ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume LX 43 Number 2, 2012

# STRATEGIC DEVELOPMENT OF VARIETAL VINEYARDS IN THE CZECH REPUBLIC

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**Received: November 30, 2011**

## Abstract

SEDLO, J., TOMŠÍK, P.: *Strategic development of varietal vineyards in the Czech Republic.* Acta univ. agric. et silvic. Mendel. Brun., 2012, LX, No. 2, pp. 325–334

The paper describes strategic changes in the structure of grapevine (*Vitis vinifera* L.) varieties grown in the Czech Republic. In 2004–2005, (i.e. after the admission of the Czech Republic into the EU) expenditures associated with restructuralisation and transformation of vineyards amounted for CZK 25,423 thous. The authors examine the development taking place in this domain within the last 50 years (i.e. from 1960 to 2010) and pay detailed attention to the period of 1989 to 2010. The paper analyses reasons of these changes and tries to describe the future development expected after 2010. The current production potential of the Czech Republic are 19,633.45 hectares of vineyards. For the time being, there are in average 1.07 wine growers per hectare of vineyards.
As compared with 1960, the acreage of vineyards has doubled up and the number of the most frequent varieties has also increased. Within the period of 1989–1990, four varieties (i.e. Müller Thurgau, Green Veltliner, Italian Riesling and Sankt Laurent) occupied more than 60% of the total vineyards area in the Czech Republic, whereas at present there are altogether 8 varieties (Müller Thurgau, Green Veltliner, Italian Riesling, Rhein Riesling, Sauvignon, Sankt Laurent, Blaufrankish, and Zweigeltrebe) at the nearly the same acreage.
As far as the percentages of Müller Thurgau, Green Veltliner, Italian Riesling and Sankt Laurent varieties is concerned, it is anticipated that their acreages will further decrease, whereas those of Rhein Riesling, Sauvignon, Blaufrankish and Zweigeltrebe are expected to grow. The industry is under pressure of all Porter's five forces of competition from external sources.

strategy, structure, attractiveness, trends, grapevine varieties, development, popularity of varieties, vineyard area

In the course of years, not only the economic importance of individual industries but also of their structure is changing. This means that it is necessary to change and modify also the strategy of each industry under study. As far as viticulture and oenology are concerned, it is obvious that both of them are of strategic character and that also the decisions about their future and development are of a long-time nature.

After 1989, Czech viticulture passed through a period of marked changes that concerned crucial and strategic decisions about the choice of prospective assortment of grapevine varieties and structure of vineyards. The most important changes took place within the period of 2000–2004. This restructuralisation was induced by economic and political changes of 1989, which enabled the introduction of the Act on viticulture and winemaking, 1995. In 2004, the Czech Republic entered into the European Union and for that reason it was necessary to amend and pass the new Act No. 3321/2004 Coll., on viticulture and wine making. The Czech national legislation on viticulture was further specified and during this process several related acts were passed by the parliament (e.g. Act No. 179/2005 Coll., Act No. 444/2005 Coll., Act No. 215/2006 Coll., Act No., 311/2008 Coll., Act No. 227/2009 Coll., and Act No. 281/2009 Coll., which all amended the preceding legal standards). In this context it is necessary to emphasise that all these legislative changes concerning viticulture and oenology resulted in deep positive changes as far as the Czech wine producers were concerned. CUERVO-CAZURA & DAU (2009) analysed pro-market reforms and firm profitability in developing countries and mentioned also the necessity of changes in this field. As mentioned by ŠKORPÍKOVÁ (2004), it is necessary to monitor and evaluate continuously impacts of common market organisation (CMO) for wine on wine market in individual countries. This problem concerns not only Czech Republic but also Spain (BORTOLÓ, 2009) and it is quite natural that these changes were influenced also by fluctuations taking place in preferences of individual varieties and by changes in consumers demand for red and white wines.

The attractivity of the industry under study raised an interest to study it not only from the traditional viewpoint of technological issues but also from that of management and economics (TOMŠÍK, ŽUFAN, SEDLO, 2006). ČERNÍKOVÁ (2004) compared the Czech and Austrian wine markets and investigated endogenous factors influencing the overall situation in this industry. Some other authors compared situations existing the Czech Republic and Slovakia (DUDA, 2004), Spain (HRABALOVÁ, 2004), and Germany (ČERNÍKOVÁ & ŽUFAN (2004). BENTZEN & SMITH (2009) corroborated justification of such studies in their paper about wine growing in a small country (Denmark). CHLÁDKOVÁ (2004) analysed the structure of vineyards in the Czech Republic and paid attention to future prospects of the Czech wine market. Some problems of the world production of wine were investigated by Italian scientists BACARELLA & CORONA (2008). It was (and still is) necessary to study and evaluate effects of moving forces of this industry, above all of bargaining power of sellers and buyers operating inside and outside the wine industry. When evaluating developmental trends, it is possible to use information about other products and other markets (ANAND, MESQUITA, VASSOLO, 2009) and about multiple business contacts potentially influencing economics and performance of a company (GIMENO & WOO, 1999). According to ŽUFAN (2004) it is also necessary to compare wine with such substitutes as beer and to perform analyses of situation in viticulture and hop-growing and brewing industry. As far as the foreign authors are concerned, problems associated with wine substitutes were analyses by ANDERSON (2009).

