in European countries, and it has been translated into regulations – the first dating from the 18th century in the Douro valley, Portugal – which define the areas where particular genotypes can be cultivated, thus identifying the so called VQPRDs (Vins de Qualité produits dans Régions Délimitées). These regulations have been the first examples within the food sector of an “environmental certification” in the sense that the customer who buys certain VQPRD wine can trace its origins to a specified territory.

It is however obvious that VQPRD regulations identify an area of origin but they do not describe the environmental components which are required to produce that wine. The scientific community has also felt the absence of such information at a research level. For these reasons investigations on the status of environmental factors in delimited production areas and thus on the role of single environmental factors in determining grape and wine quality started in the 1980s. These efforts were collectively dubbed “viticultural zoning” (zonage) and have been applied first in France and then in several other viticultural areas, in particular in Europe but also in other continents (Vaudour, 2002).

The techniques used in viticultural zoning are normally based on the collection of environmental (geographical, geopedological, climatological) data in several locations in the study area for a lapse of several years. At the same time in the same or near locations growth and ripening parameters are measured in vineyards, grape quality is assessed, wines are made in experimental standard conditions, and wine chemical and sensory analysis is performed. The data collected are then analyzed with a multivariate approach with the aim of isolating effects of single environmental factors on single wine characteristics. It is thus possible i) identify environmental characteristics which are needed for quality wine production with a defined genotype and ii) classify different areas of production (or of potential production) on the basis of the wine quality which can be obtained or on the particular techniques which must be applied in order to obtain optimal quality (Van Leeuwen *et al.*, 2004; Bodin and Morlat, 2006;).

Piedmont is a main viticultural region in Italy: wine production is 2,5-3,2 Mhl per year (Italy total is 50-60 Mhl) and vineyard area is about 53000 ha. It ranks 4th in Italy as concerns total wine production and 2nd as concerns quality wine (VQPRD) production. Piedmont viticulture is anchored to the territory by 55 origin denominations

(DOC and DOCG = VQPRD) covering 52000 ha (90% of the producing area). Grapes are grown in Piedmont in hilly or mountain areas with considerable slope grades, very differentiated as concerns environmental characteristics (from the foot of the Alps in Northern and Western Piedmont to the Langhe and Monferrato hills in Southern Piedmont). It is of no surprise that VQPRD production areas have been accurately delimited in these conditions. Recently a coordinated effort has been done to study the effects of environmental factors on wine quality through a zoning protocol as concerns wines produced by the three main cultivated varieties, Nebbiolo (Regione Piemonte, 2000), Barbera (Regione Piemonte, 2001), and Moscato (Regione Piemonte, 2003).

Materials and methods. Barbera is a red genotype yielding wines characterized by strong body, intense colour, and relatively high acidity. It covers about 34% of total Piedmont wine production and in ranks second in Italy as concerns VQPRD production. Several VQPRDs are based on Barbera, the most well-known being Barbera d'Asti, Barbera d'Alba, and Barbera del Monferrato. In this case the zoning approach did not cover all the cultivated area, but was focused on six sub-areas of particular interest. Forty vineyards were chosen as sampling locations. Geographical, geopedological and climatological characterization was performed using standard methods. Grape development was followed throughout 3 years by leaf area measurements and ripening analysis including analysis of secondary compounds. After winemaking in standard conditions, sensory analysis of the wines was performed.

Nebbiolo is a red genotype typical of a few areas in Northern Italy. It yields wines with a strong body and an important tannin content which require long aging and are much appreciated worldwide. For this genotype, zoning was performed in the production area of one of the Nebbiolo-based wines (Barolo). Thirty vineyards were selected for the study, a similar protocol was followed as in Barbera, with the major difference that wines were aged for one year in wood barrels before analysis.

Moscato on the contrary is a white genotype present in many viticultural countries. Due to its high aromatic content it is mostly used for production of sparkling wine, with the Charmat technique (vinification in large containers). In this case 30 vineyards were used for collecting data. As the type of wine involves the impossibility of winemaking in small containers (the technique used for experimental winemaking), and as grape aroma content is the main determinant of grape quality, in this case winemaking was not performed and analysis were based on the grape chemical characteristics.

Discussion. In all cases, detailed monitoring of environmental and production characteristics highlighted an important variability within the studied area, even where the area was relatively small (about 1100 ha in the case of Barolo). As an example, Fig. 1 shows the variability of a key compositional parameter (total anthocyanins) in the 40 different experimental vineyards. This high variability is not unexpected and it corresponds to the differences which are found in wines originating from particular areas, even if these areas are part of a larger relatively homogeneous area (in the Italian DOC regulation, this corresponds to sub-areas – sottozone – within the DOC area). This variability is of course not only dependent on environmental characteristics, as other – mainly genetic and agronomical – factors compound to form it.

However environmental characteristics of the vineyard site are always important determinants of grape and wine quality parameters. As an example among the many, in Moscato the main grape compositional parameters (potential alcohol which is an expression of soluble solids content, total acidity and linalool concentration) were significantly affected by slope exposition (Fig. 2), slope grade and altitude. Some of these relationships are already well established (e.g. higher potential alcohol content in south-facing slopes, which accumulate more degree days and allow better photosynthesis), others are not so evident: for instance the best performance of linalool content in west-facing slopes is explained by a relatively good biosynthesis (which is dependent on temperature and photosynthesis) together with a relatively low evaporation of this volatile compound (which is higher in south-facing slopes, where linalool concentration decreases at harvest).

