

## VITICULTURAL SITES AND THEIR VALORISATION IN ISTRIA (CROATIA)

B. Sladonja<sup>1</sup>, D. Persuric<sup>1</sup>, A. Milotic<sup>1</sup>, G. and G. Cargnello<sup>2</sup>

1 Institute of Agriculture and Tourism, Porec, C. Huguesa 8, p.p. 31, 52 440 Porec, Croatia

E-mail address: barbara@iptpo.hr

2 SOP Tecniche colturali – Istituto Sperimentale di Viticoltura – Conegliano – Treviso, Italy

### Abstract

Almost the whole territory of Istria has suitable natural conditions and millenniums long tradition of vine growing. Viticulture was and stayed economically the most important branch of agricultural production. Viticultural locations in Istria are characterised by several factors as natural, productional, social and administrative. Last hundred years, sociopolitical circumstances were not supporting viticultural development. By the end of the 19. century vine stocks were planted on one third of whole arable land surface; by the cadastre in 1880. Istria had 33.847 hectares of mature vineyards (Vivoda, 2001).

Regardless the wealth and importance of natural conditions, different states that crossed through Istria in time, had agrarian policies which caused a significant decrease in viticulture locations, so in 2001. Istria had 8.277 hectares of vineyards (Governmental Office for Statistics, 2001).

Beside economical losses and non used resources, also the land devastation occurred – the land of vineyards and wine was left without pictures vineyard sites, and its known identity.

Today intensive programs for vine stock planting and landscape renovation would be unfortunately stopped by Croatia entering the European Union.

This paper presents possible administrative solutions for viticulture spreading and data on typical viticultural locations and wine from indigenous grape varieties in Istria.

Beside returning historical characteristics in landscapes, it would possibly enable a strong revalorisation of viticulture as a unique socioeconomic and ecological branch of agriculture.

### Les sites viticoles et leur valorisation en Istrie (Croatie)

Pratiquement tout le territoire d'Istrie possède les bonnes conditions naturelles pour la viticulture, laquelle dans ce lieu a une tradition millénaire. La viticulture était et reste toujours la plus importante branche de production agricole et d'économie. Les sites viticoles en Istrie sont caractérisés par des diverses conditions naturelles.

Le développement de la viticulture est le résultat de nombreuses circonstances, tout particulièrement naturelles, productives, sociales et administratives. Les événements sociopolitiques du siècle passé n'ont pas favorisé le développement de la viticulture. Vers la fin de 19ème siècle un tiers de toutes les superficies agricoles cultivables ont été plantés de vignes, plus précisément selon le cadastre de l'an 1880 en Istrie il y avait au total 33.847 ha couvertes de plantation des vignes (Vivoda, 2001). Malgré des conditions naturelles avantageuses et favorables, la politiques agricole des différents états a résulté d'une diminution de surfaces couvertes par des vignes, lesquelles en 2001 était réduites en seulement à 8.277 ha (Drzavni Zavod za Statistiku 2001). Les dégâts économiques et le non usage de ressources sont également accompagnés de détérioration de paysage. Istrie, le pays des vignes et du vin est resté sur la majorité de son territoire sans ce paysage viticole et ainsi imputé de son identité principale.

Les programmes actuels d'intensification de viticulture et le retour de paysages autochtone dominés par la présence des vignes sont menacés d'arrêt par les barrières administratives lors de l'entrée de la Croatie dans l'Union Européen.

Ce travail propose des solutions administratives possibles mais expose aussi des données sur la recherche des sites viticoles typiques ainsi que les caractéristiques sur les vins autochtones d'Istrie.

Mis a part le retour de particularités historiques a des paysages d'Istrie une forte valorisation de la viticulture en tant que secteur d'agriculture, branche socio économique et écologique non remplaçable est envisagé.

## **Introduction**

Viticulture and wine production was the main source of income for population of peninsula Istria on the eastern part of the Adriatic Sea for centuries. During one century this picture has significantly changed, although natural condition at the beginning of this period as well as today have remained excellent for production of top quality wines. In this paper are presented and analysed possible causes and consequences of such changes.

## **Materials and Methods**

In the paper are investigated changes of viticultural surfaces, assortment and wine quality from 1880. to 2001. in the context of social changes on the Istrian territory. Based on result analyses factors and possible development limitations for this activity on the territory are given.

## **Results and Discussion**

In Istria, as well as in other parts of Roman Empire vine introduction and culture of wine making was transferred from the eastern Mediterranean. In such adequate agroecological conditions a number of cultivars have been formed, which have been kept up to now due to its high quality and good economic characteristics, and vitiviniculture have become one of the most important productive activities.

