

# **Environmental protection by means of ("Great")**

## **vitiviniculture zonation**

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### **ABSTRACT**

In the paper is discussed the first example of environmental protection, agreed in a wide term sense, by means of vitiviniculture zonations performed in Istria (Croatia) in the area of Butoniga lake, following a methodology of "Great zonation" (Cargnello G. 1998). For vitiviniculture zonation of this area we started from social and economic considerations, to come later on technical, as for example those related to "terroir". This not only because in this area, aspects of human and animal water supply and protection were fundamental, but also because this operation model is predicted in "Great zonation". Therefore, as always should be done, zonation descended primarily from social and economic aspects. This set out allowed to emphasise that for example some soils and microclimates not particularly suitable for wine growing according to standards expressed through "pedology" and "climatology", if considered from the economic and social level can results particularly propitious for wine growing and vice versa. In the present paper are shown results related to environmental protection through zonation ("Great zonation") in an relevant area in Istria from social and economic point of view. Location and valorisation of vitivinicultural "terroir" should by every mean, in our opinion, descend from and harmonise with social and economic aspects, and thus with "Great" regulatory plan, agricultural, viticultural and vitivinicultural.

### **KEY WORDS**

Environmental protection, great vitiviniculture zonation, Istria, Croatia

### **1. INTRODUCTION**

From the economic and social point of view vitiviniculture sector is of fundamental importance in Croatia, and particularly in Istria (Lizul L. et al., 1997; Milotić A. et al., 1996; Peröurić G. et al., 1997; Peröurić G. et al., 1998). Starting from this, basic researches have been performed from which derive an urgent necessity of giving a significant impulse, for example: 1) to evolution of vitivinicultural sector, from all the aspects, (particularly research and formation), in order to co-ordinate it better with environmental protection, society requests, market demands and businessman requests, 2) to research, rapid formation and diffusion of obtained results.

As already mentioned in some former researches (Milotic, A. et al., 1999.), a care for lake Butoniga is of great importance for Istria because of its function as a principal water supply accumulation. In the first place it is all about the adequate management of lake surroundings which has to comply with two main goals:

1. erosion and rinsing prevention from adjacent slopes in the lake
2. use of such agrotechnical solutions in agriculture productions not causing any negative impacts on environment, primarily on water in Butoniga accumulation.

Therefore, it emerged the necessity to promote growing cultures resistant to drought in July and

August, with high income per unit, non polluting, in harmony with territory, landscape and social aspects which suggest to keep in loco the population, in harmony with seasonal employment determined by tourism and tourism itself.

## **2. MATERIALS AND METHODS**

In accordance with mentioned viticulture, zonation had to start (descend), (as it did) and become concrete in function of specific and peculiar "LARGE" regulatory general programmes of the area: 1 - general, 2 - agricultural, 3 - viticultural and vitivinicultural ("Large" viticulture zonation), obviously different for two areas.

Therefore this zonations were started first of all from social and "economical" considerations, but having in mind also considerations of "Unité de Terroir de Base" (UTB) (Morlat R., 1996), "Système de Culture Viticol" (SCV) (Carbonneau A., 1996) and "Système de Transformation et Valorisation" (STV) (Carbonneau A., 1996). These technical considerations ("Small" Zonations) couldn't be subordinate, as they were by those social and "economic". It descends, as we'll be able to see, that even soils and climates non particularly suitable for vitiviniculture have been included in this vitivinicultural zonation and vice versa.

Moreover choosing a vineyard and product model it was taken account a global benefit (Social "benefit") of the area, besides those of the enterprise. Thus in Zonation Butoniga lake was taken into consideration primarily a soil protection around the lake and a polluting component of frenetic layers flowing in lake.

Initial researches started in 1983, carried on till 1992 and were intensified from 1997. After delimiting the research area and established a final objective of the zonation (social and economic) for specific areas have been performed analysis of:

1. politics, regulations, its uses and relative customs;
2. regulatory programmes (general, agricultural, viticultural and vitivinicultural);
3. social and economic environment;
4. technical environment regarding systems, units, aspects and components of productive global system of "territory".

As mentioned before, following a general methodology on level of "filiera" set out by one of us (Cargnello G., 1994 and Cargnello G., 1998), those of main research project regarding the Butoniga lake area management (Petrao J. et al., 1993) and the one developed in the Institute for Agriculture and Tourism in Poreč (Perourić Đ., 1995).

In the paper are also presented results of proper researches conducted by family holding polling in the area adjacent to Booting lake. Holding choice criterion in the sample was its designation to durable dealing with agriculture and the will to participate in the project realisation.

