

VITICULTURAL SYSTEMS IN WESTERN ROMANIA IN THE CONCEPT OF THE SUSTAINABLE DEVELOPMENT

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ABSTRACT

The researches took place in the Western part of the country, in the wine-growing areas of: Receaș, Silagiu-Buziaș, Teremia, Miniș. They aimed at the sustainability of the viticultural systems as systems of production and ways of sustainable rural development. There are well organized holdings, with large areas, a great varietal assortment and adequate culture technologies. At the same time there are also small and medium sized holdings which have insufficient financial resources, and also possess plantations with different degree of biological degradation, with inadequate varietal assortments and a minimal culture technology. We consider that is necessary to maintain all the autochthon cultivars in the assortment, in order to create diversity and variability through which to enter, under the effect of some high-tech culture and wine making technologies into the global wine market.

Key words: viticultural systems, sustainable development, vine assortment

INTRODUCTION

The sustainable development grants a special attention to the management of the territory, considered in its whole as an environmental complex system and also to the optimization of the processes of agricultural production, starting from an evaluation of their concordance.

Within the concept of sustainable development of the territory, one fundamental element is the adoption of a general strategy of the development that correlates and integrates the ecologic, economic and social issues as major elements of the agricultural systems and of the rural environment, in short, medium and long term time sequences.

In this context, the agricultural production systems among which the viticultural systems can contribute to the sustainable development of the rural localities.

In the agricultural systems, as an ensemble of ecologic, economic and social elements, man operates in two directions in order to enhance the performances of the system, fig. 1.

It is necessary and very important for these measures to be applied differentiated, depending on the pedoclimatic conditions and the agrobiologic particularities of the cultivated cultivars and varieties, but also unitary, in order to the agrophytotechnic treatments to complete their efficacy and to determine the viticultural production growth and enhanced quality, the maintaining or the increasing of the soil fertility, the increasing of the exploitations efficiency and maintaining the natural equilibriums.

Romania is one of the main wine-growing European countries, with a high potential and an ancient tradition in what concern the vine culture. The evolution of the viticultural systems in Romania must be analyzed in the context of nowadays social-economic and political conjuncture.

After the negotiations with the E.U. the viticultural potential of Romania comprises several categories, presented in table 1.

Romania has 8 wine-growing regions that comprise numerous vineyards and wine-growing centers. An important wine-growing region of Romania is the Western part,

which represents a region with a long tradition and experience in what concerns the vine culture. It ensures favorable and very favorable conditions both for the culture of table grape cultivars and especially for the wine cultivars.

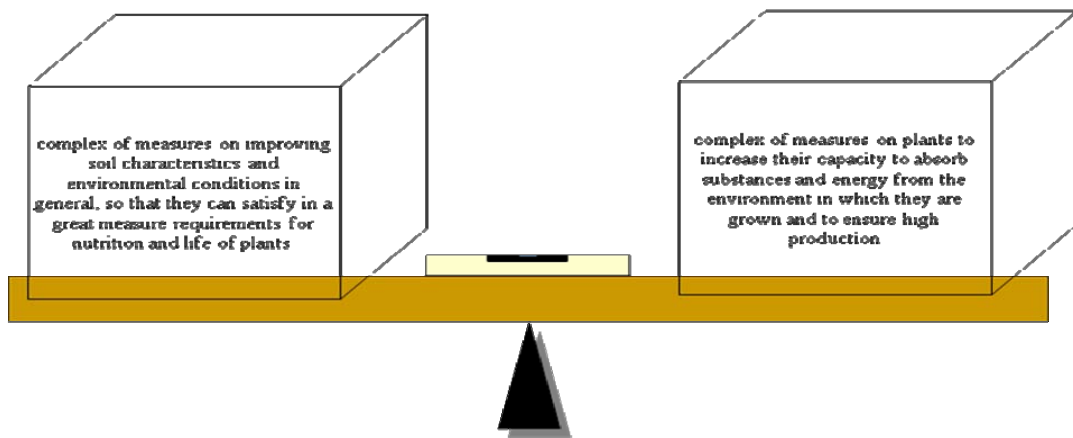


Fig. 1. All the measures undertaken by man to harmonize the process of agricultural production.

Table 1

Wine-growing area of Romania

Wine-growing area recorded in the register	189.338,0 ha
Wine-growing area occupied with parcels of <100 m ²	8.648,9 ha
Replanting rights (replacing HPD established at the negotiations)	30.000,0 ha
Supplementary replanting rights (granted at the negotiations)	2.830,5 ha
National reserve (cleared surface in the last 5 years)	9.182,6 ha
TOTAL	240.000,0 ha

The main wine-growing centers from this region are: Receaș, Silagiu, Teremia, Tirol, Miniș.

An important part of the wine-growing area of the country is unfortunately uncultivated, occupied with aged vines from a biological point of view or affected by a number of limiting factors, maintained by bad technology leading to a reduced productivity.