The effects of environmental characteristics on grape compositional patterns is often dependent on indirect effects of the environment on the physiology of the plant. In particular canopy (the total vegetation within a given volume) leaf area in grape is widely dependent on environmental factors such as soil fertility, water availability and air temperature. On the other side canopy leaf area is an important determinant of total photosynthesis and thus accumulation of organic matter. As an example, within the Nebbiolo zoning experiment it was shown that the concentration of anthocyanins – red pigments present in the berry skin and a basic parameter of grape and wine quality – are linearly dependent on the increase in canopy leaf area measured during the vegetative season, June to September (Fig. 3). This dependency is probably due to a higher level of plant photosynthetic carbon fixation in presence of larger leaf surfaces, and to the known positive relationship between carbon availability and anthocyanin content in the berry.

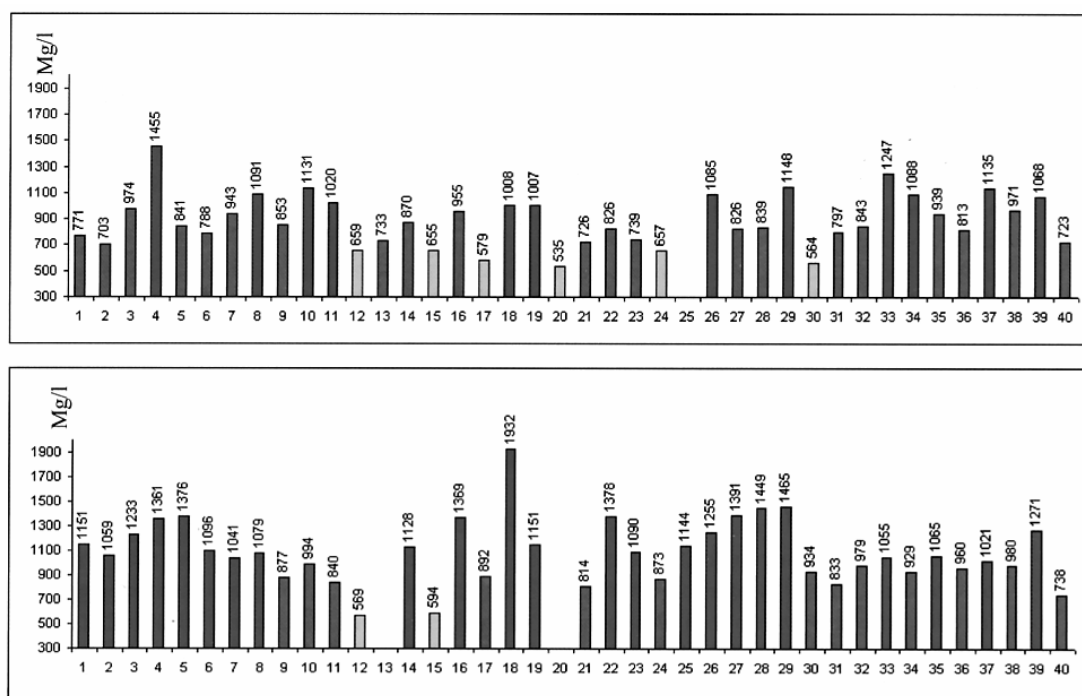


Fig. 1 Concentration of total anthocyanins in the wines obtained from the 40 Barbera experimental vineyards (Regione Piemonte, 2001).

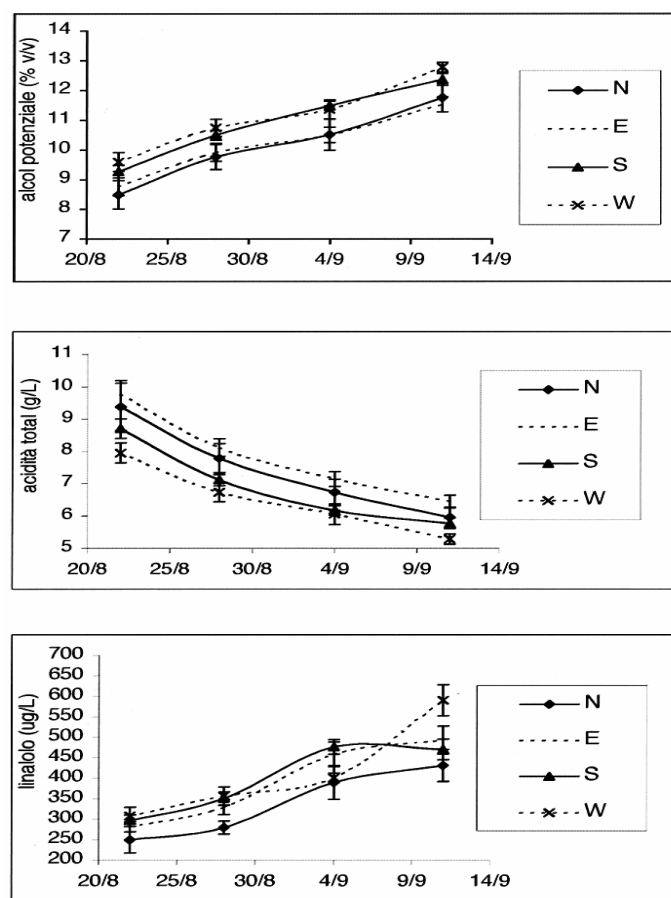


Fig. 2 Changes in potential alcohol (A), total acidity (B) and linalool content (C) during ripening in Moscato grapes located in vineyards with different exposure classes (Regione Piemonte, 2003).