Viticulture development as economic branch depends on several factors, which can be selected in few groups: agroecological, economic and social.

### **Agroecological factors**

Connection between place of vine production and wine quality was considered from the Roman times (753 BC to 476 CE), kept up to these days, even there were different opinions. Guyot and Gallesio in the first half of 19<sup>th</sup> century thought that only vine variety determines wine quality (“wine spirit lye in the vine”), but other scientists had the opinion that wine is a product of vine and environment, as such it is impossible to obtain the same wine by transferring cultivars in other conditions (Odart, Foex). Protecting the obtained reputation of singular viticulture areas, supporters of the principle considering soil influence on wine quality and its non repeatedness in other area, have promoted a concept known under name of “terroir”. Today beside “terroir”, its accepted a high influence of other factors influencing the wine quality. According to importance of influence these factors can be listed as: climatic conditions in productive year, variety, rootstock, productive location, vine load, planting distance (Scienza et al., 1987).

In the past, a crucial part in viticulture development on a particular area didn't have only natural conditions, but also demographic, social and economic conditions as well as general social occasions (wars, epidemics, market, communication development etc). As well can be assumed that in the future, besides these factors, a high influence should be considered from politics of space management and rural development, cultural and social needs, preferring way of life and especially administrative obstacles. Based on these facts and assumptions, could be said that a vitiviniproduktive system on particular area is conditioned by a complex interrelations of natural and social factors. Even the best viticultural sites in ideal natural conditions will remain non utilised, if social-economic conditions are non favourable for viticulture development, and in favourable social conditions this activity can give significant contribution to rational use of disposable resources and global rural area development.

Soil and climate are determining natural factors influencing vine growing. According to natural conditions, agricultural area of Istria can be divided into three areas. The first, embracing a plane area of municipalities and towns of south-western coast. The second embracing a hilly and highland area of central and eastern peninsula part, and the third with north-eastern mountain area. On the whole Istria peninsula, except for the north-eastern mountain area and fluvial valleys, there are favourable natural conditions for vine growing, as well as a long tradition of its cultivation. According to climatic characteristics it is almost a homogeneous area, while the soil is heterogeneous with several soil types on flysch in northern and central part and red soil and brown soils in south-western and southern vine growing area. The most frequent soil types on which vine is grown are red soil, brown soil on limestone and dolomite (calcocambisol) and anthropogeneous soils (rigosols). Climate in Istria is characterised by mild and rainy autumns and springs, moderate cold winters and dry, warm summers.

Very important factor of Istrian climate is Adriatic Sea, whose influence is higher in west (Porec) and southwestern Istria (Pula area). Central hilly area (Pazin) is less influenced by sea influence and in this area are more accentuated continental characteristics. Mountain area of Ucka and Cicaria have characteristics of highland climate. In the Figures 2-4. data of thirty years average of monthly temperatures and precipitations in three typical areas Porec (west coast), Pula (south) and Pazin (central Istria) is given. According to global natural conditions this area is particularly suitable for vine growing and production of quality and high quality wines.

#### Economic factors

Croatian viticulture area is divided in two regions (Continental region and Coastal region) and 12 subregions, each subregion in vine-growing areas. Istria is a unique subregion with three vine-growing areas: Western Istrian, Central Istrian and Eastern Istrian area<sup>1</sup>. From totally 6.735 ha of vineyards, 5.306 ha or 78,78% are situated in Western Istrian wine-growing area. In the Central area are 1.126 ha (16,72 %), and in the Eastern area 303 ha or 4,50 %.

In total arable surfaces share of vineyards (80.655 ha) is 8,35 % and vine s economically the most important years-long culture on the whole Istrian territory. Except for its economic importance, viticulture is important also for area protection, typical landscape preserving and protection of cultural and natural heritage. On viticultural development in singular vine-growing areas influenced several factors, mostly natural conditions (relief, soil, agricultural land), and productive conditions (productive areas size, mechanisation use and application of mechanised technological processes). Economical success of viticultural production depends on natural effects and invested inputs. Considering the possibility of intensive production, bigger plantation size, higher effectiveness of mechanisation and labour, lower limitations in area protection (water protection, erosion), characteristics of plains area usually give higher economic effectiveness of viticulture in comparison with slope areas. Also, investments in plantation raising are lower, because there is no need for protection against erosion (terraces construction), and a permanent capital investment per plantation unit size is lower than for hilly area. Lower grape quality in intensive production on plains production, attempts to be compensated with modern wine processing technology choice and good marketing.

