

INDEX

- 4 Preface: The ViTour Landscape project and its partners**
(Giuliana Biagioli)
- 5-7 1. General Introduction**
1.1. Cultural landscapes: definitions (Michèle Prats)
1.2. The structuring elements of the landscape according to inhabitants, public and private stakeholders: a view from the inside (Giuliana Biagioli)
1.3. The constituting elements of the winegrowing cultural landscapes according to the Vitour Landscape project: the construction of a “glocal” view. (Giuliana Biagioli)
- 8-15 2. The physical elements of the landscapes**
(Michael Schimek)
- 16-19 3. Ecological system**
(Francesco Marchese)
- 20-25 4. The agrarian/rural organisation of space, production and productivity: its characters**
(Giuliana Biagioli, Roberto Vezzosi)
- 26-32 5. Settlement development and architecture**
(Sara Scheer, Filinto Girão)
- 33-38 6. Accessibility and mobility**
(Jeanne Corthay, Emmanuel Estoppey)
- 39-45 7. Governance and Vineyard Cultural Landscapes**
(Myriam Laidet)
- 46-48 8. General Conclusions**
(Roberto Vezzosi)
- 49 Bibliography**
- 50 ViTour Landscape project partners**
- 51 Credits**
-

4. THE AGRARIAN/RURAL ORGANISATION OF SPACE, PRODUCTION AND PRODUCTIVITY: ITS CHARACTERS

(Giuliana Biagioli, Roberto Vezzosi)

"The German language uses the same word for the art of "construction" and the art of "cultivation"; the German word for "agriculture" (Ackerbau) does not signify "cultivation", but "construction"; the "settler" is a "builder" (Bauer). When the unsuspecting Germanic tribes watched bridges, streets and walls being constructed under the shadow of the Roman eagles, and, with seemingly identical lack of effort, the virgin riverbanks of the Rhine and Moselle being transformed into vineyards, they assigned a single word to describe all the work going on before their eyes. Yes, people should construct their fields as they build their cities. In this way, the cities contained houses inhabited by a number of separate families, one living on the floor above the other, just as in fields, the fertile strata can be seen to be nourishing one stratum of people above another."(Carlo Cattaneo, "Agriculture and morality, in The acts of society towards the encouragement of arts and crafts, Milan 1845).

The layout of soils, crops and agricultural watering systems in the fields, together with farm buildings and their spatial and functional relationships, are expressions of a singular "material culture", which is what determines the uniqueness of the place. For this reason, agriculture is recognised as an essential factor that, more than any other, makes a significant contribution to the construction of the landscape. The organisation of space in agriculture is the result of a functional evolution, which must respond with maximum efficiency to the given conditions (climate, soil characteristics, the presence of water, etc.) and in relation to the specific needs of agricultural productivity.

If we look at rural areas, we can see that they have long been characterised by slow and gradual change, which has kept alive the strata of different ages. From the mid-twentieth century onwards, however, the processes of change – both social and technological – have accelerated. First progressive abandonment, followed by the mechanisation and specialisation of agriculture, which have led to major changes in the methods of production and layout of the soil. The traditional agricultural landscape has changed, as has, to an even greater

extent, the landscape of vineyards.

One of the primary difficulties encountered when examining European winegrowing areas, as can be clearly seen from those included in the Vitour Landscape project, is the huge variety of landscapes, characterised by distinct cultural order and divergent spatial organisation, together with marked economic and social differentiation.

A primary example of such divergence is the management of steep terrain, which must be terraced to create small artificial plains in which to plant any kind of crop. Many of the sites included in this project, like many others in Europe, are examples of this system, employed in particular for the planting of vineyards. In fact, terraced vineyards are a characteristic of most of the cultural landscapes that form part of the world heritage sites that have singular reference to this discussion: the Upper Middle Rhine valley, the Wachau, the Upper Douro valley, Cinque Terre, Lavaux, as well as a part of the traditional Tokaj production zone. These are attractive landscapes, but the result of agricultural and socio-economic systems now largely extinct, as is the case with Cinque Terre, or residual, as with the Rhine valley, or, in other sites, considered unmanageable.

