TRENDS IN THE WINE SECTOR EFFICIENCY IN AGRICULTURAL ENTERPRISES IN MOLDOVA

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Abstract

This paper presents an analysis of the level of development of the wine sector in agricultural enterprises of the Republic of Moldova during 2001-2011. It was analyzed the dynamic of fruit bearing surfaces of the vine, global production and the yield per 1 ha. There were determined the indicators of economic efficiency the grapes and the trend of modifying the wine sector's efficiency for the years 2013-2016 using analytical leveling process according to linear function.

Key words: *agricultural enterprises, efficiency, the trend of modification, wine sector*

INTRODUCTION

The main direction of development of the Moldovan wine industry is producing technical varieties of grapes (about 90%), table grapes (about 10%) with 15% increase of the latter until 2015.

Landscape and local traditions of development regions of the country have led to the fact of specializing in the cultivation of vines and production of grapes. The vine is one of the crops which, in hilly conditions, especially in the Central Development Region, enables efficient use of agricultural land on the slopes with an angle greater than 5 degrees, which for other crops the cultivation is not profitable.

On January 1, 2012 the country's vineyards patrimony was 149,6 thousand ha, from which the weight bearing of plantations constituted 92%, of which 141,4 000 ha or 84.6% was in the possession of private owners, and the rest – 8,2 000 ha (5.5%) - public ownership (Statistical Yearbook, 2011).

Investigations conducted by the author are based on data provided by the farms from Moldova and allow us to conclude that during 2001-2011 the total area of plantations of vines decreased from 46,2 000 ha to 34,0 000 ha or by 26% and the yield of fruit bearing with 36%, where the overall yield decreased from 133,7 000 tones to 69,1 000.

About 75% of the total area of vineyards is occupied by concentrated white varieties located in the Central Development Region and only 25% of red varieties are concentrated in the south region. The highest peak of the viticulture branch development was reached in the period 1981-1985, when the size of the fruit plantations (246 000 ha), the global harvest of grapes, productivity per 1 hectare and volume of wine products, Moldova ranks sixth place in world after Italy, France, Romania, Spain and Portugal. This allowed the country to become a producer of quality wines and cognacs and a recognized exporter of wine products abroad [3].

MATERIALS AND METHODS

In the research the author used data from Statistical Yearbook, specialized blanks of agricultural enterprises. There were selected enterprises from the Development Centre and South regions to perform a more detailed analysis of the economic efficiency of production of grapes. There were used method selective comparison method, graphical method and some analytical procedures as research methods of problems.

RESULTS AND DISCUSSIONS

Negative processes of transition to market economy, social and economic events and

natural disasters have affected the vineyards in the country. Compared to the years 1981-1985 currently living area plantations decreased by 104.1 thousand ha or about 40%. The total amount of taking out the vineyards is more than the surface of planting new vineyards with more than 2 times.

In all categories of households in Moldova the global grape production decreased from 2001 from 505 000 tones by 9% in 2011, while the share value of grapes in the structure of global agricultural production (in comparable prices) increased by 3.5% (Figure 1), on account of weight reduction product of other types that were more responsive to adverse weather conditions in recent years.
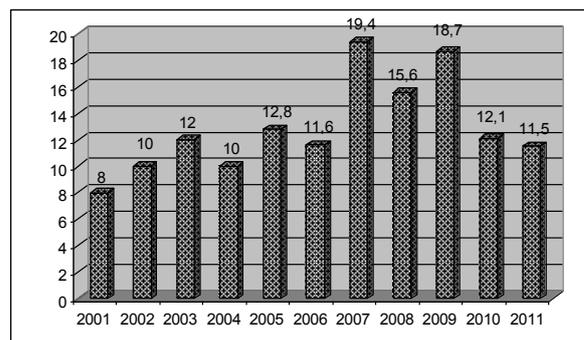
Figure 1. Theweight of grapes Ponderea valorii strugurilor in the structure of agricultural production value (in comparable prices) in the agricultural enterprises of all categories in the Republic of Moldova
Source: Statistical Yearbook of the Republic of Moldova, Chisinau, 2006, pp. 301 and 2011, p 319

Table 1. Dynamics of economic efficiency in grapes production in the agricultural enterprises of Moldova

Year	Productivity of viticultural plantations on weight bearing viticole pe rod, q/ha	Unit cost of finished products sold, lei	Average price of selling 1 q of grapes, lei	calculated (lei) profit per:		The level of return, %
				1 q of sold product	1 ha from which production was sold	
2001	30,3	136,86	165,0	28,17	845,1	20,58
2002	37,4	132,43	192,4	77,44	2904,0	58,47
2003	41,0	152,46	270,0	117,55	4807,7	77,10
2004	45,2	169,49	245,54	76,05	3438,8	44,87
2005	31,5	238,95	314,37	74,44	2344,7	31,02
2006	25,1	234,76	272,0	37,27	935,4	15,88
2007	30,8	219,93	268,38	48,45	1492,3	22,03
2008	37,1	224,50	246,04	21,54	799,30	9,60
2009	41,1	171,19	181,41	10,22	420,0	5,97
2010	20,9	313,98	340,95	26,96	563,6	8,59
2011	42,6	237,17	323,81	86,64	3691,0	36,53

In 2007-2009 the share of value of grapes reached the level 15-19%.