The aim of this study was to evaluate changes in strategic decision-making concerning varietal structure of Czech vineyards after 1960, especially within the last two decades (till 2010). At the same time we also tried to predict the developmental trends in percentages of the most frequent varieties grown in Czech and Moravian vineyards. To reach this objective, it was necessary to evaluate crucial transformation that occurred in the wine industry within the period of the last 25 years (i.e. political and, subsequently, also legislative changes) and to assess if they were caused by changes of other factors functioning in the exogenous environment of the wine industry.

## MATERIAL AND METHODS

The evaluation of the development of and changes in varietal structure of vineyards was performed on the base of historical data about percentages of individual grapevine varieties grown in the present territory of the Czech Republic, earlier results of field surveys performed by the Českomoravská vinohradnická a vinařská unie (Czech and Moravian Union of Viticulturists and Wine Makers) performed within the period of 1994–1996, and data stored in the register of vineyards kept at the Central Institute for Supervising and Testing in Agriculture (CISTA). This register was established in accordance with provisions of the Act No. 115/1995 Coll., on viticulture and wine making, which entered into the legal force on 1 Sept. 1995 and, subsequently, pursuant provisions of the Act No. 321/2004 Coll., on viticulture and wine making as amended. In this case the reliable data could be used since the year 1997. All these data were also confronted with information of the Czech Statistical Office about acreages of production vineyards in the Czech Republic. The investigation was focused on the period 1960–2010. When evaluating causes of changes taking place in the varietal structure of vineyards within the last two decades (i.e. 1990–2010), we have used data about percentages of white and red grapes and about their average prices as collected by the Czech and Moravian Union of Viticulturists and Wine Makers and, later on, by the Winegrowers Union of the Czech Republic and their members. To visualize results of this analysis, various kinds of graphs (frequency polygon, pie charts, histograms etc.) were used (HINDLS, HRONOVÁ, NOVÁK, 1999). Estimations of the future development of varietal structure of vineyards in the Czech Republic (SEDLO, LUDVÍKOVÁ, JANDUROVÁ, 2011) were performed on the base of data about the actual changes in percentages of individual varieties and about the average age of existing plantations (2010); these data were stored in the Register of Vineyards kept at CISTA. The paper also takes into account the methodology of the research project MSM 6215648904 and the methodology of the research project of the Czech Ministry of Agriculture QF 3276.

## RESULTS AND DISCUSSION

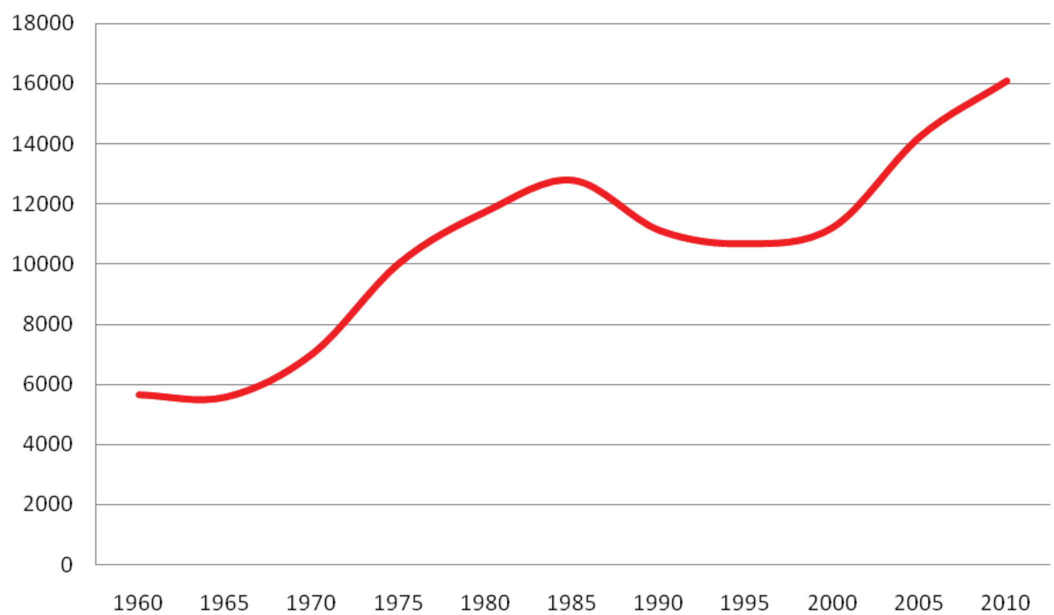
The privatisation and restitutions of vineyards after 1990 influenced, among others, also the general opinion concerning varietal structure of a part of cultivated vineyards. In 1995, the Act on viticulture and wine growing created conditions for qualitative changes of produced wine and due to this fact it was also necessary to change shares of individual varieties and the structure of the varietal assortment. Earlier, the main (and preferred) objective of wine growers was yield of grapes, not their quality. Since 1995, the sugar content in grapes has become the main parameter of quality of grapes and, moreover, due to a gradual intensification and openness of international market, the consumers could compare different varietal wines originating from many countries of the world. This process resulted in a gradual restructuralisation of the varietal assortment in Czech and Moravian vineyards. After 1995, planting of new vineyards began to be financialy supported and subsidised and, when the negotiations about the admission of the Czech Republic into the EU indicated that it would not be possible to extend the acreage of vineyards above that of 1989, the Czech government approved a programme of planting and establishment of new vineyards. This plan had been implemented till 30 April 2004. On 1 May 2004, the Czech Republic became the member of EU.