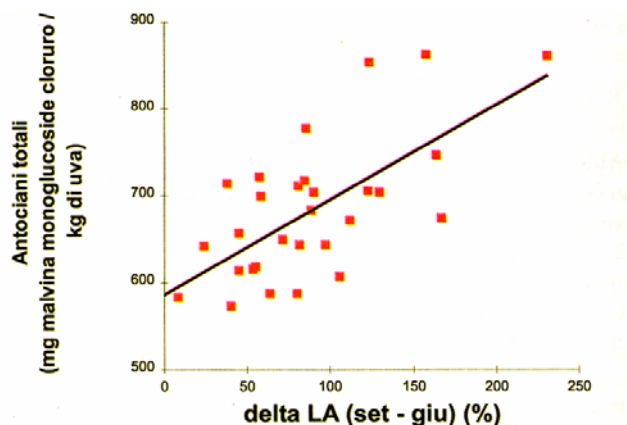


Fig. 3. Anthocyanin concentration plotted against leaf area increase (delta LA) from the start of June to the end of September in Nebbiolo grapes grown in 30 vineyards of the Barolo area (Lovisolo *et al.*, 1999).

The complex network of direct and indirect relationships among environmental and quality factors has been explored with multivariate analysis tools in the different zoning studies. Cluster analysis allows the grouping of the different vineyards on the basis of the grape and wine compositional and sensory characteristics. These groupings are associated with the geopedologic parameters, although at a limited level. In the Nebbiolo study, the two main cluster groups are characterized by significantly different levels of soil micronutrient concentration. In the case of Barbera it has been possible to aggregate the 5 different geopedological areas detected in the study in two macroareas showing consistent differences in grape and wine characteristics. Another important association is present between grape and wine quality parameters and microclimatic characteristics. These analyses allow the mapping of the areas featuring the more promising conditions for grape and wine growth over the different areas which have been studied.

Conclusions and further perspectives. These zoning studies carried out in Piedmont on the three main quality wine grape genotypes have provided a detailed characterization of the link between environmental characteristics and wine quality. These informations have been used in order to refine the VQPRD regulations, which represent a basic form of environmental labelling for the wine sector. Of course this kind of certification of the environmental characteristics of the territory where a specific wine is produced does not take into account other environmental parameters, such levels of contamination by chemicals of agricultural or industrial use. An indirect way to guarantee consumers about these issues is the characterization and protection of the landscape of the territory where the wine is produced. Although landscape is more an edonistic than an analytical factor, its characterization and protection is an indirect guarantee that the producing area is removed from centers of important industrial and urban pollution. A new step towards environmental labelling of wine in Piedmont is thus the application for UNESCO recognition of the viticultural landscape of southern Piedmont. This recognition has been already awarded to a few viticultural areas: Douro valley (Portugal), Pico island (Portugal), Tokay area (Hungary), Saint-Emilion (France), Mittelrhein (Germany), Lavaux-Léman (Switzerland). The application has been put forward in 2007 by the Piedmont Region for to the viticultural areas of Langhe, Monferrato and Roero. It reflects the willingness of the local population and administration to consider its landscape and environmental features as a resource and a chance of local development. At this stage a program of inspection in the proposed area has started which will end up in its delimitation and characterization. An official candidature will be presented which will contain a management plan including:

- site description, including typical products;
- regulations which are or will be enforced in order to protect the area's landscape and territorial integrity;
- strategic plan describing the proposed site economical and cultural development;
- deliverables, checkpoints and possible correcting actions;

This project has same points of strength and of weakness. The area is substantially a grape monoculture (hazelnut is present at higher elevations) which reduces biodiversity but would ease the application of future protection regulations. Private and public bodies already exist which can convey the producers and population needs a willingness to cover future costs. On the other hand, Piedmont is a heavily industrial region and also in rural areas the push toward edification and urban sprawl is strong. At any rate, the results of the zoning studies will represent an important contribution to the demonstration of a strict link between the landscape and the environment of a territory and the quality of the wines it produces.

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The Regional Nature Park Trademark: a market tool devoted to support sustainable local development

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Abstract Building on the French experience of Regional Nature Parks, this paper aims at presenting the labelling policies implemented within these protected areas in order to promote market development and draw benefits from the improved status of sustainably managed areas. These collective trademarks will be replaced in the French and European official quality and origin signs policies context.

Introduction

The Regional Nature Parks and their missions

What is a Regional Nature Park ?

Regional Nature Parks (*Parcs Naturels Régionaux*), created in 1967, are one of the institutional arrangements devoted to the conservation of natural resources and remarkable rural areas in France. Ahead of sustainable development, they aimed from the outset at ensuring a balance among nature conservation, the maintenance of rural life and the need to relax of city dwellers. Their purpose is to enable local population to maintain their occupation while securing the conservation of their natural and cultural heritage.

The area of a Regional Nature Park (RNP) is classified by decree from the Prime Minister taken from a report from the Ministry of the Environment for a maximum duration of 12 years, renewable, depending on each case⁴. It is organised around a territorial project of sustainable development based on the preservation and enhancement of the natural and cultural heritages and local know-how⁵. This territorial project is managed by an organisation gathering the elected people of the local communities (regions, departments, villages) and which associates local stakeholders in their decision-making⁶.

