

# THE ROLE OF COMMON AGRICULTURAL POLICY IN THE LANDSCAPE EVOLUTION: THE CASE STUDY OF VAL D'ORCIA (SIENA, ITALY).

**Massimo Rovai\*, Simone Gorelli\*\*, Elena Balducci\*.**

\*Pisa University, Department of Agronomy and Agro-ecosystem Management, Via San Michele degli Scalzi, 2 - 56124 Pisa, Italy.

\*\*Pisa University, Department of Civil Engineering, Via Diotisalvi, 2- 56126 Pisa, Italy.

---

## 1.1. Introduction

In the last years there is growing debate between agricultural economists on the role of agriculture to produce positive and negative externalities. The externalities are defined as *public goods* or *no-commodity outputs* (Marangon, 2006; Daugstad *et al.*, 2006; OECD, 2001; Brunori *et al.*, 2006) and they need of specific regulation. In rural areas landscape is a typical example of externality because it is the result of agricultural activity and it changes with the agricultural change. At the same time, landscape in specific territorial contexts can assume historic, cultural, social and economic value, so that it could become a strategic resource for local development policies (Brunori *et al.*, 2006).

The decoupling and cross-compliance introduced by the new Common Agricultural Policy (CAP) and the increasing demand of environmental goods by citizens/consumers are elements of novelty that will modify farms in next years. In particular, CAP reform could lead to farm externalisation of activity or suspension of business in many rural areas with important socio-economic and environmental impacts as, for example, on landscape.

In Val d'Orcia, as in other Tuscan rural areas, landscape assumes the role of economic resource because it attracts tourists and is utilised to promote the territory (landscape as a "business card"). This is in connection with the rural configuration of the landscape and the high concentration of architectural and artistic goods. To remember, for example, the UNESCO recognition in 2004 as "*Val d'Orcia cultural landscape*". At the same time, if this landscape is an important point of strength of the local economy, it shows also environmental fragility (biodiversity reduction, soil erosion, etc.) that they need specific actions.

In agreement with art.1 of European Landscape Convention (European Council, 2000) where it is affirmed that "*Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*", this work shows the results of a survey developed in Val d'Orcia with the following objectives:

- to identify the driving forces that have led to the current landscape in Val d'Orcia since the 1970s;
- to try to define the possible landscape evolution in relationship with the novelty introduced by the CAP reform;
- to suggest specific actions to drive the landscape evolution in the direction of a "*sustainable rural landscape*" where landscape is an element to strengthen the identity of the local rural community, to promote local sustainable development and to safeguard environmental resources in their complexity (European Council, 2000).

## 2.1. Methods

To verify the historic evolutionary landscape transformations generated by agricultural activity, different methods of analysis were used: GIS with digital orthophotos, statistical data, qualitative analysis with interviews and focus groups.

The first step of the analysis was the comparison of digital orthophotos in two different periods to evaluate the transformations in land use:

- in 1977 when the CAP introduced the payments based on cultivated surface for durum wheat production (Reg. 3103/76); this specific regime allowed a large extension of the durum wheat in the successive years (Belletti *et al.*, 1994);
- in 1994 when the durum wheat achieved the large diffusion in this area before the Mac Sharry CAP reform. At the same time, this has been the beginning of the conversion of the farms to organic production and agritourism services.

Afterwards, with the analysis of the agro-socio-economic statistical data and a field survey through interviews and focus-groups with stakeholders (Blanchetti *et al.*, 2005) we have tried to understand the present structure of the farms and the entrepreneurial choices in connection with the new CAP regime and the potential impacts on landscape. The interviews and the focus-groups are based on an open-questions questionnaire: one focus-group was addressed to various members of organisations involved in the environmental resources use of the area; to

the second focus-group have involved farmers owners of different typologies of farms (small farm, large farm, organic and agritouristic farm, ect.).