As compared with 1989, the total acreage of vineyards was significantly increased (Fig. 1) to this date and this enabled a relatively quick change in the varietal assortment (which otherwise could last for several decades). The structure of vineyards was markedly changed and this change could be considered as a strategic decision because it deeply influenced the development of the whole industry for a period of at least one generation of vineyards. Economic and ecological consequences of this change influenced not only individual business subjects but also whole specialised regions.

This development reflects all abrupt changes, i.e. not only effects of extreme weather conditions or occurrence of various pests but also of economic and political changes and subsequent strategic decisions of grape producers. The area of productive vineyards (i.e. with a three-year delay after their planting) is illustrated in Fig. 1.

In the past centuries, the total area of vineyards was undoubtedly higher but the curve presented in Fig. 1 begins as late as in 1960, i.e. a long time after the phylloxera catastrophe, both world wars and the beginning of commanded economics. In the Czech Republic, vineyards were collectivised to the end of 1950s and became a part of newly established Unified Agricultural Cooperatives (JZD). An increase in the acreage of vineyards began as late as after the final economical stabilisation of these cooperatives. The year 1985 was another important milestone in this process of development of Czech viticulture because strong winter frosts destroyed not only the current harvest but also a significant part of the next year's production and reduced the acreage of many vineyards. Before it could be possible to stabilise this bad situation, significant political changes took place in the former Czechoslovakia and the commanded socialist national economy was transformed into a market economy and for that reason the ownership relationships in the country were also principally changed.

After 1995, right and justified strategic decisions as well as the governmental financial subsidies have started the growth in the acreage of vineyards and caused their restructuralisation. In 2004 (i.e. in the year of enlargement of the EU), the applicants for subsidies received altogether 25,423 thous. CZK and in 2009/2010 these subsidies grew up to as much as 78,662 thous. CZK. In 2010, the total production potential of vineyards in the Czech Republic represented 19,633.45 hectares and of this




1: *Development of the acreage of producing vineyards in the Czech Republic (hectares)*
(Source: Own calculations)

altogether 17,337.81 hectares were in production (the difference in both aforementioned acreages consisted of grubbed-up vineyards, rights to replant them and of a governmental reserve).

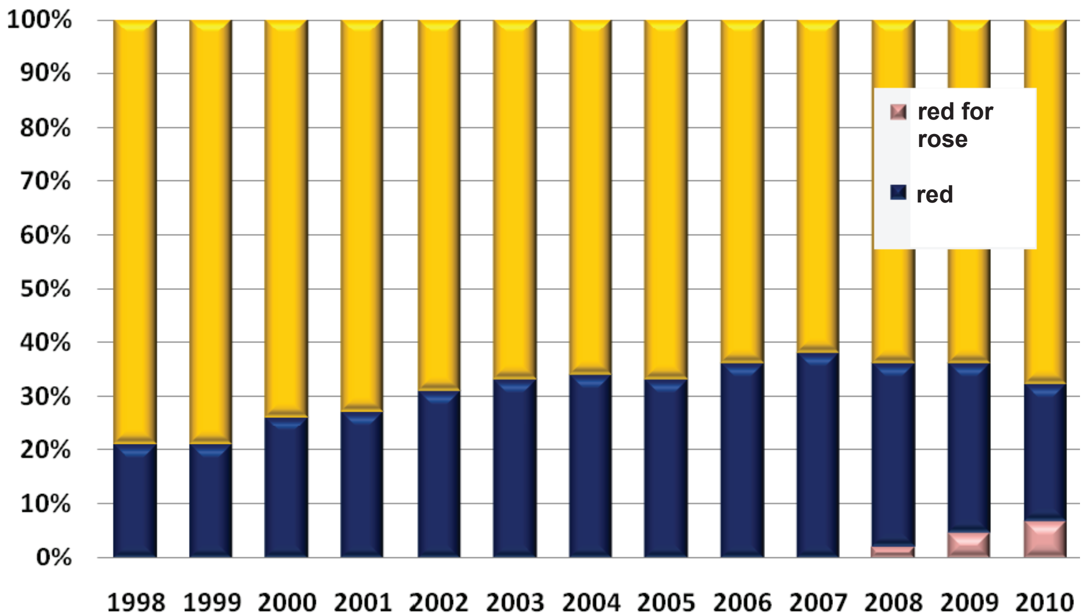
Within the period of the last fifty years, the total acreage of vineyards increased nearly three times. As compared with the preceding period of unchanging area of vineyards, this increase enabled to carry out quick changes in the varietal structure. Besides the enlargement of the total vineyard area, this process concerned also increasing numbers of producers of grapes and wine and creation of new jobs not only in the wine industry but also in other, related industries. In 100 largest wine-growing municipalities the total number of growers was 15,363 persons.