We have more integrated vine-growing and wine-making systems, where it is possible for a man or woman to be both winemaker and citizen, as in Lavaux, where small family-run properties completely dominate (700 ha of vineyards are divided among 1,840 owners and 660 co-owners), all with cutting-edge technology, applied in particular to environmental protection. At the other end of the scale, we find farm organisations that are controlled by huge, capital-oriented wineries and run by salaried employees.

The situation is particularly complex in the vast area of the Loire Valley. Here the vine is by no means the only crop. The area devoted to agriculture in the UNESCO site is almost 178,000 ha, a considerable amount of which is dedicated to cereal and oilseed crops and cattle rearing. About 65,000 hectares are dedicated to vine growing (8% vignoble français: Val de Loire is the 3rd largest vine-growing region in France) with 4,000

growers, 60 wine traders and 16 wine cooperatives. Sixty percent of the region's wine sales are accounted for by 15 specialised négociant companies and 24 cooperative wine merchants; the remaining 40% is sold directly from the winery. The average size of a wine estate is approximately 15 ha; anything less is considered insufficient for making a living. In "professional" estates, i.e. those with a minimum size of 1 to 3 hectares, 50% of the work is carried out by salaried employees. In May 2012, the Chamber of Agriculture issued a "typology of vineyards and socio-types in the Val de Loire, with the identification of five profiles: direct sellers to professionals, representing 20% of the area's estates; growers selling directly to private individuals accounting for 17% of the estates. These are independent wine producers, who are aided by family members and expert employees and have a strong presence in local social and political networks. They are termed "vigneron artisan", exercising the double role of vine-grower and winemaker. The fourth and fifth profiles refer to companies, whose production and activity is diverse. The first of these categories is made up of the "vendeurs au négoce," representing 23% of the area's producers, often with a mixed farming system and aided by family members and just a few employees. The latter profile consists of the "coopérateurs" (cooperative) system, which represents 18% of the producers. They generally enjoy an assured outlet for their produce, by selling the entire crop (grapes, must) to the cooperative winery, which vinifies and markets the wine. The organisation of labour revolves around the family nucleus, with professional help. Profitability is amongst the highest levels in the sector, as administrative and commercial costs are reduced. These growers generally practise diversified agriculture or are engaged in a second activity. It would be interesting to explore the theme of agricultural diversification in this high quality wine-producing area, it being an agricultural system that may be regarded, historically, as the most respectful of local landscape and biodiversity, and also less subject to the risks of monoculture.

In the Wachau and the Upper Middle Rhine Valley the small, directly run winery dominates, as in Lavaux, albeit with less fractional ownership.

The cultivated area in the Wachau amounts to 25,000 ha, of which 1,400 ha are vineyards. Land ownership and estates are on average much smaller than in the Val de Loire. The vines grow on terraces supported by dry stone walls. Around 250 families share ownership of 440 hectares of vineyards, an average of less than 2 ha and by no means enough to support a family. Conservation of the cultural landscape is aided also by the strength of the cooperative movement in the production and marketing of wine. The largest cooperative, Domäne Wachau, founded 70 years ago, controls about a third of the vine growing area and is able to create top quality wines. In fact, the typical weakness inherent to production from small parcels of vines - the

difficulty of producing and marketing just a few grapes - becomes a strength where small producers become producers of speciality grapes, which may be marketed under a territorial brand, with quality guaranteed by the winemaking professionalism of the cooperative. The presence of the cooperative winery is, therefore, very important for small producers in the region included in the UNESCO site, who would not have the strength to survive alone, nor, consequently, be allowed to contribute to the survival of the historical landscape; the role of the association "Vinea Wachau Nobilis Districtus" is also important, giving its members very strict rules for wine production, much stricter than in the Austrian vine growing area (see Chapter 2).