The project of protection and development drawn up for the RNP is consolidated by a Charter –the contract of the RNP- which commits the parties for 12 years. The Charter sets the objectives to be reached, the orientation for protection, improvement and development of the Park, and the measures, which will set these in action. It helps guaranteeing the coherence and co-ordination of actions carried out within the park by the various local authorities.

After 12 years, a revision procedure for the Charter leads to the redefinition of a new 12-year- project, and if necessary, the renewal of its classification.

RNP can therefore be considered as a collective and participative management system for sensitive natural areas⁷. Furthermore, the mode of governance of the French Regional Nature Parks perfectly fits in with the new commitments for protected areas adopted in the Durban Accord by the participants of the 2003 IUCN World Parks Congress. Indeed, the latter “*urge(s) commitment to mainstream protected areas within overall development agendas, engaging support from broad cross-sections of government, communities and the private sector*” and “*to involve local communities, indigenous and mobile peoples in the creation, proclamation and management of protected areas*”.

⁴ There are 45 Regional Nature Parks in 2008 in France, covering about 13% of the national territory.

⁵ The limits of a Regional Nature Park are negotiated between all its partners, but the definitive area corresponds to those of the local counties, which voluntarily adhere to the park's Charter. These limits are therefore not fixed with respect to administrative limits: they may overlap several counties or regions. Currently, the surface area of the RNP varies from 25 000 hectares (Haute Vallée de Chevreuse) to 300 000 hectares (Guyane). The area of a RNP includes an average of 80 little towns and villages.

⁶ It is run by a multidisciplinary technical team and its financial means are essentially provided by public funds.

⁷ Contrary to other protected areas which benefit from regulatory protection, RNP implements contractual measures of management and protection. RNPs meet the condition of the VIth UICN protected area management category (Managed Resource Protected Area).



Figure 1 : The 45 French Regional Nature Parks

Regional Nature Park missions

According to French law, RNPs have five missions.

- 1) Protect the natural and cultural heritage:** A RNP has agreed to manage its rural area harmoniously, to maintain the biological diversity of its environment, to preserve and improve its resources and most remarkable or fragile sites and landscapes.
- 2) Implement economic and social development:** Its policy of economic development is based on the environmental conservation of its heritage. It must guarantee a quality of life for its inhabitants by supporting and valorising local economic activities and improving the land and the natural and human resources.
- 3) Participate in the spatial planning of its area:** It gives advice to towns and villages regarding urban organisation and the insertion of buildings in the landscape.
- 4) Welcome and inform the public:** It favours public contact with nature, promotes the understanding and awareness of environmental problems (sensitization), the discovery of local culture through activities and equipment, respecting nature and countryside.
- 5) Carry out experiments:** It aims to perfect experimental procedures and methods.

The activities implemented by RNP teams in order to fulfil such missions depend on the project, which each Park has defined in its Charter, and the current issues existing in the area.

The means used by RNPs to promote local sustainable development

Initially, the initiatives to promote economic and social development focused on the promotion of “soft” tourism and other environment-friendly activities (discover environment and open-leisure activities). Progressively they have taken new forms: support to handicraft production (cutlery and pottery industries, woodcarving...) and to local small business and new enterprise, revitalisation of local trade, assistance to maintain services in rural areas, and the search for new outlets for the agricultural products in connection with the tourist attraction of the area.

To that purpose, a labelling policy has been implemented at the end of the 90's, through the development of a collective trademark called “*Parcs Naturels Régionaux de France*” specifying and protecting the products and services or local expertise of the RNP territories.

II- The RNP labelling policy

RNP Trademarks

The RNP trademarks are collective trademarks registered at the INPI (*Institut National de la Propriété Industrielle*) by the Ministry of the Environment⁸.

The RNP trademarks are both :

- The logo of the national RNP institution (*Parc Naturel Régional*)
- Registered collective trademarks for each of the RNPs at the moment of their classification. They are composed of a figurative emblem and a denomination specific to each park (for example : *Parc Naturel Régional des Grands-Causse*s) and designed according to a national graphic charter.



Figure 2 : Identification of the RNP trademarks

RNP trademarks are owned by the French Ministry of the environment which delegates their implementation to the RNPs (through an exclusive license of use). The management organization of the RNP is the guarantor for the right use of the RNP trademarks. It can use it for the identification of its territory and its specific facilities (signage, discovery footpaths, tourist routes,...), for its institutional needs (communication policy, ...) and to support local products, services and expertise complying with the objectives of the RNP charter and missions.

The implementation of the RNP Trademarks is directed by a national guide of brand utilization (registered at the INPI), and specifications defined to each range of products or services. Such products and services must be in accordance with national norms and also meet precise criteria.

These three criteria, or "guaranteed values", are directly connected with the RNP's missions

- **Area:** contributing to the development of the RNP area and participating in the construction of its identity;
- **Environmental preservation and valorisation:** contributing to the challenges of area management, preservation of the environment and landscape integration;
- **Human dimension:** participating in a local development dynamic mastered by man and contributing to social challenges.