Before discussing the development and changes in percentages of individual varieties, it is necessary to have a look at a very general ratio existing between produced red and white wines. This ratio is determined by consumers so that the wine makers have to respect this demand. When reacting on the market demand, the wine-makers change the purchasing prices of grapes (Fig. 2) and influence (or even force) growers to change the varietal structure in their vineyards. Wine-makers try very intensively to influence consumers as far as their demand is concerned and use modern marketing methods of promotion and communication (see for example the issue of the so-called „French paradox“, which concerns consumption of red wine). However, the process of changes is lengthy and lasts for many years so that it takes time to change the structure of the assortment and shares of individual grapevine varieties while the taste of consumers and their demand is very dynamic. This disproportion results in fluctuations, which can be eliminated only with difficulties (Fig. 3). Within the last three years (2008–2010), the surplus production of red wine could be compensated by means of a tactic decision to increase production of rosé wines. From the marketing point of view, this change was supported by the wine fund of the CR so that it was possible to respond (at least partly) to changing demand and diversification of both the Czech and the European wine markets (Fig. 2).

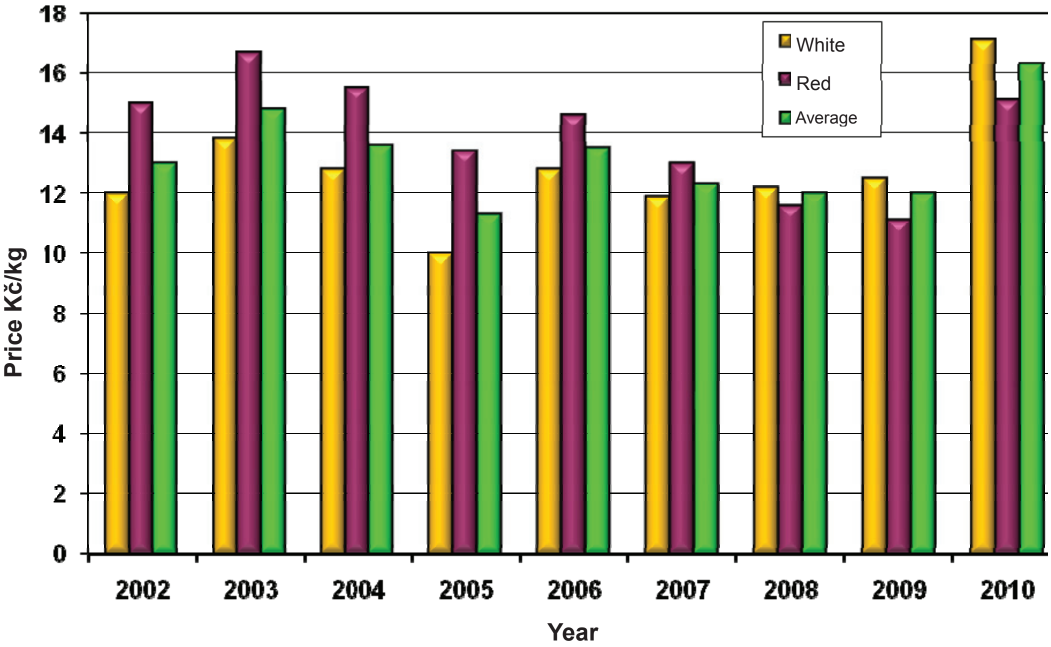
## Development of and changes in percentages of individual varieties

In the long-term history of Czech viticulture, we should start with names of wine not of varieties because only one hundred years ago vineyards with a mixture of different varieties were predominating. In 1995, the Act on viticulture and wine making started a gradual registration of all vineyards in the Czech Republic. Before the Register of Vineyards was created and became effective, the Association of Viticulturists of the Czech Republic (i.e. the ancestor of the Union of Winegrowers of the Czech Republic) carried out an investigation among its members. The acquired data indicated that:

- In 1994, four most popular varieties, i.e. Müller Thurgau, Green Veltliner, Italian Riesling, and Sankt Laurent, were planted on more than 60 percent of the total area of vineyards in the Czech Republic. Red grape varieties represented 20% of this area and the interest in red wine was increasing;
- In 2010, only a little lower percentage of vineyards was occupied by altogether eight varieties (i.e.




2: *The share of red and white grapes in the total production of wine*
(Source: Own calculations)




3: *Average prices of must grapes in the Czech Republic*
(Source: Own calculations)

Müller Thurgau, Green Veltliner, Italian Riesling, Rhein Riesling, Sauvignon, Sankt Laurent, Blaufrankish, and Zweigeltrebe); of these, red grape varieties represented 31% and the interest in consumption of red wine had been decreasing for more than five years.