These are two examples of places where, to varying degrees, from lowest to highest, there is still a relationship between private interests and those of citizens in the maintenance and development of a cultural landscape. This relationship weakens when properties get larger, to the point where financial and international capital interests hold sway.

In the Douro Valley, for example, from the 1960s on, it is multinational "luxury" companies that monopolise the production and sale of wine. Here the agricultural area utilised is about 250,000 ha, of which 48,000 ha is under vines, with 9,000 companies, of which, however, we observe a progressive reduction (between 1989 and 1997 by about 13%). This reduction applies mostly to smaller companies, with less than 5 ha. The largest number of companies (and growing) in the Douro Valley has areas ranging from 5 to 20 ha, comprising 61% of the total, while those between 20 and 50 ha come to 31%. The demographic structure of the region follows the same pattern, but in addition to a general reduction however, there is also the worry of an aging population. Around 39% of manufacturers are over-65, while only 8% of farmers are under the age of 40.

Another peculiar feature of the region is the presence of freight, which is also linked to the extreme land fragmentation that often makes cellar aging economically unviable. Small producers then sell grapes or wine to shippers, many of whom have their own vineyards, or to cooperatives. It is important to note in this context the importance of the cooperative model, which has allowed many small producers to maintain their activity. Small vineyards are almost exclusively characterised by the use of family labour and are the "traditional" model of the Douro wine system. These are the ones that keep the richness of the landscape in the area, thanks to their complete role in the vine-growing process and their work in maintaining traditional production systems. The larger vineyards, on the other hand, are almost exclusively characterised by the use of hired labour and represent the more dynamic model of the Douro Valley wine production system. It is they who bear the huge investments required for the purchase of new land, for the major effort needed to restructure the traditional vineyards, for the exploi-

tation of other local agricultural products (oil, apples, cherries, livestock, etc.) and for the same diversification of the activities of the estate towards multifunctionality, mainly through the introduction of tourism. At almost the opposite end of the scale, because of the scarcity of financial investments, we have winemaking systems that play a residual role and subordinate to, for example, the development of tourism (as in Cinque Terre) and others where the totally unique climate and natural or physical features assume greater importance (as in Pico).

In Montalcino however, the image of wine is strong enough to dominate the economic and social life and the overall image of the area (it is no coincidence that the area governed by the DOCG appellation coincides exactly with that of the municipality). The success of Brunello in recent years has led to a significant increase in the area under vines, which has gradually filled the areas once devoted to olive trees and arable crops. Vine cultivation accounts for 70% of the cultivated area, referring to plots of land extending over more than five contiguous hectares of land; including those that exceed 20 ha, making up about a quarter of the total. The largest number of farms are those with a surface area of between 20 ha and 50 or more ha (68 companies). A survey carried out in 2000 identified 75 estates with 50 or more ha, covering a total area of 17,963.14 ha.

In a town of about 5,200 inhabitants, direct farming employs 2,000 people (certainly not all residents) and, taking wine-related activities into consideration, a total of about 2500 people are active in the sector, demonstrating the focal point that Brunello has assumed over the years. Seventy-five percent of the estates are directly owned and family-run, although land rental

and salaried labour is on the increase. The producer is also bottler and seller, in the absence of industrial scale production, and over 60% of the wine produced in the municipality is the product of just 10 estates. Thus it appears that the town of Montalcino is a reality that is atypical when compared to other Tuscan and Italian areas, because the entire winemaking process is carried out within the confines of the estate. It seems like the town of Montalcino is an atypical reality compared to other Tuscan and Italian areas because the process of winemaking is entirely carried out within the boundaries of one single estate. The lack of association between companies and the self-reliance of wineries also reduces the possibility of promoting common policies and actions to promote the area as a whole.

The case studies, therefore, illustrate the primary value of the Vitour Landscape project in understanding the differences between different European cultural landscapes, and in particular those where the vineyard is still an essential part of the economy and society. From these differences derive the priorities and actions to be taken for the protection and enhancement of the landscape by each partner, together with the relative solutions and the choice of instruments to be used, which necessarily vary according to the needs of each individual case.