Three types of products or services may be labelled:

- Agricultural and food products
- Services (accommodation, catering, visits, educative tours...)
- Handicraft (products and know-how or local expertise)

Box 1 – The RNP trademarks offer – May 2008

⁸ A collective trademark or collective mark is a trademark owned by an organization (such as an association), whose members use them to identify themselves with a level of quality or accuracy, geographical origin, or other characteristics set by the organization.

- 162 labelling procedures had been registered in May 2008, 36 RNP have implemented a labelling policy
- 80 Labelled Food Products: 13 honeys, 9 vegetables, 9 fruits, 7 drinks (fruit juice and alcohol), 16 fish and meat, 9 dairy products (mainly cheeses), 5 aromatic plants, 4 bread and flour, 8 pastries and sweets.
 - 64 Labelled Services: 33 hotels and self-catering cottages, 9 catering, 24 visits (“Terroir” and “patrimoine” visits, educative tours).
 - 18 Labelled Handicrafts (know-how): 17 wood crafts, 1 quarry know-how

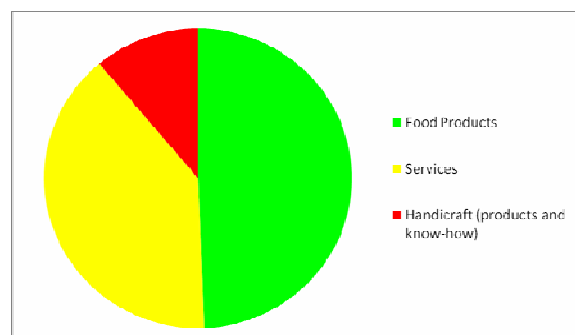


Figure 3: Sectoral repartition of the RNP trademarks offer – May 2008

Source : Fédération Française des Parcs Naturels Régionaux

The RNP trademarks elaboration and attribution procedure

The management organization of the RNP is responsible for the implementation and the management of the RNP trademarks. These cannot be used without its express authorization.

The allocation procedure of the RNP trademarks requires the definition of specifications and of modalities of control defined at the local (RNP) level for each range of product or service complying with the national guide of brand utilization. These specifications are recorded in a “use convention” that is subject to the agreement of a specific commission of the French Federation of RNP – the National Commission of the RNP trademarks - of which the Ministry of the Environment is a member. These official documents are elaborated in a participative way with its potential beneficiaries.

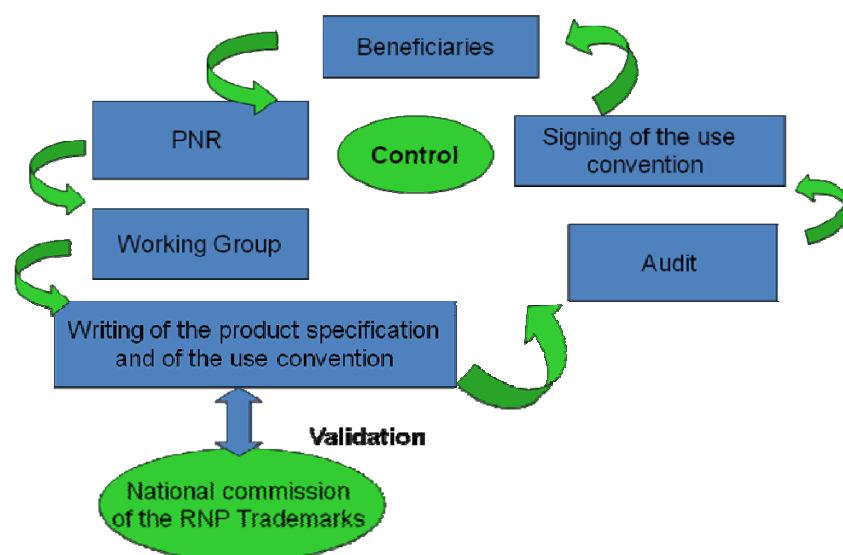


Figure 4: The participative process of the RNP trademarks elaboration and attribution

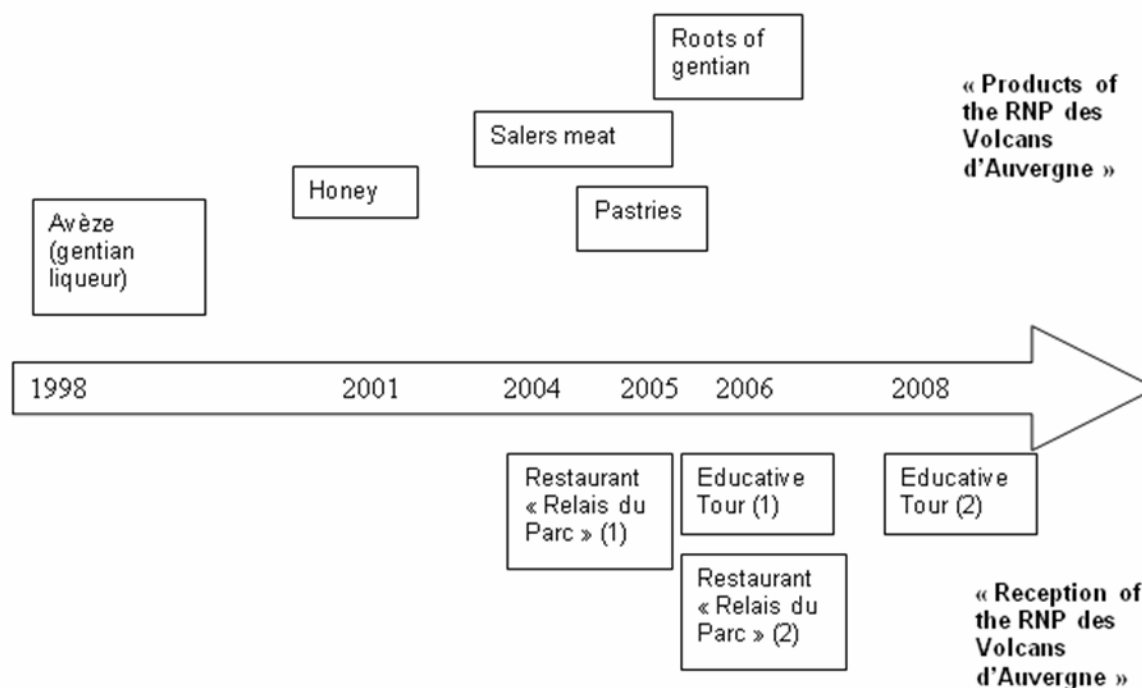
After validation at the national level, the potential beneficiary must write an official request to the President of the concerned RNP in order to use the trademark. An audit is performed to check that the potential beneficiaries' practices meet the conditions of the use convention⁹. After formulation of possible suggestions, the use convention is signed by the RNP and the third party for a duration of 3 years renewable. Beneficiaries are