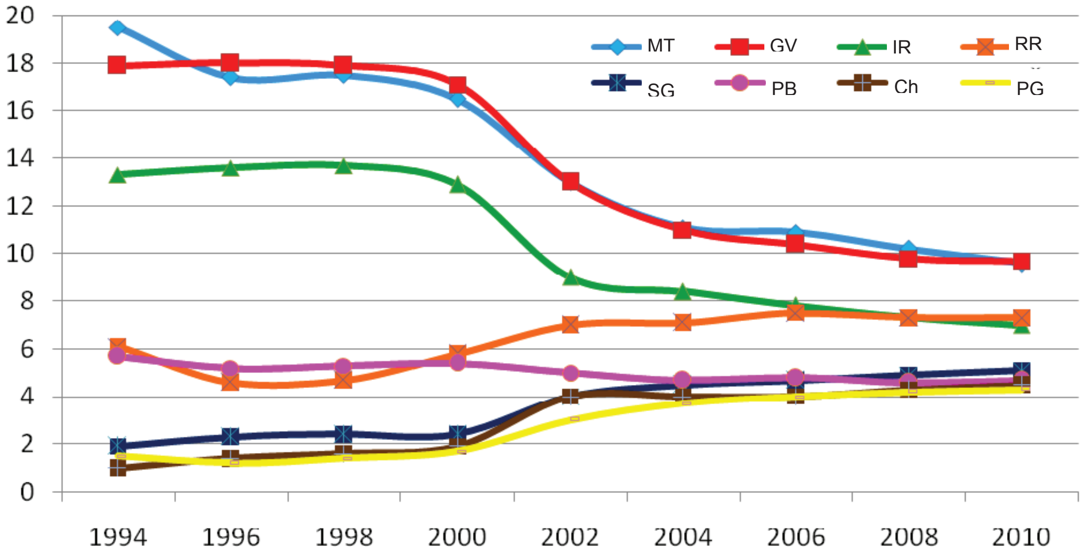
In the half of 1930s, five white (i.e. Green Veltliner, Rhein Riesling, Sylvaner, Neuburger and Gewürztraminer) and two red varieties (i.e. Blue Protugieser and Blaufrankish) were planted on 63 and 13 percent, respectively, of the total vineyard area in the Czech Republic. In that time, the variety Green Veltliner represented 30% of the total area of vineyards; it was followed by Rhein Riesling (13 %), Sylvaner (12 %), and Blue Portugieser (9%) [18]. In recent years under study, this traditional assortment has been gradually expanding and involved also several new varieties, which (although not too popular until now) are rather prospective due to their quality and higher resistance to the most frequent fungal diseases. A comparison on individual white and red grape varieties grown in the Czech Republic in 1993 and 2011 is presented in Tab. I.

As one can see, the number of the most frequent varieties increased from 7 to 11 between years 1993 and 2011. In 1930s, Rhein Riesling, Gewürztraminer, Pinot Blanc and Pinot Gris were considered for top-quality white varieties. Among others, Silvaner, Roter Silvaner, Neuburger, Green Veltliner and Sauvignon were grown for making quality wines and Grauer Portugieser, Müller-Thurgau, Frühroter Veltliner, Roter Veltliner, Italian Riesling, and Rotgipfler for making table wines. Varieties Pinot Noir, Blaufrankish, Sankt Laurent, Cabernet Sauvignon, Cabernet Franc, Kadarka

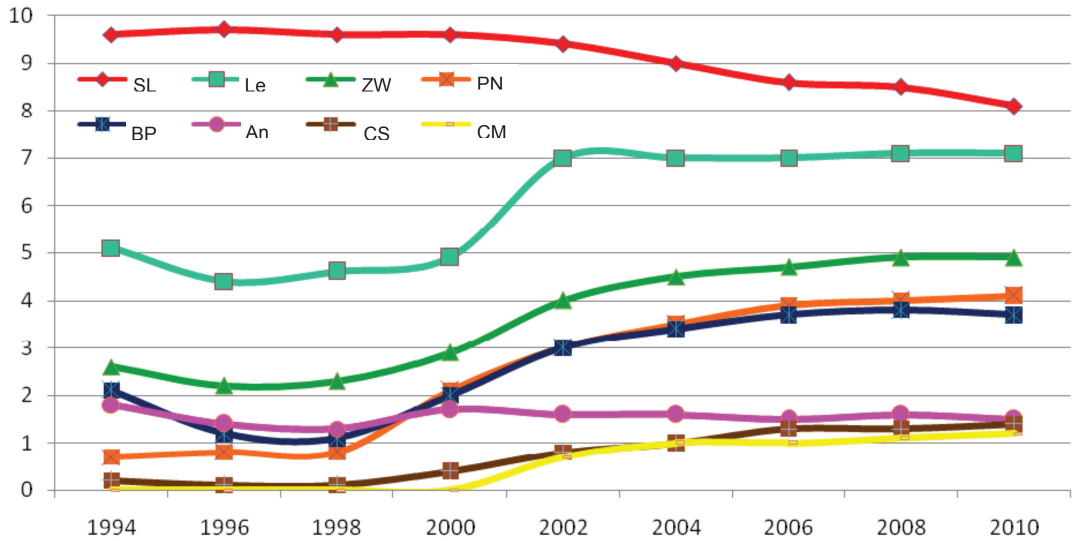
I: *Percentages of individual grapevine varieties in Czech and Moravian vineyards*