In total revenues for crop and livestock products the revenue from the sale of grapes is 7.6 to 8.7%.

Economy cannot be considered effective if it is not responsive enough to achieve technical and scientific progress and to use irrationally its economic resources. It is typical for an efficient economy to have a high level of using its economic possibilities and production. Do not forget that efficiency is the result of production, and this result can be low-level, high or negative. And therefore in some cases it can create favorable conditions for expanded reproductive performance, and in some cases, on the contrary, it will lead to lower production.

But how to determine the fact that it is an efficient production or it is not?

For efficiency characteristic of any production sector it is used a system of indicators expressing special factors influencing the final results of production. These indicators reflect the level of use of agricultural land, means of production, which indicate the consumption of materials, labor, etc.

Production efficiency is characterized by the presence of obtained results effect that always exceeds the production consumption.

A high economic efficiency was achieved in 2002, 2003 and 2011, when the grape productivity recorded high levels in the analyzed period and when the correlation between the sales price and the cost of finished products sold was the largest. For every 1 leu consumed the enterprises obtained

an average profit of 77.1 bani, 58.47 bani and, respectively, 36.53 bani.

Vine plantation productivity is the main indicator which characterizes the economic efficiency in viticulture, which increasing, in the conditions of intensification and difficult financing, remains to be a problem for farms. Increase or decrease of plantations

productivity and modification of their quality determines the level of the efficiency of production of grapes. About interdependent nature of vine plantations productivity, unit cost, average selling price of 1 q of grapes and the level of profitability demonstrates Figure 2.
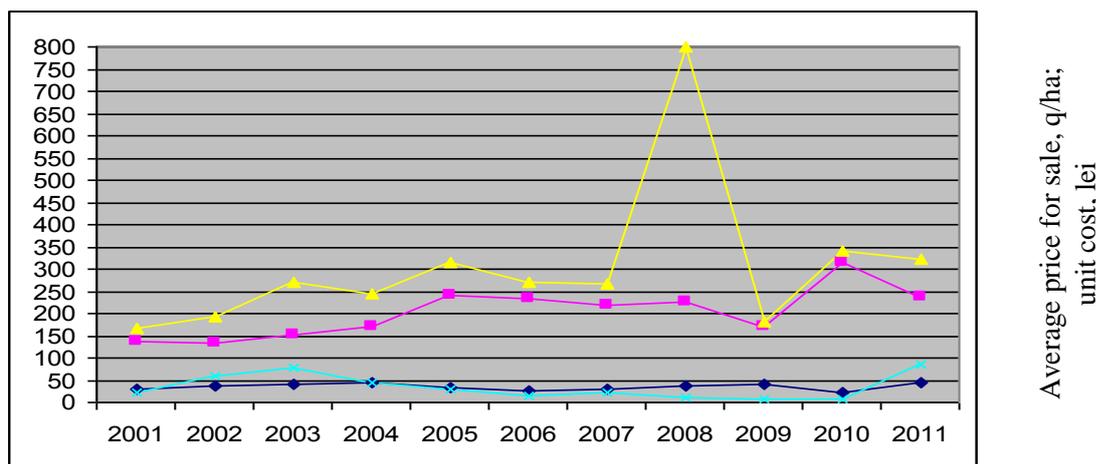
Figure 2. Interdependence between grape productivity, unit cost, average price of sale and the level of return in the agricultural enterprises of the Republic of Moldova *Source: Elaborated by author on the data basis from Table 1*.
On the vertical line: Productivity per 1 ha on weight bearing, q/ha, On the abcise: Average price for sale, q/ha; unit cost, lei
Legend:..............plantation productivity per 1 ha;   __ _ __ _ average price of sale per 1 q.

Analyzing the dynamics of the indicators showing the economic efficiency of grapes during 2001-2011, it was established that this had a tendency of modification on the form of linear function.

$$\bar{y}_t = a_0 + a_1 t$$

where: a_0 and a_1 – the parameters of the function and t – scoring the time.

This fact is confirmed by the minimum value of deviation as well as the coefficient of variation. So, adjustment model after the linear function best fits objective trend of evolution of indicators investigated on the farms in Moldova. Exponential and second degree parabolic function proved to be more distant from the actual development indicators during the period studied.

Parameter of linear function a_1 indicates that during the 2001-2011 the economic efficiency indicators of grapes in agricultural enterprises tend to change in the annual average as follows (Table 2):

-bearing vineyard productivity - reduction in annual average by 0.18 q/ha;

-unit cost of finite production sold and the average selling price - the average annual increase by 12.5 and 8.9 lei lei;

-profit calculated at 1 q of product sold and the profitability - the average annual decrease of 3.3 lei or 3.76%.