However, there is a common question that we all must ask, and that is whether it is possible to ensure that the needs of agricultural production do not erase the signs that tell a human story, a story that is always unique and always on the move. On the other hand, an assurance of sustainable development of the European wine landscape and the refusal to allow its crystallisation into a still image, can be an effective strategy for the protection of its cultural value.



Picture 26 - Vineyards in Pico Island (PT)

4.1. RISKS AND PROBLEMS

The landscape is the product of the incessant work of man. In particular, the rural landscape bears witness to the historical relationship between nature and work, where the many marks left on the ground are representative of the balance between these two dynamics. In relatively recent times, however, new external factors have been added that determine the design of the landscape; these are not the product of local conditions and have had an increasing impact on the transformation of rural areas. What have emerged are factors that increase the pressure on the agricultural systems or elements that may bring about a crisis situation.

First of all we must consider the danger of an aging and declining rural population, for both economic and social reasons. These factors directly affect corporate investments and could call into question both the different production systems and the maintenance of the agricultural landscape.

The diffusion and internationalisation of wine markets, the dispersal of places for living and places of work, the development of territorial infrastructures (highways, power lines, plants for the production of energy and waste disposal, etc.), the attraction of the countryside in the mind of the urban population and for the same reason tourism, with its new quantitative and geographical dimensions and... All these factors create contradictory phenomena.

On the one hand, we have a decrease in the rural population; on the other, an increase in the population moving out of the cities, searching for different and better environmental conditions and drawing the countryside away from its traditional agricultural use. In a country area bereft of agriculture, care of the soil is interrupted and minor infrastructural patterns disappear - the ditches and hedges, which are reduced to stereotypes, where once they had strong symbolic value.

The house is no longer the place of work and models for the construction of the family and the choices of belonging (to a place, a community) become pluralised. Changes in lifestyle and the introduction of more urban models into social relationships, with more and more individual factors coming into play, carry with them the risk of undermining the methods for the creation and use of agricultural land, its cultural heritage and landscape.

Tourism also is an industry that makes use of the attraction factor of the land, but at the same time has an impact that tends, if not considered in the long term,

to reduce the quality of life of the local population, by urging mobility flows or the increase in prices and developing activities, that are not always compatible.

The more marginal areas - hills and mountains - are seeing progressive abandonment, whereas in other areas that are accessible from the major cities, new populations are arriving (the Rhine Valley and the Loire Valley), who choose them either as weekend retreats or full-time homes, escaping from the big city and urban deprivation.

In places where the agricultural system is marked by widespread settlement, governed by relationships, established over time, between the different components - rural villages, barns, gardens, cultivated land, woodland - the recent building additions too often threaten to overwhelm the historical nuclei and lead to a breakdown in the old spatial balance.

Where agricultural areas and surfaces are easier, intensive agricultural methods have taken the place of old farming practices. In the most fertile areas, where profitability from the vine is higher, winegrowing has progressively diminished the grazing meadows and mixed crop areas, which have been gradually replaced by vineyards, thereby reducing the diversity of the landscape (Montalcino), where elements that guaranteed the balance of ecosystems and biodiversity used to coexist. The lowlands have more and more often seen the rise of industry, commerce and new infrastructures and are subject to a growing demand for the localisation of large equipment, and technological systems (e.g. renewable energy) in agricultural areas, which further diminishes agricultural use.

At risk of gradual extinction are the terraces, dry stone walls, embankments, hedges and other agricultural features that for centuries helped to contain erosion, the effects of which, owing to abandonment or the mechanisation of agriculture, have become more severe and destructive (as in the case of the recent floods in Cinque Terre).

Intensive agriculture can produce problems of pollution, hydro-geological instability, water scarcity, loss of fertility and deterioration in the structure of the soil. It should however be remembered that the presence of humans and agricultural practices have important environmental value: on land abandoned by agriculture, different forms of vegetation take root, not always in the form of native or traditional species and abandonment results in the reduction of biological diversity.