MATERIAL AND METHOD

Researches have been conducted in the Western area of the country, in wine-growing areas: Receaș, Silagiu-Buziaș, Teremia, Tirol, Miniș. They aimed at the sustainability of viticultural systems as production systems and means of sustainable rural development. We approached these issues through the pedoclimatic potential, the varietal assortments and culture technologies.

In this respect we did some findings and determination in 4 wine-growing holdings of Receaș center, 2 wine-growing holdings of Miniș center, 6 wine-growing holdings of Silagiu-Buziaș center and one wine-growing holding of Tirol-Jamu Mare center. Wine-growing holdings that are subjects of the research have areas ranging from 5-700 ha.

RECAȘ WINE-GROWING CENTER. It is located at 20-30 km North-East of Timisoara. Main wine-growing areas are: Izvin, Herneacova and Giarmata. This wine-growing center stand out by superior quality wines, both red and white (made from red varieties: Cabernet Sauvignon, Pinot noir, Merlot and Burgund, and white: Italian Riesling, Fetească regală, Muscat Ottonel).

SILAGIU-BUZIAS WINE-GROWING CENTER. It is situated in Timiș county, near Buziaș town and includes Dealul Silagiului and Bacova. Wine-growing center Silagiu has as its main production orientation white and aromatic wines of high quality (predominant cultivars are: Italian Riesling, Sauvignon and Muscat Ottonel.). Red wines of high quality are also produced from the cultivars: Cabernet Sauvignon, Pinot noir, Merlot and Burgund.

TEREMIA WINE-GROWING CENTER. It is situated in Timiș county, North of the city of Timisoara near the border with Serbia. Main orientation of production is the production of current consumption white wines from local cultivars: Creață, Majarcă albă, Fetească regală and Muscat Ottonel.

MINIS-MADERAT WINE-GROWING CENTER. It is situated 20 km east of the city of Arad and includes wine-growing centers Miniș and Măderat. Between the two wine-growing centers there are large eco-climatic differences, so there are differences in assortment. At Miniș cultivars for red wines of high quality prevail (Cabernet Sauvignon, Pinot noir, Cadarcă, Merlot, Burgund), followed by white wine cultivars for high quality (Italian Riesling, Fetească regală, Muscat Ottonel).

La Măderat in the foreground there are cultivars for current consumption white wines represented by Mustoasă de Măderat, considered as a local cultivar, and by Fetească regală. Also current consumption red wines are obtained with the cultivars Burgund Mare, Sangiovese and Oporto, as well as white wines of high quality on relatively small surfaces from the existing cultivars in Miniș wine-growing center (Italian Riesling, Fetească regală, Muscat Ottonel).

TIROL WINE-GROWING CENTER. Altitude 165 m. It is situated at 30-40 km West of the city of Resita and includes areas belonging to Caraș-Severin county (Doclin, Berzovia) and areas belonging to the county Timiș (Jamu Mare). Heliothermal resources are lower than those required of vines, and the hydric ones surpass the requirements of this culture. The main orientation of production is the production of red wines of high quality from the cultivars: Cabernet Sauvignon, Pinot noir, Merlot and Burgund, but also of the white wines of high quality from the cultivars: Italian Riesling, Fetească regală and Muscat Ottonel.

RESULTS AND DISCUSSION

Given the reference data, the region of Western Romania provides favorable conditions and very favorable for the cultivation of vines. Heliothermal index has values between 2.04 at Receaș and 2.27 at Teremia.

In terms of hydrothermal coefficient, with Teremia we noticed a slight deficit of precipitations, while other areas are balanced in this regard. Regarding absolute minimum there is a greater climatic risk for Teremia area which is also situated on a relatively plane terrain.

After the data provided by www.timis.insse.ro the region of Western Romania includes the following wine-growing areas (Table 2).

Cultivation of vines in the economic efficiency is possible through application of advanced technologies, but it depends very much on how the environmental resources of the area of culture satisfy the requirements of biological biotypes grown.

Based on studies and researches shown we present in the summary, in Table 3, the ecologic resources of the reference areas in our area of study.

After the presented data it is shown that the region of Western Romania provides favorable conditions and very favorable for the cultivation of vines.

Table 2

Fruit-bearing vines surfaces in 2007 (hectares)

Region/County	Fruit-bearing vines - total		Grafted and indigenous vines		Hybrid vines	
	Total	Out of which: majority private property	Total	Out of which: majority private property	Total	Out of which: majority private property
Arad	2524	2524	2104	2104	420	420
Caraș-Severin	554	554	350	350	204	204
Hunedoara	11	5	6	-	5	5
Timiș	2644	2644	2249	2249	395	395
Total Western Region	5733	5727	4709	4703	1024	1024

Table 3

The synthesis of pedoclimatic conditions

Wine-growing center	Heliothermal index (IH)	Hydrothermal coefficient (CH)	Temperature °C			Soil types
			Absolute minimum	Absolute maximum	Multiannual average	
Recaș	2,04	1,1	-31,6	40,5	10,6	Iluvial-brown-clay, Brown luvic
Buziaș-Silagiu	2,01	1,5	-30,1	41,2	10,8	Iluvial-brown-clay, brown eu-mezobasic, regosoils
Teremia	2,27	0,9	-34,5	42,0	10,7	Chernozem, Eluviated chernozems
Tirol	2.17	1,1	-28,7	40,8	11,4	Iluvial-brown-clay
Miniș-Măderat	2,11	1,3	-24,7	41,5	11,2	Brown eumezobasic, typical Iluvial-brown-clay regosoils

In terms of hydrothermal coefficient, Teremia stands out by a slight deficit of precipitation as compared to other areas, balanced from this point of view.