There were performed some predictions on dynamics indicators analyzed on the basis of the model of linear trend in farms of the Republic of Moldova until 2016.

Table 2. The trend of economic efficiency indicators of grapes in agricultural enterprises during 2001-2011 and forecast for 2016 determined by linear adjustment

Indicator	Equation of linear trend $\overline{N}_t = a_0 + a_1 t$	Level on average on period of 2001-2011 years of indicators	Adjusted level of 2016 year	Data of 2016 year in % than the average of the period of 2001-2011 years
Productivity of viticultural plantations on weight bearing, q/ha	$\overline{N}_t = 34,8-0,18t$	34,8	28,0	80,5
Unit cost of finite sold production, lei	$\overline{N}_t = 203+12,5t$	203,0	313,5	154,5
Prețul mediu de vânzare al 1 q de struguri, lei	$\overline{N}_t = 256,3+8,9t$	256,3	336,4	131,3
Profit calculated per 1 q of sold product, lei	$\overline{N}_t = 55,0-3,3t$	55,0	25,3	46,0
Level of rentability, %	$\overline{N}_t = 30-3,76t$	30,0	-3,0	-33 p.p.

By the extrapolation method are reflected in the dynamics calculations forecasting indicators that show that if you keep the future trend of change in direction and size of the calculation, the predicted economic efficiency indicators of grapes compared with 2011 average of 2001 will be as follows:

In 2016 bearing vineyard productivity will decrease by 19.5% and will reach 28 q/ha, the unit cost of finite production sold will increase by 54.5% and will constitute 313.5 lei, and the average selling price will increase by 31.3%. Given to the fact that the growth rate of unit cost is higher than the selling price in the agricultural enterprises and will reduce the profit calculated per 1 q of sold product with more than 20% and by 2016 the production of grapes will register losses of 3 bani to 1 leu consumed.

Location of agricultural production on regions is based on natural resources that is, in the fist place, the soil. Location agricultural production shows how well or how poorly are used the natural-territorial economic conditions and that is reflected in the process of specialization and concentration, in the structure of incomes obtained for selling the production. The share of revenues obtained from selling commodity production from the Central region on average on the period of 2008-2011 is 15.5% and in the South - 50%.

Analysis of wine sector development by regions shows that more than 40% of the potential of grapes production is in the south region. Occupying 44.5% of the fruit plantations all over the country region make a profit share of total profit which is obtained in all regions. Surface weight bearing plantations in Chisinau, Central and Gagauzia region is 9.2%, 22% and 21% and, respectively, the rate of profit is 10%, 5.8% and 7%.

Analysis of economic efficiency of grapes (Table 3), demonstrates a high level of development in the South region. In this region, although productivity per 1 ha of plantations bearing is on an average level in the country, and the average selling price of 1 q grape reached 298.52 lei, which is 3.4% higher than the average in the country. This indicates a higher quality product.

Due to the fact that the growth rate of the sales price of 1 q of grapes is higher than the increase in cost, the farms in the South region have made a profit of 1 q sold by 66.1 lei and 1 ha of the which the production sold is of 25,041 lei, the return was 28.5%.

Economic efficiency of grapes is high and in Chisinau the level of profitability is 19.9%, followed by Central and Gagauzia region with less than 10%. Northern Region put restrictions on the cultivation of vine plantations and only Falesti, Sângerei and Soroca on the lower terraces are cultivated vines for production trade.

Table 3. Economic efficiency of grapes in the agricultural enterprises on developing regions from the Republic of Moldova, on average on 2008-2011 years

Indicator	Region of development				On average in Republic of Moldova
	Center	South	mun. Chişinău	UTA Gagauzia	
Productivity on bearing vineyard plantations, q/ha	31,7	35,85	57,2	25,3	35,5
Unit cost of finite production sold, lei	221,6	232,4	214,0	230,1	236,51
Average selling price per 1 q of grapes, lei	243,0	298,52	256,5	251,3	273,02
Profit (lei) calculated per: -1q of solf production -1 ha from which was sold the production	21,4 12,10	66,1 2504	42,5 1703	21,0 1320	36,5 1368,2
Level of rentability, %	9,7	28,5	19,9	9,2	15,5

CONCLUSIONS

Based on date obtained from the research, it is believed that in order to avoid the negative trends of modification in the economic efficiency of grape in the wine sector of agricultural enterprises or reducing the rate of growth of 1 hectare of a bearing vineyard is necessary:

-argumentation of optimal level allocated resources of investment per 1 ha;

-implementation of scientific and technical progress;

-realization of only the adaptive technologies implemented with reduced consumption of production;

-use new varieties and hybrids of local selection with high productivity;

- raising the quality level of grapes;

-producing seedlings in conformity with specialization of enterprises in regional profile;

-apply irrigation systems with high and stable yields.

-aplicarea sistemelor de irigare cu randamente înalte şi stabile.

Viticulture as a main component of wine and vineyard sector must be apreciated and considered as a national treasure, that should be renewed, sustained and promoted for the next generation.

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