4.2. SELECTED GOOD POLICY PRACTICES

4.2.1. GPP FOR TRADITIONAL CULTIVATIONS:

4.2.1.1. LEGAMBIENTE WORK CAMPS AT CINQUE TERRE THIS PRACTICE CAN BE ASSOCIATED ALSO TO A GPP ON MULTIFUNCTIONALITY.

Legambiente is an Italian environmental NGO. We promote sustainable development, environmental education programmes, the use of renewable energy, involving more than 3,000 people each year, participating in our volunteer work camps. A work camp is a brief experience in which we offer participants the opportunity to implement a project to restore, protect and enhance the environment and local culture. The volunteers from Italy and from all over the world do ten-day shifts coordinated by Legambiente leaders, working five hours a day. Free time is used to visit and discover the area. The work camps were organised in accordance with the Park Authority and the Municipality of Riomaggiore through a convention. The first aim was to recover abandoned paths, most of them, except those on the coastal area, no longer being maintained by the locals.

In particular, paths connecting villages to the hills have been considered. The second objective was to recover abandoned terraces. The third was to enhance biodiversity and multifunctionality in agriculture. The last and consequent one was to ensure a more balance return from the territory, both from the participants and from the tourists, through dialogue between different generations and cultures. The results were:

- a re-opening of paths, (see photos)
 - the recovering of terraces, where, to increase biodiversity, steps were taken to protect the presence, in such a small area, of 20 varieties of local vines.
 - the installation of electric fences to prevent incursions of wild boars on the restored and cultivated lands. This action was useful also to protect the dry walls, the main element of the Cinque Terre landscape
- Finally, a wider range of agricultural products complementary to the vines and the wine was introduced, with the plantation of lemon trees and terraces dedicated to the cultivation of basil used for the well-known pesto, to encourage the local economic stakeholders to earn an income from other local Mediterranean products.



Picture 27 - Legambiente Work camp in Cinque Terre (IT)



Picture 28 - Vineyards and olive groves around Sant'Antimo Abbey in val d'Orcia



Picture 29 - Vineyards down on the hill of Montalcino

4.2.2. SUSTAINABLE USE AND ENHANCEMENT OF THE HERITAGE

4.2.2.1. THE LANDSCAPE IN REGIONAL POLICIES AND IN LOCAL KNOWLEDGE AND GOVERNANCE PROCESSES: THE CASE OF MONTALCINO.

In recent decades, the demand for Brunello wine has constantly increased, leading to a 100-fold growth in winemaking businesses from 1980. This economic boom has also caused a shift from traditional production methods to new cultivation methods. Landscape is a quality factor that has an important influence on

appreciation of wine. For this reason, experimentation of new processes of knowledge and active guardianship of territory as a measure of economic policy (taken to attract tourism, to help in creating the image of local products and to promote the development of various economic activities complementary to winemaking).

The main planning tools in Tuscany are the Territorial and Landscape Plan (Pit, NUT2) and the Regional Development Plan (Prs, NUT2). These two plans are closely linked, thanks to a strategic choice made by the Tuscan Region that connects territorial planning tools with socio-economic development plans.