### 3.1. Results of research and discussions

#### 3.1.1. The typical Val d’Orcia landscape

Val d’Orcia is an hilly area in the south of Siena province (668,62 square kilometres); it includes the municipalities of Castiglione d’Orcia, Montalcino, Pienza, Radicofani and San Quirico d’Orcia characterized from a Medieval (XI-XIV century) and/or Renaissance epochs (XV-XVI century) urban structure. Other distinctive elements are fortified villages, scattered rural and religious buildings that are insert a territory characterized from the presence of:

- erosive forms (erosion furrow, named “biancane”) with typical flora (Maccherini *et al.*, 1998);
- large fields (often over ten hectares) cultivated with durum wheat and forage cultivated;
- small extension of woods where the slopes of the soli is very high;
- isolated or small groups of the trees (i.e. *cupressus* spp., *quercus* spp., etc.);
- canyon and wide riverbeds of Orcia river with typical river vegetation that confers a characteristic aspect to the landscape.

Besides, in July 2004, UNESCO recognized Val d’Orcia as humanity cultural heritage in according to the *Criteria IV* and *Criteria VI* (European Council, 2000).

#### 3.1.2. The role of CAP in the evolution of landscape in Val d’Orcia.

Current Val d’Orcia landscape structure characterized by large hills with extensive cultivation is the result of the deep transformation that, to start from sixties, has involved the agriculture of this area as well as a large part of Tuscany hills (Rovai, 1994). This structure come from three principal driving forces: CAP, technology progress (mechanization, seeds, fertilizers, pesticides, ect.) and attraction from other product sector (industry and service sectors) of the members of the farmer’s families.

Until fifties, Val d’Orcia was characterized by large farms (over 100 hectares) and extend areas with bushy grassland; later, with Serpieri law (agrarian reform) the structure of the territory, changed because of it started the cultivation of a lot of grassland. The new and present structure is characterized by small farms in the plain valley bottom where the soils are more fertile and large farms in the marginal hill areas where is lower the soils fertility.

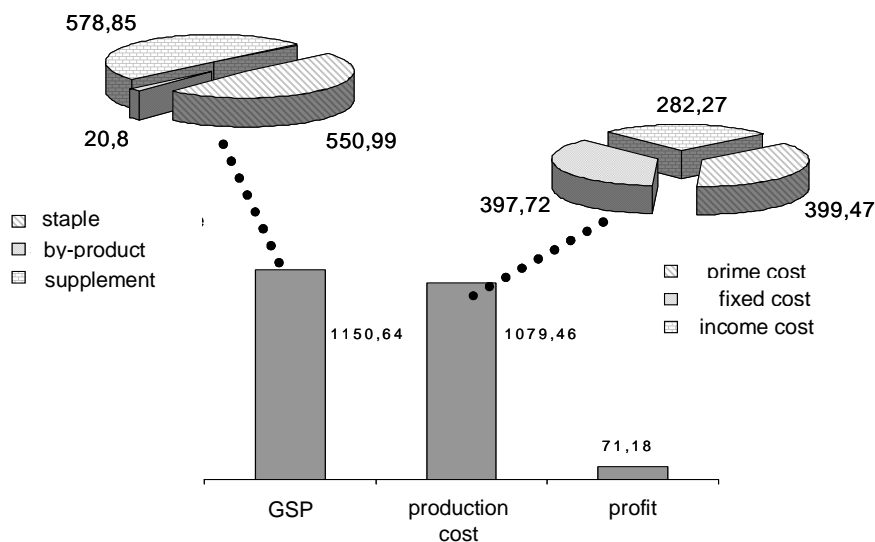


Figure 1. Community subsidy incidence on Gross Saleable Production (GSP) of durum wheat and production costs (€/hectare) -Source: Arsia Toscana average period 1998-2004.