Even if with lower economic effectiveness, viticulture in central hilly area is not less important. From the economic point of view a contribution in space protection should be considered: namely, vineyards are no more only space users but also serve for its preserving (erosion, fires etc.). From social aspects this activity is important for its men keeping in demographically most sensitive areas, traditional way of life culture and typical vineyard landscape preserving.

Grape quality and wine production enhancing of this area was a research subject of many researches of the 19<sup>th</sup> century up to now. For illustration of the success of this work, as well as of the quality level the Exposition in Vienna in 1890 can be mentioned, when Istrian wines have obtained the highest number of prizes and special rewards. Recently, from the 1994. each year is going on a regional exposition of wines and typical Istrian products in Porec where a wine quality are evaluated according to international organoleptic evaluation criteria. A number of wine samples evaluated as high and top quality wines can also be an indicator of vine growing area and assortment potential, as well as potential of modern processing technologies and wine care applied by local producers. In the last ten years local producers achieve great results on national exposition winning medals for their wines.

This long agricultural tradition claimed for an institution where a new ideas and modern technologies in agriculture will be developed, and actual problems will be solved. From the foundation of the Institute for Agriculture and Tourism in Poreč, in the year 1875. research activities in agriculture are ongoing. Some researches are of basic theory interests and some applied and aimed to help and enhance agriculture development on the territory. Research results have been presented as final project results, published in scientific papers or presented at national or international symposiums. Thematic of particular interests are: biological, ecological viticulture aspects (Sladonja et al., 2001), technology development in viticulture and viniculture (Persuric et al., 2002; 2003), biodiversity preservation and autochthonous varieties (Poljuha et al., 2004), pedologic characteristics (Persuric et al., 1998). Istria with its long viticulture tradition has developed in years a number of autochthonous varieties giving

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<sup>1</sup> Wine law, N N number 34/96.; Wine legislation, N N number 96/96.

excellent typical wines of the region. Some of those are left with a few vine trees and we are now trying to preserve and revalorise them.

In viticultural assortment of the 19<sup>th</sup> century, teran (red variety) was dominant. Besides teran, other varieties are mentioned such as refosk, plavinica, hrvatica, trebijan, garganja, izolano, gustano, pogadebic, pucolino, cibica, malvasia etc. Malvasia as wine variety has for the first time gained importance on its presentation during Great Jubilean Exposition in 1891. in Zagreb, and in the 20<sup>th</sup> century becomes a prevalent variety. This was an announcement of white grape varieties spreading in Istria (Vivoda, 2001). Today, the most known autochthonous grape varieties in Istria are Istrian malvasia, teran, hrvatica, borgonja, Muscat rose of Porec and momjan white Muscat. The well-known location for teran growing is Motovun. Momjan white muscat wine is a characteristic product of Buje and Momjan area. These particular positions give wines of high quality with discrete muscat aroma. Western Istrian coast is known for its red wines hrvatica, borgonja and muscat rose of Porec. Malvasia is spread all over Istria but the most suitable positions are along west Istrian vine-growing area (Persuric et al., 2002).

### Social factors

Grapevine destiny is strictly linked to man fate and human society development. It is sufficient to remember a catastrophically devastating consequences caused by filoxera and diseases came from America by traffic intensification between two continents. On the other hand, communication development enabled grape transfer in new areas where have spread rapidly and become a concurrent for European grape and wine production (North and South America, South Africa, Australia and New Zealand). Industry development, urbanisation and following deagrarisation, have led the whole agricultural activity, and especially viticulture in a difficult position. Globalisation processes and capital promoting in a sense and aim of living, even if causing a one-way disruption of natural balance and loss of human habitat, have forced a part of economically developed countries to changes in economy and natural resources preservation. This is primarily referred to total agricultural activity, since it is going on rural areas (which is a majority of national territories) and it is a potential water and soil polluter. On the other hand, a men presence on a certain area enables the execution of protection measures and maintenance of soil fertility. These measurements can be rationally performed with productive activities by applying suitable technological procedures, respecting economical principles inside given limitations. Changes in agricultural production are conditioned with changes in as surrounding and with relation of the whole society towards this activity.

Data analysis on vineyard surface changes (Figure 1.) on Istrian territory give a picture of great influence of natural and social conditions on intensity and dynamics of these processes.