The quality objectives for the landscape identified at regional level for the transformation in the agricultural areas are involved with the maintenance of the activities in the countryside. Richness of a landscape is linked to the presence and maintenance of the agricultural sector. Agriculture, if well done, is a creative activity, able to defend the territory; it also guarantees hydrogeological guardianship and biodiversity. Simplification of the layout of the fields, the elimination of agricultural drainage networks and also the absolute prevalence of vine monoculture should be avoided. In addition, new lifestyles gave rise to new approaches to and new collective imagination of the countryside, which might endanger the iconic value of the most typical landscapes and give rise to a uniform, "fake Tuscan" landscape. "The Region, the provinces and the municipalities participate in the creation and integrated management of the regional GIS, which is the main source of information enabling planning and assessment at all levels". In the Structural Plan of Montalcino (tool for spatial planning at municipal level), the GIS has been used to collect and highlight the information and relationships between land forms, the agricultural mosaic, the urban system and the geo-morphological risk. Some of the information layers produced can support assessment of agricultural characteristics of individual areas, like the map of annual solar radiation, the slope exposure map. Soil type maps can also be produced (soil composition, rock types) as well as maps of soil use. The GIS makes it possible to identify the key and recurring features of different landscapes and to highlight the different characters of each one. The information and its visual representation are fundamental for policy actions targeting improvement of the wine landscapes. For management of the territory, application of the GIS can enable the authorities to assess changes in types of crops. Perception of the negative externalities of farming practices is still limited (soil erosion, pollution, standardisation, etc.). This tool makes it possible to promote environmentally friendly farming practices, for the hydrogeological and environmental protection of the territory and to ensure the conservation of environmental resources and the active protection of the landscape features. The GIS also makes it possible to track the historical evolution of farming practices and agricultural landscapes.

In addition, at Montalcino, during the creation phase of the Structural plan, drawing on technical expert knowledge was accompanied by engagement and participation of the local community and the stakeholders.

During the development of the data sets, to bring to light the most pressing issues;

In the goal-setting phase;

In the definition of the technical tools, exclusively with the representatives of the farming sector, which highlighted their role as "counterparts".

The work of constructing structural plans allowed the establishment of Guidelines and standards for the improvement of a wine landscape:

- preservation of olive belts next to roads and settlements;
- planting bushes to improve ecological connection;
- avoid building along the ridge roads
- taking care of trees inside historical settlements.

Planting a vineyard can bring risks, so it is submitted to a valuation by precise and definite standards, but it can also be a new opportunity to improve environmental performance. Thus, the structural plan actively takes care of the characteristics of the landscape.

The landscape is a key component in the identity and "good name" of many territories and is often the subject of local tensions and conflicts. Local stakeholder groups represent diverging interests: on the one hand there are those who wish to preserve heritage and memory, on the other, farmers mainly target productivity. Although the role of the landscape as a key economic resource is formally recognised, this often does not translate into practice. Awareness of the role of farmers in producing "public assets" is still scarcely understood, even by the farmers themselves.

The ability for spatial planning tools to act directly on agricultural practices is limited. For instance, their nature is largely of "moral suasion" with regard to crop types and to the farmers' choice of production methods in general. This is why it is necessary to experiment a new approach for more effective cooperation between all stakeholders, starting with the creation of knowledge bases as a tool for the management of territorial changes.

4.2.3. GPP AIMED AT RE-ESTABLISHING DIVERSITY IN CULTIVATION, SUSTAINABLE WINEGROWING AND ENHANCING BIODIVERSITY

4.2.3.1. BIODIVERSITY IN WINE-PRODUCING COUNTRY: THE EXAMPLE OF THE SAUMUR CHAMPIGNY AOC

The "biodiversity and landscape" project, based on the hypothesis that "increasing biodiversity has a regulatory effect on pest populations" and coordinated by a winegrowers' union, raises many questions, some of them ecological, others sociological and agronomical. Currently, winegrowing has the reputation of being an intensive crop that consumes large quantities of pesticides and is therefore of little interest for biodiversity. However, since the 1990s, winegrowing practices and objectives have evolved to become more environmentally conscious. These environmental approaches, implemented at farm scale, are now well known and can be considered "classic" in 2010.