| Category (% of the total area) | Variety |
|---|---|
| **YEAR 1993** | |
| 9 to 20 % | Müller Thurgau, Green Veltliner, Italian Riesling, Sankt Laurent |
| 7 to 8.9% | - |
| 4 to 6.9% | Rhein Riesling, Pinot Blanc, Blaufrankish |
| **YEAR 2011** | |
| 9 to 20% | Müller Thurgau, Green Veltliner |
| 7 to 8.9% | Sankt Laurent, Blaufrankish, Rhein Riesling, Italian Riesling |
| 4 to 6.9% | Sauvignon, Pinot Blanc, Chardonnay and Pinot Gris, Zweigeltrebe |

(Source: Own calculations)




4: *Changes in percentages of the most popular white grapevine varieties*
(Source: Own calculations)

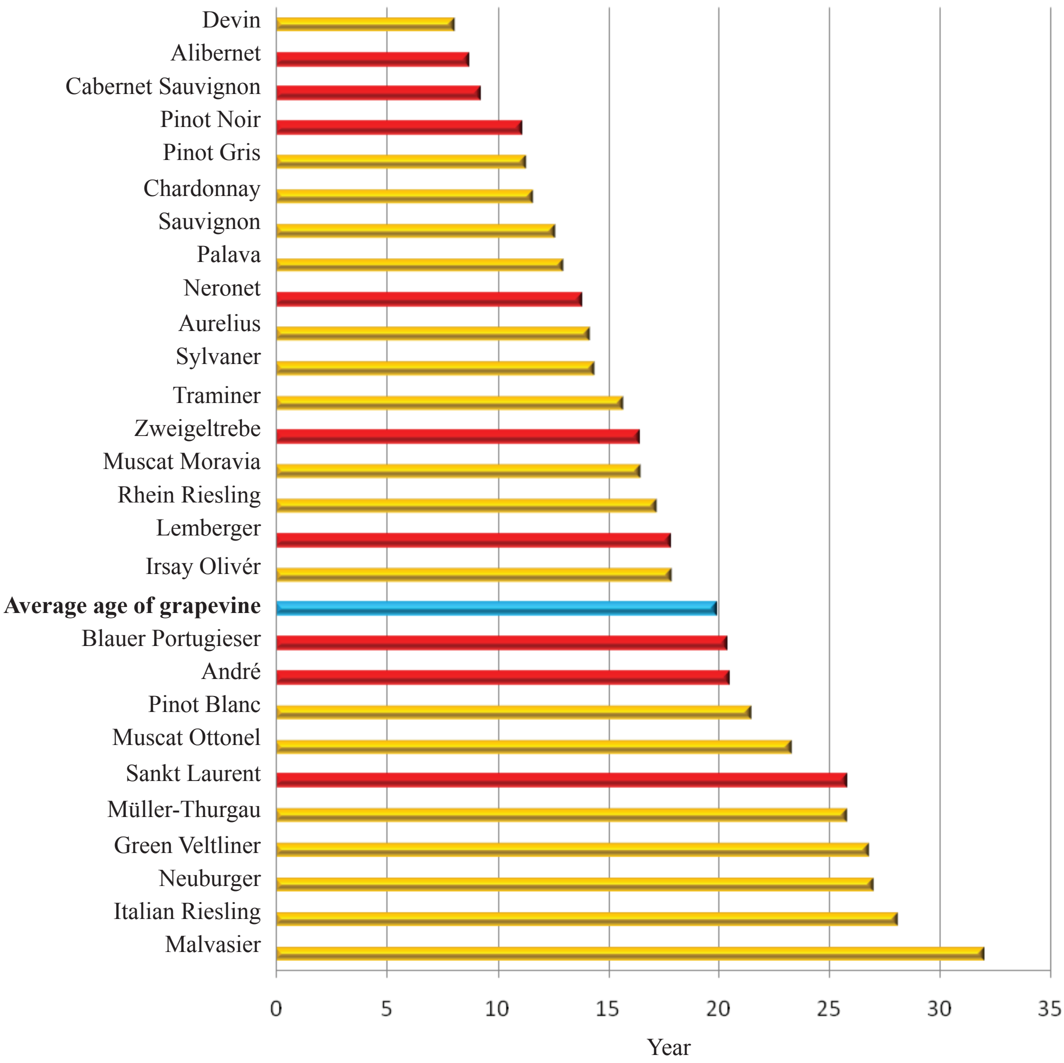



5: *Changes in percentages of the most popular red grape varieties*
(Source: Own calculations)

and Blue Portugieser were grown for making red wines. This categorisation was thereafter modified into the Czechoslovak National Standard of wine quality (ČSN 56 7741), in which grapevine varieties were classified into quality categories I.a, I.b and II. In 1995, the system of wine classification was principially changed and the sugar content – not the variety – became the main criterion of quality evaluation of each vintage.