In the specific, these are the reasons of the impacts of the three driving forces:

- the introduction of a durum wheat supplementary payments in the CAP regime (Reg. 3103/76) accounted extremely attractive the durum wheat cultivation also because of the lack of valuable alternative cultivations.. Figure 1 shows the incidence of CAP payments on Gross Saleable Production (GSP) of durum wheat and the production costs. In particular, it shows that the payments constitute about the 50% of the proceeds;

- technological development with:
  - high development of mechanization with the introduction of high power tractor and combine harvester and a remarkable increase of the labour productivity;
  - introduction of new durum wheat variety characterized by higher productivity, shorter size and more allurement resistance;
- to start from seventies there was an increasing development of other economic sector (industry and service sectors) in the near towns and many that determined the progressive relocation of the members of the farming family in this new activity because of the higher wages and better quality of life.

The action of this three principal driving forces for a few decades has determined a progressive simplification of the farming system and a specialization of the farms on the durum wheat cultivation. Other important aspect of this evolution was the increasing extension of arable soil to the detriment of semi-natural areas like permanent and bushy grassland and natural areas as the typical erosion furrow and a remarkable reduction of the hedgerows. These transformations have conduced to the present landscape with these typical elements and have allowed to the territory to became famous and easily identified for aesthetic reasons in all the world. However, at the same time, this landscape underlines few aspects of environmental fragility:

- progressive loss of flora-fauna biodiversity at different level: territorial, farm and field level;
- increase of erosion phenomena due to the presence of large extensions of plots completely uncovered with vegetation in the periods of annual major rainfall with negative repercussions in downrivers due to silting up phenomena and increasing risk of floods;
- potential risk due to pesticides and nutrients environmental dispersion (run-off).

Figure 2 shows the empirical evidence of this transformation that identify a progressive simplification of Val d’Orcia landscape. Where in 1977 had littleness sowable plots interrupted by natural corridors like hedges, drainage ditches, etc. in 1995, natural areas are deleted and we have only a large sowable hilly plot. In other part we see in 1977 a sowable plots with scattered trees and in 1994 the same plots where trees are extinct.

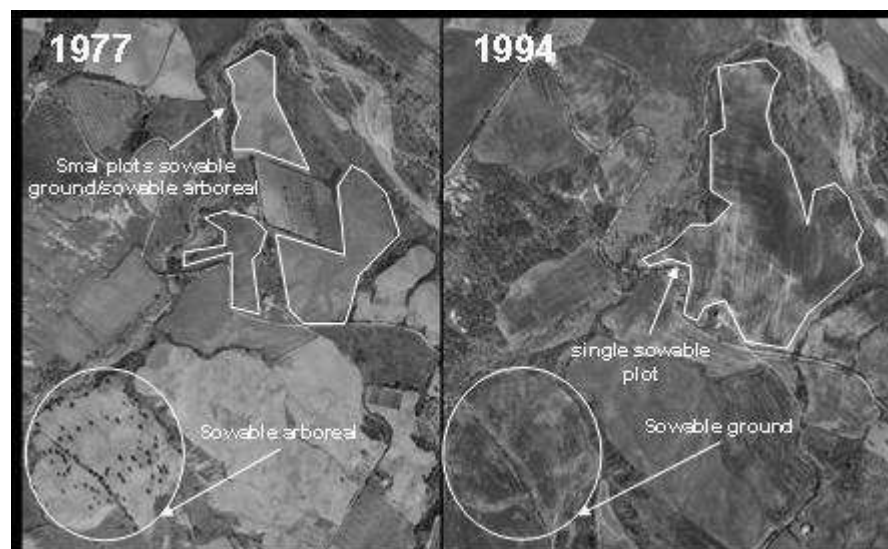


Figure 2. Digital ortophotos analysis to describe the deep modifications in Val d’Orcia landscape.

### 3.1.3. CAP reform: which will be the landscape evolution?

In the next years the evolution of Val d’Orcia landscape will depend in large part from the impacts of the new CAP reform on the different typologies of farms. In particular, new CAP reform introduces two fundamental novelty: the total decoupling and the cross-compliance. These novelty allow to the local farmers to receive payments only if they respect the cross-compliance rules but they can cultivate what they want or they can decide don’t cultivate.