A period of 120 years (1880-2001) and trend of vineyard surfaces reflects three social and natural events and economy policy in four different states that have been replaced on this territory.

Year 1880. has been taken as a period before the appearance of filoxera. Total vineyard surfaces are 33.847 ha, viticulture is the most important agricultural activity, and wine is a main product of this typically agrarian area with the market on the territory of Austro-Hungarian Empire. The basements of the assortment are red autochthonous varieties.

Period between 1880. and 1910. as marked with a viticulture disaster caused by the appearance of filoxera and after with vineyard renewal on American rootstocks with native and introduced quality European varieties. New vineyards have been raised on smaller surfaces (25.000 ha), but are more productive, and that's a period of the biggest grape, and respectively wine production. National policy is directed to viticulture preservation as an important economy activity and vineyard renewal after filoxera.

Soon after a process of Austro-Hungarian decay started, and also began the First World War (1914), after which on this area enters a new state – Italy (1918). In this period a vineyard surfaces diminished to about 17.000 ha (1921), and before the Second World War (1939) were 12.576 ha. National policy was directed to increase a production of cereals, which resulted with an increase in field crops suffering damage to other cultures (vineyards too).

After the war and proclaiming the new state – Jugoslavija, a decreasing trend was somehow slower, also because of changes in statistical data gathering.

National economical policy was not incline to agriculture development and due to deagrarisation processes caused by economic and social-politics measures, decreasing trend of agricultural and vineyard surfaces is further ongoing.

These tendencies follow even after 1990. when a Croatia Republic, with Istria as one of the regions, separates and become independent.

Positive changes in economy policy to the benefit of agriculture at the beginning of the 21<sup>st</sup> century could stop negative processes and stimulate a new developing cycles on Istrian territory. The aim of having 20 % of arable land or 16.000 ha planted with vineyards can not be achieved by the expected integration of Croatia in European Union (year 2007). That's why there is a risk that relatively large typical vineyard surfaces will remain unplanted, if that would be a final deadline for realisation of this program. Farmers would lose the possibility to utilise the most quality resources of this territory, and viticulture a valuable high quality product.

Administrative regulations that impede vineyard planting for EU members give certain possibilities to members or candidates to solve this problem in accordance with national and regional conditions and public interests (planting and replanting rights)<sup>2</sup>. There are several reasons for a special approach to vineyard renewal program realisation in Istria. Besides the already mentioned, changes of social policy system and necessary transition period as well as adaptation of agrarian system to market economy should be considered. It is aspect that also in states EU members some typical vineyard positions are not utilised due to administrative limitations. The example of Istria in Croatia as a potential EU member show how incalculable consequences on typical historical vineyard sites could happen. Thus, regardless to long tradition, typical vineyard sites, valuable autochthonous varieties in vine growing areas of Croatia, administrative obstacles could become limitation factors for development of whole regions (Istria, islands, Mediterranean and continental hilly locations), and as such of the state in a whole. Grapevine as a traditional culture on several landscapes may not be renewed, or be promoting activity on many areas in Croatia, if we not provide this possibility in EU access documents.

### **Conclusions**

A crucial role in viticulture development on Istrian territory had besides natural factors, demographic, social and economic conditions as well as global social events (wars, epidemics, market, communication development etc.)

Based on society development could be assumed, that besides mentioned factors, a great influence on viticulture development will also have: space management and rural development policy, cultural, cultural and social inhabitants needs, preferring way of living and especially administrative obstacles. Starting from these facts and assumptions could be said that vitivincultural system on a territory is conditioned by complex interrelations between natural and social factors. Even the best viticultural positions in ideal natural circumstances will remain non utilised, if social economic conditions are not favourable for viticulture development, and in optimal social conditions this activity can give a significant contribution to a rational use of disposable resources and global rural area development. Possible forthcoming administrative obstacles of viticulture development in Croatia, as an access EU member, should be overcome by providing a necessary transition period for plantation raising on historical typical viticulture sites.

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Figure 1. Vineyard surfaces trend from 1880. to 2001.