Within the last two decades, percentages of the most important varieties markedly decreased. While in 1994, Müller Thurgau and Green Veltliner were cultivated on approximately 19% of the total area each and Italian Riesling on 13%, in 2010 the shares of the former two decreased below 10% and that of Italian Riesling to less than 8% (Fig. 4).

On the other hand, however, the shares of other varieties gradually increased. The difference in acreages of Müller Thurgau, Green Veltliner and Italian Riesling on the one hand and that of Rhein Riesling, Sankt Laurent, Blaufrankish, Pinot Blanc, Sauvignon, Chardonnay, Pinot Gris, Pinot Noir, and Blue Portugieser on the other hand practically disappeared (Fig. 5). It is of interest that among the most frequent white varieties none of the Moravian new varieties selected in the last century was planted. However, as far as red varieties were concerned, new Moravian varieties André and Cabernet Moravia became rather popular.




6: *Average age of grapevine varieties in individual vineyards (2010)*
(Source: Register of vineyards, CISTA)

The importance of Cabernet Sauvignon and Cabernet Moravia has gradually increased and nowadays their acreages are similar to that of André. In this context it is necessary to mention that the share of this variety in plantings was relatively very stable in the course of the last two decades,.

Future developmental trends in shares (percentages) of other grapevine varieties may be derived also from the average age of stands existing in Czech and Moravian vineyards (Fig. 6). When doing this, however, it is necessary to compare the average age with the time period, in which plantations of a given variety were established and also with their total acreage.

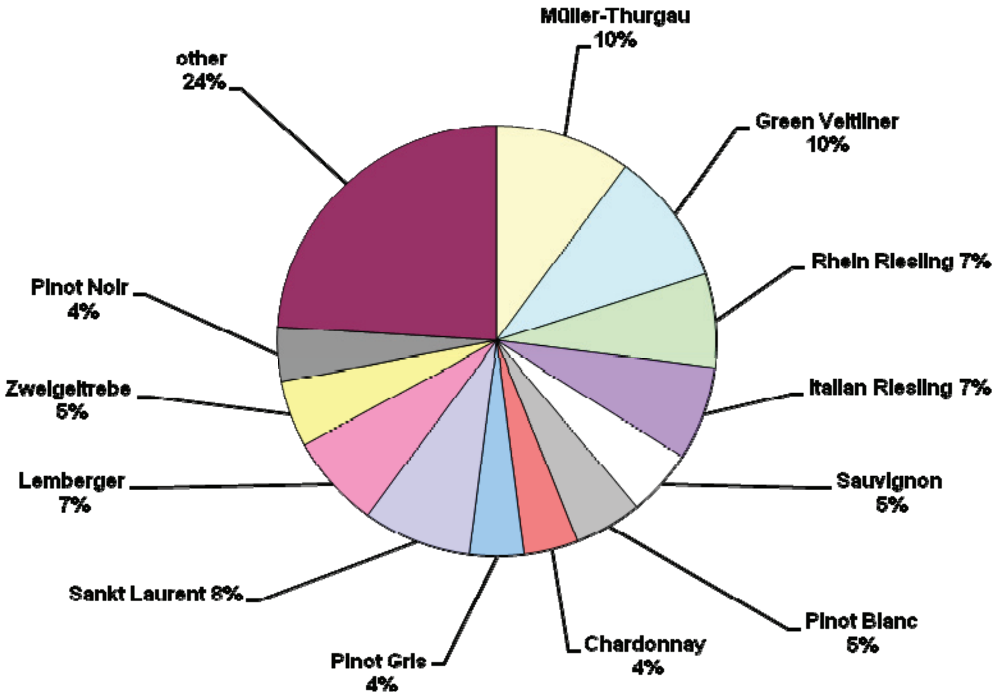
In the very near future, it is expected that the shares of varieties Pálava, Sylvaner and Gewürztraminer will be increasing, acreages of Moravian Muscat and Irsai Oliver will remain unchanged and the shares of Frühroter Veltliner and Neuburger will go down.

The assortment of grapevine varieties in Czech and Moravian vineyards in 2010 is presented in Fig. 7.

## Strategic development of the currently most important grapevine varieties

**Green Veltliner –** Hundred years ago, this was the most popular variety in Moravia (BABO & MACH, 1909), and in 1935 with its 30% share as well. In the first half of 1990s, its share was 19%, in 2002 13%, and in 2010 less than 10%. In spite of this decline, Green Veltliner is now, together with Müller Thurgau, the most frequent grapevine variety in the Czech Republic. It is expected that in the near future its acreage will further decrease. At present, it is cultivated worldwide on approximately 18 thous. hectares (above all in Austria).

**Müller Thurgau –** This variety was created it the Swiss Canton of Thurgau in 1882. Eighty years ago, it was introduced into the Czechoslovak Republic and twenty years ago it was grown on nearly 20%




7: *Assortment of grapevine varieties in Czech and Moravian vineyards in 2010*
(Source: Register of vineyards, CISTA)

of the vineyard area and represented the most popular grapevine variety at all. In 2002, its share in the total assortment decreased to mere 13% and at present it is less than 10%; in spite of this, however, it is still the most popular variety together with the Green Veltliner. It is expected that its percentage will further decrease in future. Worldwide, this grapevine variety is cultivated on around 45 thous. hectares (mostly in Germany). This makes Müller Thurgau the most widely planted grapevine variety and the most popular of the so-called "new breeds" of grapevine varieties created in the world since the end of the 19th century.