⁹ During the audit process two types of criteria may be distinguished : necessary criteria (on which the granting of the trademark is depending) and “margin of progress” ones (that can be reached after the granting).

submitted to regular controls and a “margin of progress plan” may be formulated in order to reach specific goals. In case of non respect of the specifications, the RNP can suspend the authorization of using its trademark.

Box 2 - The RNP “Des Volcans d’Auvergne” Labelling Policy

The labelling policy was implemented 10 years ago in this RNP of the Auvergne Volcanoes chartered in 1977. Currently 7 types of products (5 food products) and services (restaurant and educative tours) are granted with the RNP “des Volcans d’Auvergne” trademarks and 70 beneficiaries are involved. The RNP trademarks are implemented as a tool dedicated to promote sustainable local development through the increase of the value of the products and services by local identity and the creation of collective dynamics by means of the networking of local actors.



(Source : Parc Naturel Régional des Volcans d’Auvergne)

III. The context : French and European Union official quality and origin signs policy

The RNP trademarks do not constitute official quality and origin signs. According to the similarity of its objectives connected to the support of sustainable local development dynamics, the RNP labelling policy must be put in the context of the French and EU quality and origin policy. This policy implemented by the French Ministry of Agriculture, Food, Fisheries and Rural Affairs is very long standing. It was set up over a century ago and is governed by the French Code of Rural Law. The French system that was reformed in 2006 is linked with the European system established in 1991 and 1992.

The goals and issues of the official quality and origin signs system have evolved in the course of time. Originally intended to protect the product names from misuse and imitation, quality and origin signs have been used since the 70s to encourage the diversification of agricultural production (market and agricultural policy issues). Since the 80s, a new justification of this policy has emerged: the promotion of typical products with special ties to their geographical origin benefits local development. The system of official quality origin signs is thus actually conceived as a means to allow producers and economic agents to highlight more effectively the worth of their products. Moreover, it allows consumers to make enlightened choices regarding food quality, environment, taste and product process by guaranteeing that the promises made are actually kept (product clarity and credibility issues).

A new emergent patrimonial justification of this official quality and origin signs is closely linked to the Biological Diversity Convention and The Agreement on Trade-Related aspects of Intellectual Property Rights (TRIPs) negotiations. Geographical indications (AOC, DPO, PGI) are recognised as intellectual property rights and protected in the TRIPs Agreement (Art. 22, 23, 24). The actual scope of protection is still undefined and much debated (geographical indications are criticised as trade barriers and distinguished subsidies). But in

developing countries there is a growing interest for geographical indications as a means of protecting and valorising indigenous and local knowledge favouring the in-situ biodiversity conservation.

The French official quality and origin signs

There are three categories of French official quality and origin signs: three quality signs for geographical or traditional origin, one sign is devoted to a natural mode of production and processing, and one national quality sign guarantees superior or special quality.

Quality signs for geographical or traditional origin:

- *Appellation d'origine contrôlée* (AOC) or Protected Designation of Origin (PDO), its European equivalent for all products other than wine¹⁰, guarantees quality based on an origin in a local soil or *terroir*. AOC products express the close ties binding product, region and local human skills and expertise. It is used to describe foodstuffs which are produced, processed and prepared in a given geographical area using recognised know how¹¹.
- Protected Geographical Indication (PGI) guarantees the link between a product and its geographical origin¹². The geographical link must occur in at least one of the stages of production, processing or preparation. Furthermore, the product may benefit from a good reputation. PGI relates to a specific expertise. It cannot be invented: it enshrines an existing form of production.
- Traditional Speciality Guaranteed (TSG) sign does not refer to the origin but highlights the traditional character of a product, either in its composition or means of production¹³.

Sign for natural mode of production and processing:

- *Agriculture Biologique* (AB) or Organic Farming sign, applicable at national and EU levels guarantees quality linked to a type of production which is protective of the environment¹⁴. The foodstuff comes from natural, environmental-friendly farming with no use of synthetic chemical products, and where animals are fed with organic input. Organic farmers are committed to the protection of nature, animal welfare and product diversity.