This area, located on a relatively plane terrain is also a greater risk climate.

In certain conditions of some favorable pedoclimatic resources, the success of vine culture depends on the cultivar grown and the technology applied. From this point of view of wine-growing holdings from the studied areas are very inhomogeneous.

There are well organized holdings, on large areas, an advanced varietal assortment and proper culture technologies, while there are usually small and medium sized enterprises with insufficient funds, which own vineyards with different degrees of biological degradation, with the inappropriate varietal assortment, and with a minimal culture technology.

In table 4 we present synthesized in comparison some technologic elements practiced by the wine-growing holdings with remarkable economic results and also by the less profitable wine-growing holdings.

The main elements that determine the effectiveness of the culture of the vines are: the biologic material, culture technology, products obtained, quality of production, technology of wine production, the capitalization of production. In the researched areas of culture these elements are uneven depending on the wine-growing holding concerned, so in Table 5 we show the average results obtained with the specification that in each area investigated there are holdings with different degree of efficiency.

Table 4

Comparative analysis of some technological elements
practiced in various wine-growing holdings

Technologic element	Holdings with remarkable economic results	Holdings less profitable
Cultivars and byotypes	Ameliorated , autochthones, universal, zoned	Direct productive hybrids , old local cultivars
Soil works	Complex systems for maintenance of the soil	1-2 weeding
Pruning	Rational, depending on the cultivar, vigor, at the right moment	Fluctuating, with uncorrelated loads over or undersized
Phytosanitary treatments	Preventive, following complex schedules , correlated to the climatic conditions	1-2 treatments effectuated randomly , usually with cheaper phytosanitary products

Table 5

Comparative presentation of some elements of the studied wine-growing systems

Analyzed element	Investigated area				
	Buzias-Silagiu	Recas	Minis-Măderat	Teremia	Tirol
Biologic material					
Ameliorated cultivars	75%	90%	70%	60%	70%
Direct productive hybrids	10%	4%	5%	20%	5%
Local populations	15%	6%	25%	20%	25%
Technology					
Pruning	Well executed	Very well executed	Well executed	Satisfactory	Well executed
Fertilization	Insufficient	Equilibrated	Moderate	Absent	Insufficient
Phytosanitary treatments	Insufficient and satisfactory	Sufficient and well executed	Insufficient and satisfactory	Insufficient and inappropriate	Insufficient and satisfactory
Productions	Reduced, medium quality	Big, quality	Reduced, medium quality	Reduced, low quality	Reduced, medium quality
Wine making technology	Inappropriate	Very good	Satisfactory	De tip familial	Inappropriate
Production capitalization	Inappropriate	Very good	Satisfactory	Inexistent	Inappropriate

Western Romania is notable for a variety of local cultivars and biotypes, some truly valuable, which mostly are very little known, perhaps only by those in whose household are located, requiring their popularization.

Maintained local biotypes and cultivars are grown in households, after a minimal technology, which in most cases is limited to pruning, harvesting, weeding possibly 1-2.

The phytosanitary treatments are either missing or limited to 1-2 spraying with copper sulfate, which leads us to say that the grapes produced can be considered ecologic grapes, and the harmful impact of technology on the environment is very low, almost nonexistent.

However there are local cultivars and biotypes noticed through big productions, pleasant commercial aspect of grapes and balanced content in sugars and acidity, which in

terms of suitable culture technologies could create premises for obtaining exquisite wine products.

Certainly there are still many enclaves with their own very valuable wine germplasm which in the conditions of a superior usage would become an important source of diversity and variability.

CONCLUSIONS

Because of aggressive policies of the great wine-growing countries (France, Italy, Spain) and some countries that in recent years have entered into the wine-growing charts (Argentina, Chile, South Africa, Australia) world of wine has become very competitive whom can only cope with high-quality wines and typical traditional wines that bring more diversity and authenticity.

Autochthon cultivars Fetească regală, Fetească albă, Creată , Mustoasă de Măderat, Fetească neagră or Cadarcă proved to be valuable and very valuable that produced singly or in various blends lead to the achievement of quality wine bearing the fingerprint checks, without diminishing very more quantitative aspect.

We consider necessary to maintain all autochthon cultivars in assortment and even discovering or rediscovering of other local cultivars to create the diversity and variability that we can access, in terms of advanced technology of cultures and wine making, in the world of wine.

We consider essential developing appropriate technologies to maximize the local biologic potential and improving it.

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