**Italian Riesling –** This variety was introduced to Moravia at the beginning of the 20th century. Although it was not very popular as late as in 1935, its importance gradually increased and, in the first half of 1990s, its share in the total acreage of Czech and Moravian vineyards was nearly 14 percent. Thereafter, in 2002, its share dropped to 9% and nowadays it makes only 7%. It is expected that, in Moravia, its acreage will be further reduced. The worldwide area of Italian Riesling is 35 thous. hectares, mostly in the region of the former Austro-Hungarian Empire.

**Rhein Riesling –** In contradistinction to varieties mentioned above, Rhein Riesling was introduced into the territory of the Czech Republic already in the 17th century. In the half of 1930s, this variety occupied about 13% of the area of all vineyards. In the first half of 1990s and after 2002, its share were 6% and about 7%, respectively. It can be expected that its acreage will slightly increase in future. The worldwide area of Rhein Riesling plantations is 60 thous. hectares and it can be said that it is very popular in Germany. It occupies the 18th position in the list of the most popular grapevine varieties in the whole world.

**Sankt Laurent** – In the territory of the Czech Republic, this variety occurred after 1900 and in 1935 its share was only 1%. In the first half of 1990s, however, it was already planted on 10% of the total area. Although its acreage gradually decreased to 9.5% and 8% in 2002 and 2010, respectively, it is still the most frequent red grape variety. It is expected that its share in the assortment of grapevine varieties will decline in the near future. Worldwide, the variety Sankt Laurent is grown on approximately 3 thous. hectares (above all in the Czech Republic).

**Blaufrankish –** In Austria, this variety was grown already in the 18th century and in the territory of the Czech Republic it was the most popular red grape variety in the 19th century. In years to follow, it was gradually replaced at first by Blue Portugieser and thereafter also by Sankt Laurent. Till 2000, it was planted on less than 5% of the total area of vineyards in the Czech Republic and after 2002 its share increased to 7%. It is expected that its popularity will further increase and that it will be n° 1 among red grape varieties (to the detriment of Sankt Laurent). Worldwide, its area makes approximately 10 thous. hectares and it is cultivated above all in Hungary and Austria.

## CONCLUSIONS

In the Czech Republic, the current (2010) production potential represents 19,633.45 ha of vineyards; of this, 17,337.81 hectares are planted and in full production. In 100 largest wine-growing municipalities there are altogether 15,363 of growers and the acreage of their vineyards is 14,267 hectares. This means that the average number of growers per hectare of vineyards is 1.07 person. In 1935, 5 white and 2 red grape varieties represented 63 % and 13 %, respectively, of the total acreage of vineyards in the territory of the Czech Republic. These were as follows: Green Veltliner, Rhein Riesling, Sylvaner, Neuburger, Gewürztraminer, Blue Portugieser, and Blaufrankish). In other words, 7 varieties represented altogether three quarters of all cultivated varieties. In 1989/1990, 60 % of vineyards were planted with only 4 varieties (i.e. Müller Thurgau, Green Veltliner, Italian Riesling and Sankt Laurent). At present, an only slightly smaller acreage is occupied by a doubled number of varieties (i.e. Müller Thurgau, Green Veltliner, Italian Riesling, Rhein Riesling, Sauvignon, Sankt Laurent, Blaufrankish, and Zweigeltrebe). Besides, several new varieties have been introduced into the country and their popularity has gradually increased. The general trend consists in a growth of the number of varieties on the one hand and in a reduction of the percentages of the most frequent ones on the other; this means that the differences existing among individual varieties diminish (with the exception of very new varieties). It is expected that the percentages of Müller Thurgau, Green Veltliner, Italian Riesling and Sankt Laurent will further decline while those of Rhein Riesling, Sauvignon, Blaufrankish and Zweigeltrebe will grow up. Of less frequent varieties, an increase in shares of Pálava, Sylvaner, Gewürztraminer, Cabernet Sauvignon and Cabernet Moravia is very probable. Acreages of Pinot Blanc, Moravian Muscat, Irsai Oliver and Andre will not be changed and the shares of Frührot Veltiner and Neuburger will go down. From the economic point of view, strategic decisions concerning restructuralisation of vineyards from the viewpoint of shares of individual varieties and enlargement of their areas show a significant effect on all resources, i.e. land, capital, technologies and labour. Because of these strategic decisions, the current total acreage of vineyards (2010) is three times larger than in 1960. This situation enabled a further development of business activities of not only wine makers but also of subjects operating in other (i.e. related) businesses, which either supply their products into the wine industry or buy its final products. This means that the attractiveness of the wine industry increases and that this increase concerns also the related industries. The wine industry is under the pressure of all five forces that determine the competitive intensity and therefore attractiveness of a market (PORTER, 1994).

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Act No. 227/2009 Coll., kterým se mění některé zákony v souvislosti s přijetím zákona o základních registrech.

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