Approaches at a regional or landscape scale, wider than the classical farm-scale framework, have in particular been developed in order to better integrate relationships between winegrowing and biodiversity and the two-way benefits that could be strengthened to help control vine insect pests or to stop declines in common farmland biodiversity. In the Loire Valley, a growing number of winegrowers are taking an interest in these approaches. The Saumur-Champigny controlled origin appellation, in partnership with research teams and other agricultural organisations, launched a major project on this topic more than five years ago. This habitat creation project aims to encourage biodiversity throughout the appellation zone and is of particular interest as it was initiated by the winegrowers themselves and deals with all aspects of sustainability (economic, environmental and social interests). This example may help to define those actions that could contribute to preserving vineyards while farming sustainably and managing and conserving natural habitats and biodiversity. Preliminary results confirm the importance of taking an interest in uncropped areas or interstices within the vineyard, to understand the contribution winegrowers can make to preserving biodiversity. This adds more weight to the argument for landscape-scale approaches when studying the management of the sustainability of winegrowing. The core element of this "case-study" is its being the first "agroecological" habitat creation project to be planned and implemented over an entire wine appellation area. Another originality of the project is that it was initiated by the winegrowers themselves. Through their union, they organised themselves, sought out partnerships and completed requests for funding. The fact that the project was conceived by a union has influenced the definition of its content. Finally, this project is also remarkable for the relationships it has established with scientists and the type of research they develop. As the project has progressed, the Angers and Bordeaux research teams have helped the winegrowers to construct their project, to design pest monitoring tools, to produce their habitat creation strategy.

4.2.3.2. GROUND COVER PLANTING ISSUES ON WINE QUALITY AND BIODIVERSITY AND INTEGRATED PRODUCTION - VITISWISS CERTIFICATE AND VINATURA LABEL IN LAVAUX.

Two GPP are presented here, both related either to sustainable winegrowing or to the enhancement of the biodiversity. The first is related to ground cover planting issues to improve the quality of soil for winegrowing while avoiding erosion. Erosion is no longer an issue in Lavaux. It has been fought with transverse terracing, water settlement (streaming system) and ground cover planting. Cover crops can damage the wine quality because the plant did not get enough water or nitrogen. Studies were carried

out by the Swiss research station, Agroscope (which is supported by the Federal Office of Agriculture), to discover what types of ground cover plants do not compete with the plant, with wine quality therefore being maintained. Five species were cultivated and observed. The first one was "Pérennes" grass, which does not need to be sown and grows naturally. The second and the third ones were 2 species of "à ressemis" grass (*Bromus tectorum* and *Hordeum murinum*) and the last ones were 2 species of "à ressemis" leguminous plants (*Trifolium subterraneum* and *Trifolium repens*). The study showed that the 2 species of "à ressemis" grass could help in maintaining the quality of the wine because they minimised competition between the plant and the grass with regard to water. Therefore the plant was able to absorb the quantity needed. On the other hand, the 2 species of leguminous plants were good alternatives for nitrogen supply (same minimisation of competition between the plant and the grass with regard to nitrogen). Indeed, the 4 "à ressemis" species improved the vine's vigour and the production capacity of the plant. Nevertheless, further studies have to be undertaken before these species are used by the winegrowers (on the sowing and production method for these cover plants).

The second GPP is related to biodiversity and integrated wine production through two instruments: the Vitiswiss certificate and the Vinatura label. The Vitiswiss certificate (grapes) and the Vinatura label (wine) tend to represent ecological and integrated production. The winegrowers are encouraged to reduce their use of insecticides, acaricides, herbicides etc. Switzerland is a pioneer in integrated production. The approach is volunteer-based and initiated by the profession. Since 1993, the project has been supported by the federal government. First of all, local organisations had to be federated: six regional organisations cover the territory and are federated in the VitiSwiss group. The one for the Canton of Vaud (therefore Lavaux) is called Vitiplus. The Vitiswiss certificate has some requirements (drawn up by a technical commission). The Vinatura label can be obtained only if the winemaker already has the grape certificate. This label enhances the winegrowing and oenological aspects of the wine. The requirements tend to reduce the use of insecticides, herbicides, acaricides, nitrogen etc. Winemakers that are interested in this certification have to go on training sessions. Vitiswiss defends and promotes the branch and encourages the integration of young people into the profession. Until now, more than 70% of the farms in the canton had obtained the Vitiswiss certificate. On the other hand, only 3% of the wine produced in the canton is Vinatura certified. The Vinatura label still has to improve its impact. The mentality of the consumers also has to evolve. They are too often attracted by low prices, regardless of quality.