Later one year of CAP reform application, we registered remarkable effects in few areas of the Tuscany extensive hill specialized in durum wheat cultivation (Brunori *et al.*, 2006) with considerable changeable in the mix of cultivated crops (reduction of 30% of durum wheat surfaces with partial substitution with forage, soft wheat and bean). If this situation will continue in the next years, is possible to suppose non only remarkable socioeconomic impacts but also environmental and landscape repercussions.

Figure 3 shows the distribution of Used Agricultural Surface (UAS) in class of farms, of the UAS and of the total surface in Val d’Orcia. In Val d’Orcia dominates conventional farms with medium dimension, with landed estate and ownership tractor and often with old age farmers. The large farms are 6% of the total, but they manage the 48% of the UAS and is possible suppose that the farms with have employees or are buying agricultural machine services outside have a high probability to suspend their activity and business.

At the moment, about 1/3 of the UAS is represented by organic farms; they are addressed to the multifunctional agriculture with agri-tourism services and direct selling of owner products and this farms have a better probability to survival adopting diversification strategies.

The diversification or suspension of business strategies with a remarkable reduction of the cereal growing could be interpret in positive sense if we are remembering the relationships with the negative externalities described above and the increase of the landscape complexity. But it is necessary to understand what will be happened in a short and long term view (Table 1).

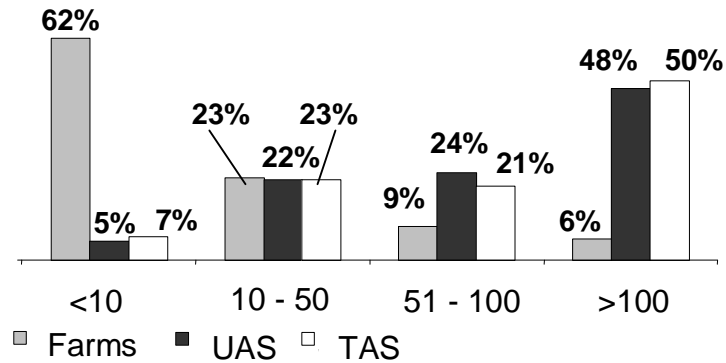


Figure 3. Distribution of Used Agricultural Surface (UAS) in class of farms, of the UAS and of the total surface in Val d'Orcia. - ISTAT 2000.

In the short term and private point of view, new CAP regime, could give positive impacts to the farms, because their incomes will be anyway guarantee, but with relation to the farms' choices, negative effects are underlined from the point of view of public benefits. In first place, in fact, landscape will change in a different way respect the way of thinking of the collectivity:

- loss of typical landscape elements as large sowable plots that now are characterized by different colours on the different seasons with a high appreciation of the aesthetic value by the tourists that in the future could be decrease;
- loss of natural elements (erosion furrow) and increasing of hydro-geologic instability in relationship with the reduction of the maintenance operations by the farmers.

Table I. The evaluation landscape impacts of the CAP in Val d'Orcia

		Impacts		
		Socio-economic	Environmental resources	Landscape
Short term	• Farm' income maintenance;	• Erosion and hydro-geologic instability phenomena;	• Biogeochemical cycle modification.	• Loss of typical landscape elements;
	• Reduction of durum wheat cultivation;			
Long term	• Forage increasing.	• Hydro-geologic instability phenomena;	• Biodiversity increase;	• Hedge and wood areas increase;
	• Small farms disused due to absence of generation change;	• No cultivated areas increase.		• Degrade of important landscape elements: country roads, hedges, rows and rural building elements; uncultivated plots;
	• Property concentration;			
	• Loss of identity values and of rural culture.			

In the long term, is possible have negative socio-economic impacts in relationship with the reduction of the number of active farms on the territory and the consequently loss of the rural culture and identity. In the worse case, could be possible have a total degrade of important landscape elements, like country roads, hedges, rows and rural building elements that need constant maintenance (Table 1).