National Quality sign guaranteeing superior or special quality:

- Agricultural Quality Label or Red Label (LR) guarantees a superior quality of a product¹⁵. At each stage of the production, the product must be strictly controlled and comply with requirements pertaining to quality and taste.

The system of official quality signs is founded on a joint commitment by government and professional sectors (farmers, processors, distributors) that protects consumers' interests. They come under the exclusive jurisdiction of two public organizations (INAO –*Institut National de l'Origine et de la Qualité* and the *Agence Bio*) under the control of the French Ministry of Agriculture.

Box 3 - The French official quality signs policy implementation (figures for 2006)

The INAO has ratified 474 AOC wines (80% of all French wine production in value terms and 57% of total vineyard area), 48 dairy AOC products (mainly cheeses generate an annual turnover of 2,1 billion Euros) and 39 other products (fruit, vegetables, olive oil). Almost 129 400 holdings produce AOC products.

80 PGIs are registered in France (of which 31 are for poultry and 13 for fruit and vegetables). There are 25 000 PGI producers and products covered by PGIs generate 1 billion Euros in annual turnover.

500 Red Label are officially approved. The sector involved 53 241 producers (poultry farmers, livestock farmers, dairy producers, market gardeners, oyster breeders, salt-marsh producers and fishermen) and 8 537 operators. The turnover generated by this label is in the region of 1.8 billion Euros.

Organic farming involves over 11 402 growers and livestock farmers and 5 000 operators are subject to control for the preparation of products complying with the organic mode of production. Land devoted to this form of production cover 2% of France's Utilised Agricultural Area).

Sourc : INAO www.inao.gouv.fr

¹⁰ The European equivalent for wine is the Quality Wine Produced in Specified Regions (QWPSR).

¹¹ AOC is the oldest quality sign. Its first formal definition in law dates back to 1905.

¹² PGI has existed since 1992 and is covered by the same EU regulation as the PDO. It is internationally recognised as covered by intellectual property law.

¹³ TSG was put in place by an EU regulation in 1992.

¹⁴ The first official recognition of organic farming dates back to the agricultural reform law of 1980, and later, at European level, in a regulation adopted in 1991 and supplemented in 1999.

¹⁵ The principle underlying this label was given official recognition in the agricultural reform law of 5 August 1960.

Similarities and differences between RNP trademarks and official quality and origin signs

There are current debates about the compatibility of the official quality and origin signs policy and the RNP trademarks compatibility. At the moment, the accumulation of an RNP trademarks with an AOC is not recommended by the INAO. The Ministry of Agriculture underlines a risk of confusion for the consumers, due to the increase of the number of official signs. A synthesis of the similarities and the differences between the official quality and origin signs that share some of the RNP's goals is proposed in table 1.

Table 1: Specificities of the different official quality and origin signs and RNP trademarks

| | RNP trademarks | AOC/AOP (PDO) | Organic Farming | PGI | Red Label |
|---|--|--|--------------------------|------------------------|--------------------------|
| Origin (provenance of the product in reference with a demarcated area) | RNP's area | "Terroir" | No | Place, Region, Country | No |
| Cultural heritage preservation specifications | Yes RNP's missions (3 criteria) | Cultural Heritage | Yes | Cultural Heritage | No |
| Environmental requirements | Yes (but in some cases defined in terms of "margin of progress") | No (but in certain cases the drafted public specifications) | Organic | No | No |
| Production process specifications | Yes (use convention) | Yes (drafted public specifications) | Yes | Yes | Yes |
| "Typicité" specifications | In some cases | Yes | Organic | | Superior quality |
| One or a range of products | Range (products and services) | One | One | One | one |
| Industrial specifications | No | Possible | Possible | Possible | Possible |
| Collective procedure | Desirable | Yes | No | Yes | Yes |
| Certification procedures (guarantees) | No (collective trademarks) | Yes (INAO and certifying organizations according to the 2006 reform) | Certifying organizations | Yes | Certifying organizations |
| Control of the compliance with specifications | Desirable | Yes | Yes | Yes | Yes |

(Source: *Fédération des Parcs Naturels Régionaux de France*)

IV. Conclusion

The interest and the specificity of the RNP trademarks and the labelling policy allowed lie in their embedding in the sustainable local development projects driven by the RNP Charters. Through the activation of its potential range effects –products, services, expertises or know-how may be granted- such a labelling policy can create and support local collective dynamics favouring sustainable agriculture and economic and social challenges specific to the park's area. Establishing tourist facilities and activities that respect the environment, inciting environmental excellence from companies and supporting new activities, helping in maintaining services and commerce in rural areas, etc., constitute many examples of actions that can be favoured and supported in order to meet the combined objectives of protection and development. Furthermore, RNP trademarks appear as an interesting tool to draw benefits from biodiversity and agro-diversity conservation management, according to the French commitments in this matter (CDB 1992, Natura 2000). The French Federation of RNPs induces and supports implementations of RNP labelling policies favouring such objectives (by granting RPN trademarks to threatened vegetable and fruit varieties and to meat from hardy breeds of cattle or sheep) ¹⁶. Furthermore, ongoing decentralized cooperation between French RNPs and protected areas of the developing countries (Morocco, Benin, Vietnam, Senegal, Brazil, Chile, ...) indicates that such collective labelling policy could be relevant to back conservation actions. For example, in the regional nature park in Pantanal (Brazil), a collective

¹⁶ Cf. http://www.parcs-naturels-regionaux.tm.fr/upload/doc_telechargement/grandes/4%20volets%20biodiversite.pdf

trademark has been created and implemented in order to support and valorise extensive organic calf breeding on natural pastures to protect the landscape. The aim of this successful program (VITPAN) supported by the French Federation of RPNs since 2002, is to provide new sources of income that may reduce migration and improve the local population's welfare without increasing the environmental pressure.