## **3. RESULTS AND DISCUSSION**

The Butoniga accumulation lake is situated in northern part of central Istria and it was constructed because it must satisfied a need for drink water and, in the same time, it helped from floods interested agricultural areas in Mirna river valley. The catchment area of the reservoir extends to 7300 ha, mostly of flysch sediments with altitude oscillations from 25 to 500 m and pronounced erosion on 90% of surfaces. This area also comprise agricultural land, which covers 41% of river basin surface. Land frequently cultivated is more likely subject to soil erosion, as arable land and vineyards. Research project "Protection of the Butoniga Reservoir from Erosion and Torrents" is a part of wider programme for Adriatic protection and one of the aims is "determining of optimal system for agricultural

production for achieving the best anti-erosion effects, and to limit a potential water pollution by agrochemical" (Petraö et al., 1993.). The whole river basin area is because of named problems (erosion) and strong anthropogenic influence established as a protection area. Behind the first protection belt (alongside lake) begin agricultural surfaces.

In a basin area of Butoniga lake live 2012 inhabitants in 25 settlements. From 469 house holdings almost all are pluriactive and besides agriculture deal also with other activities, the most of habitants are employed in near bigger towns.

On the basis of research questionnaires in the following table data about the age groups of holding's members are presented.

Table 1: Age groups.

	Total		Age groups		
		<14 years	15-27 years	28-59 years	>60 years
Members number	160	38	40	61	21
Share (in %)	100	24	25	38	13

Polling comprised holding with 5 members on average. Inside the group, 63% are working active from 18-60 years) which is a very high share and guarantee that labour needs will be completely satisfied. Moreover, number of 49% of young people (up to 27 years), tell us that it an area with a good perspective in the future, since this is a biggest wealth for an area. Therefore, also the aim of the present paper is to give incentive to young people and enable dealing with agriculture on the profitable way, ensuring an satisfying life standard.

Total land surfaces and its use is the following:

Total	7256 ha
Cultivable land	2292 ha
Meadows and grassland	2566 ha
Woods	1874 ha
Unfertile	522 ha

In the following table are shown the disposable production capacities in an average family holding: land surface structure, number of each mechanisation type and livestock.

Table 2: Production capacities

	Average per holding						Mechanisation (in %)		Cattle
	Vine-yards	Orc-hards	Arable lands	Meadows and pastures	Non arable	Total	Tra-ctors	Moto-cultivators	
Surface	0,41	0,04	1,54	5,35	1,21	8,65	0,9	0,9	1,3

(ha)									
Share	4,8	0,4	17,8	61,9	13,9	100,00			
(in %)									

Analysing the holdings we came to data that they own totally 31 tractors and the same number of motocultivators, which is compared to 67,7 ha of workable land too much, respectively one tractor of 40 H.P on average, comes to 2,2 ha of workable surfaces. When its considered that from workable land, 75% falls on arable land, respectively to sowable (seed) crops, it comes out that holdings own fund of tractors with too much power, which is one of main causes of family holdings non efficiency in global. This is of course also the consequence of parceling and fragmenting of properties.

The solution of this problems should be looked in amplifying of such cultures giving higher economic effect per production surface unit, firstly of woody agrarian cultivations, applying some other vine-growing techniques, especially in engrassment (there are no particular summer drought) and in disease and pest protection, it came out that vine is advantaged culture from the economic and ecological point of view. Production structure should be changed in order to increase vineyards decreasing arable land from 183 to 585 hectares, increasing a total production value, and what even more important of total market value. This would create condition for employment of 25% family house holdings (117), which could create a satisfactory income for a permanent employment of one family member with a vineyard surface of about 5 hectares.

Considering the agrotechnical conditions of this area, there are no enough suitable vine-growing locations. Problem is even more complicated because vineyards must be placed closer to settlements, respectively close to paths and communications. According to rough estimations, typical vineyards locations are only 50% of those needed for a realisation of viticulture programme in this area, for this reason non typical vineyard locations will be also used (northern exposition, bigger inclination, smaller parcels, shallow arable layer, wood nearness). All of this has the aim of developing the product linked to environment, developing the high quality tipicity preferred by consumer (preference), using if possible autochthonous varieties and viticulture models (varieties, clones, cultivation forms, cultivation management, etc.) which doesn't create problems of labour in tourist season.

Expenses for plantation raising in comparison with other kind of helps for population retaining in this area (standard measures) are lower, respectively for soil and water protection, as well as for a protection of the accumulation itself. Namely, without the anti erosive protection, the accumulation would fill up in next 30 to 50 years (Pavletić, Lj. and coop., 1993.).

#### 4. CONCLUSION

The basic agricultural activity in the are adjacent to Butoniga lake should become a viticulture production, because of:

1. working out of existing terraces will in big part diminish land rinsing and mud choking of the accumulation, which will contribute to rational managing of space and to its protection and landscape and estetic preserving,
2. use of such technical-technological solutions which don't pollute the environment, and especially are not harmful for water in the accumulation,
3. with this production, in relation to other acceptable it is possible to achieve higher economic-financial advantages.

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