#### 3.1.4. Which tools for a sustainable rural landscape?

At the light of the considerations expressed above, is important to understand which strategy or landscape policy is necessary implement in Val d'Orcia, where:

- from one side, landscape has assumed the role of economic resource and with the CAP reform a new its evolution (with high probability a worsening of the aesthetic value) could be negative reflexes on local development;

- from the other side, despite the high value of the landscape, capable to generate economic development, it shows some signals of environmental untenability that emerge from some studies (Lazzerini *et al.*, 2003). To reach the objective of a model of “*rural sustainable landscape*” is necessary to act with the aid of economic tool, like payments and/or incentives, but only these instruments are not enough because, often, we don’t manage to achieve structural (permanent) changes. To have structural sustainable changes is also necessary to lead a more incisive action with the purpose of a *cultural change* in the people (and in the farmers). A possible way in this direction is the use of participative planning tools, like for instance, the agro-environmental schemes (Brunori, 2003; Marangon, 2006), even in consideration of the remarkable success experiences, at level of north European countries and at level of OCSE countries (Australia, New Zealand, etc.) (Galli, 2003). To develop a participative approach requires a comparison/listening phase to collect the different local stakeholders opinions, to evaluate the perception/knowledge level of the agro-environmental problems and, later, it proceeds with a second phase of discussion/interaction, between the actors involved, to combine the different experiences. This second phase is determinant to create/strengthen the “*sharing knowledge*” that is the fundamental condition to individuate operative and monitoring tools to promote a *sustainable landscape* requalification.

#### 4.1. Conclusion

In this work we want underline that also a landscape as the Val d’Orcia landscape with an high reputation such as be an economic resource can have critical environmental aspects and at same time, to underline the intrinsic weakness of this landscape due to the impacts of the politics (CAP in first place) with a high risk of a deep transformation of the landscape and loss of its typicalness.

With this considerations, the study proposes a new regulation tool (agro-environmental schemes) to allow to conciliate private and public objectives and to manage landscape evolution towards a better environmental sustainability. This tool is proposed also thinking to the positive north European experiences in the theme of agro-environmental and landscape policies that are increasing in comparison with the “command and control” regulation tools.

This approach is very important especially when the territory is characterized by remarkable resistance to the change, so becomes essential actions to favourite the integration between local stakeholders to increase their mutual trust. This is a fundamental phase that allows the production of new knowledge and the consolidation of values indispensable to the process of change, in the direction of a greater environmental and landscape sustainability.

#### References

- Belletti G. & Marescotti A. (1994)** La filiera frumento. Accademia dei Georgofili.
- Blanchetti E. & Conti E. (2005)** *La comunicazione, la negoziazione e il consenso territoriale come fattori strategici nella realizzazione di impianti industriali, grandi opere civili per lo sviluppo del paese*. Nimby Forum 04-2005. Allea.
- Brunori G., (2003)** Problema ambientale, conoscenza e attitudini: alcune riflessioni preliminari per la realizzazione di schemi ambientali partecipativi A. Rossi, P. Pieroni eds *Sviluppo sostenibile delle aree rurali*, Edizioni ETS, Pisa 7-33.
- Brunori G.; Cerruti R.; Rovai M.; Belletti G.; Marescotti A. & Neri T. (2006)** Cambiamento delle politiche e strategie aziendali: i risultati di un’indagine degli effetti della riforma di medio termine sulla produzione del frumento duro in Toscana. Convegno SIDEA, Perugia, 7-9 settembre 2006.
- Brunori G. & Pieroni P. (2006)** La (ri-)costruzione sociale del paesaggio nella campagna contemporanea: processi, problematiche, politiche per uno sviluppo rurale sostenibile F. Marangon eds *Gli interventi paesaggistico-ambientali nelle politiche regionali di sviluppo rurale*, Milano, Franco Angeli 77-98.
- Consiglio d’Europa (2000)** *The European Landscape Convention*.
- Daugstad K.; Rønningena K. & Skarb B. (2006)** Agriculture as an upholder of cultural heritage? Conceptualizations and value judgements—A Norwegian perspective in international context, *Journal of Rural Studies*, **22**: 67-81.
- Galli M. (2003)** Esperienze esemplificative per la gestione del territorio rurale attraverso schemi agro-ambientali di natura partecipativa. A. Rossi, P. Pieroni eds *Sviluppo sostenibile delle aree rurali*, Edizioni ETS, Pisa 7-33.
- Lazzerini G.; Colom R.M. & Vazzana C., (2003)** Indicatori agro - ambientali per la valutazione della sostenibilità di aziende agricole con metodo di gestione biologica e convenzionale in Val d’Orcia (Toscana). XII Congresso Nazionale Società Italiana di Ecologia, Como 8 - 10 settembre 2003
- Maccherini S.; Chiarucci A. & De Dominicis V., (1998)** Relazioni tra la vegetazione e la morfologia nei calanchi di Radicofani (Toscana meridionale). *Att Museo Storia Naturale Maremma* **17**: 91-108.
- Marangon F. eds (2006)** *Gli interventi paesaggistico ambientali nelle politiche regionali di sviluppo rurale*, Milano, FrancoAngeli.
- OECD (2001)** *Multifunctionality: Towards an Analytical Framework*, Parigi, OECD.
- Rovai M. (1994)** Il comparto cerealicolo delle Colline Pisano-Livornesi: un’analisi attraverso i fenomeni di strutturazione e ristrutturazione delle aziende cerealicole e dei canali di commercializzazione locali A. Panattoni, eds, *La sfida della moderna ruralità. Agricoltura e sviluppo integrato del territorio: il caso delle colline pisane e livornesi*. RAISA-CNR, Pisa: 299-366.