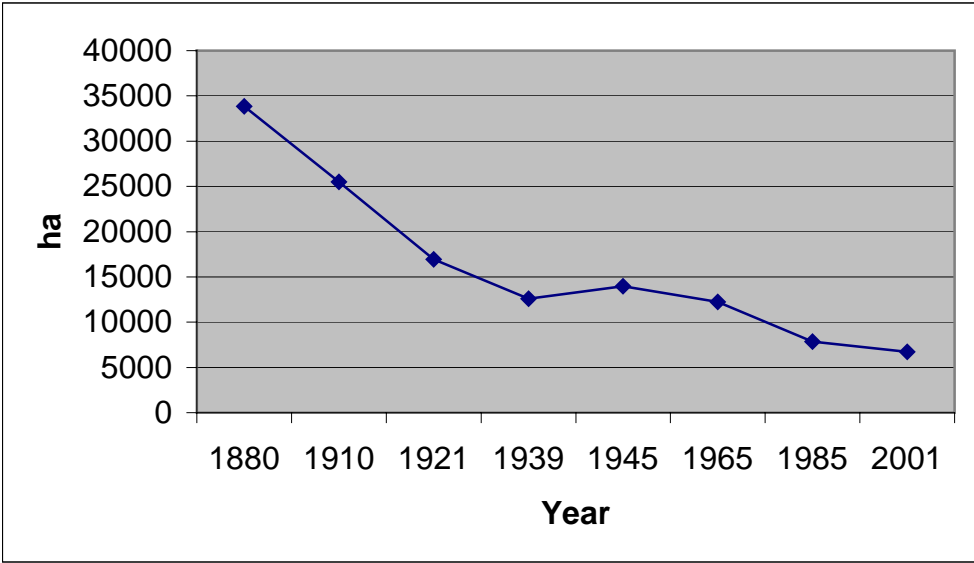


Figure 2. Climate diagram for Porec (western Istrian coast), average data for period 1931.-1960. (Altitude 15m; Average annual air temperature 13.4 °C; Average annual precipitations 869 mm)

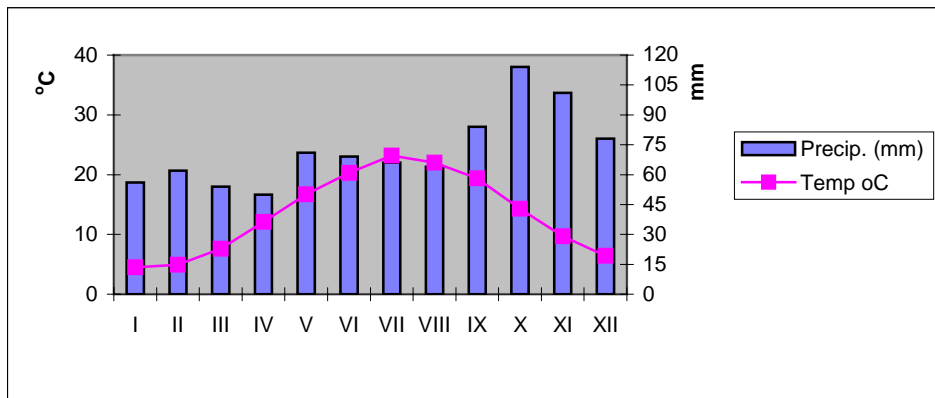


Figure 3. Climate diagram for Pula (south Istria), average data for period 1931.-1960. (Altitude 30m; Average annual air temperature 14.1 °C; Average annual precipitations 710 mm)

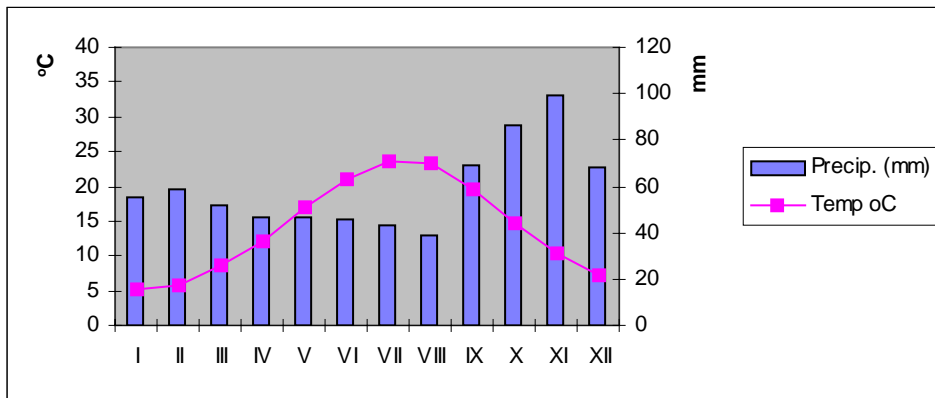


Figure 4. Climate diagram for Pazin (central Istria), average data for period 1931.-1960. (Altitude 291m; Average annual air temperature 11.3 °C; Average annual precipitations 1072 mm)