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Summer Expert Meeting
‘Environmental labelling and certification initiatives
in the agri-food sector – a way of marketing
agricultural sustainability’

Ranco, 1 – 3 July 2008

Scientific Committee:

Katarzyna Biała (JRC)

Maria Luisa Paracchini (JRC)

Jean-Michel Terres (JRC)

Programme

Tuesday, 1 July

8:30 – 9:00 Registration

9:00 – 9:30 **Welcome / Opening of the Summer Expert Meeting**

Giovanni BIDOGLIO (Head of Rural, Water & Ecosystem Resources
Unit, IES, JRC Ispra)

Presentation of the JRC

Objectives and programme of the Expert Meeting

**SESSION 1 Overview of environmental labelling and certification initiatives in
view of current challenges facing agriculture in Europe and worldwide**

Chairperson: **Katarzyna BIAŁA**

9:30 – 10:15 **The EU systems for protected food names**

Gesa WESSELER (European Commission, DG Agriculture)

10:15 – 10:35 **COFFEE BREAK**

10:35 – 11:20 **Environmental labelling initiatives in the agri-food sector:
evidence from developing countries**

Ulrike GROTE (Institute for Environmental Economics and
World Trade, Leibniz University, Hannover, Germany)

11:20 – 11:50 **The Future of Agriculture - The balance between Food and
Environmental Security**

Mark THOMASIN-FOSTER (President of European
Landowners' Organization, Brussels, Belgium)

11:50 – 12:30 DISCUSSION

12:30 – 14:00 LUNCH

SESSION 2 Case studies from Europe

| | |
|----------------------|--|
| 14:00 – 14:30 | Organic label (UK) Jonathan TROTH (Soil Association Certification Ltd, Bristol, United Kingdom) |
| 14:30 – 15:00 | Dehesa (Spain) Guy BEAUFOY (European Forum on Nature Conservation and Pastoralism, Spain) |
| 15:00 – 15:30 | Uelje olive oil (Italy, transboundary label with Slovenia) Josef PARENTE (ERSA – Agenzia regionale per lo sviluppo rurale, Friuli Venezia Giulia, Italy) |
| 15:30 – 16:00 | Carinthia – Genuss region (Austria) Peter RAMSPACHER (Joanneum Research, Graz, Austria) |
| 16:30 – 17:00 | COFFEE BREAK |
| 17:00 – 17:30 | Labelling system of Parco del Ticino (Italy) Claudio DE PAOLA (Parco Lombardo della valle del Ticino, Italy) |
| 17:30 – 18:15 | DISCUSSION |

Wednesday, 2 July

Chairperson: **Josef PARENTE**

SESSION 3 Case studies from Europe (continued)

- | | |
|----------------------|---|
| 9:00 – 9:30 | Idiazabal cheese (Spain, Basque country) Miriam MOLINA MESTANZA (Idiazabal Cheese DOP, Vitoria-Gasteiz, Spain) |
| 9:30– 10:00 | Oscypek cheese from the Tatra Mountains (Poland) Jacek SZKLAREK (Slow Food, Poland) |
| 10:00 – 10:30 | COFFEE BREAK |
| 10:30 – 11:00 | Union brewery in Ljubljana and bottling company of Droga Kolinska in Rogaška Slatina (Slovenia) Branka TRČEK (Geological Survey of Slovenia, Ljubljana, Slovenia) |
| 11:00 – 11:30 | DISCUSSION |

SESSION 4 Technical visit to Parco del Ticino and farms in the region

- | | |
|--------------|---------------------------------------|
| 11:45 | Departure for Parco del Ticino |
| 19:00 | SOCIAL DINNER |

Thursday, 3 July

SESSION 4 Round table

Chairperson: **Jean-Michel TERRES**

| | |
|----------------------|--|
| 9:00 – 9:30 | Grenelle initiative (France) Philippe POINTEREAU (SOLAGRO, Toulouse, France) |
| 9:30 – 10:30 | DISCUSSION |
| 10:30 – 11:00 | COFFEE BREAK |
| 11:00 – 12:30 | DISCUSSION (continued) |
| 12:30 – 14:00 | LUNCH |
| 14:00 – 16:00 | FINAL CONCLUSIONS |

SUMMER EXPERT MEETING

**ENVIRONMENTAL LABELLING AND CERTIFICATION INITIATIVES
IN THE AGRI-FOOD SECTOR – A WAY OF MARKETING
AGRICULTURAL SUSTAINABILITY**

Hotel Conca Azzurra, RANCO

1-3 July 2008

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Abstract

The report contains papers presented during the JRC Summer Expert Meeting 'Environmental labelling and certification initiatives in the agri-food sector– a way of marketing agricultural sustainability' held in Ranco on 1-3 July 2008. The papers gave an overview of the current knowledge about environmental impacts of labelled food at European and regional level.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