#### Summary

This paper, starting from the hypothesis of the narrow relation between agricultural activity and landscape, underline some considerations on possible impacts that could happen as a consequence of recent CAP reform on the typical landscape of Val d’Orcia (Siena - Italy). This landscape is very important because it is used to promote tourism and the local economic activities and it could be considered ad “economic” resource.

In connection with this considerations the work described the evolution of existing landscape in association of current agricultural production systems and of investigation results about a representative sample of stakeholders (farmers, organizations, public administrations, etc.) that they had direct influence on landscape reproduction. In the end, we proposed the introduction of management instruments of the evolutive landscape dynamics based on participative approach.

---

#### **Data about the authors**

**Massimo Rovai** is Associate Professor - Department of Agronomy and Agro-ecosystem management University of Pisa.

Didactic activity: Management of Construction and Environmental Evaluation – Faculty of Engineering - University of Pisa; Value Analysis of the projects - Faculty of Engineering -University of Pisa; Environmental Evaluation in Agriculture – Faculty of Agricultural Science – University of Pisa.

Research activity: Rural development; Environmental accounting in agriculture; Environmental impacts of the agricultural system of production; Management and organization in agribusiness; Landscape analysis in territorial planning  
mrovai@agr.unipi.it, Pisa University, Department of Agronomy and Agro-ecosystem Management, Via San Michele degli Scalzi, 2 - 56124 Pisa, Italy. Tel.+39 050.551553 Fax +39.050.540633

**Simone Gorelli** is PhD student - Department of Civil Engineering –University of Pisa

Teaching collaboration in “Management of Construction and Environmental Evaluation” and Value Analysis of the projects – Faculty of Engineering - University of Pisa; and Environmental Evaluation in Agriculture – Faculty of Agricultural Science – University of Pisa.

Research activity: Study of Environmental management system on territorial and farm level; Predictive analysis on environmental and socio-economical aspects about the effects of coexistence between GMO and GMO-free, Impact assessment on environmental and socio-economical system of textile hemp chain; Environmental impact assessment; study of assessment landscape methods for territorial planning.  
sgorelli@agr.unipi.it, Pisa University, Department of Civil Engineering, Via Diotalvi, 2- 56126 Pisa, Italy. Tel. 050.553502/ 050.571553 Fax +39.050.540633.

**Elena Balducci** is PhD Student in Environmental Science University of Bologna.

ebalducci@agr.unipi.it, Pisa University, Department of Agronomy and Agro-ecosystem Management, Via San Michele degli Scalzi, 2 - 56124 Pisa, Italy. Tel.+39 050.551553 Fax +39.050.540633