

## STRUCTURE OF THE PRIMARY SUPPLY FOR GRAPES IN THE REGION OF DEVELOPMENT SOUTH-WEST OLTENIA (2015-2017)

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### Abstract

*The paper purpose was to establish the position of South Western Oltenia region in the national grape supply. For the South-Western Region Oltenia, an average of the wine patrimony area of 32,866 Ha is noted, with the following weights: 32.50 and 67.50% of the gravel vines respectively hybrid ones (10,680 and 22,186 ha); 1.48 and 98.52% of the table grapes respectively wine (485.33 and 32,380.67 ha). The evolution of total production is uneven, the average of the period was 127,492.33 t, with the following weights: 34.66 and 65.34% grafted or hybrid vineyards (4,419.33 and 83,299 t); 1.54 and 98.46% of the table grapes respectively wine (1,958.33 and 125.534 t).*

*Region, does not in any circumstances achieve the national level of average production, the average of the period recorded 3,879 kg/ha, with different placements from it, by types of vines and production directions: 106.68 and 96.80% grafts and hybrid vineyards (4,138 and 3,755 kg/ha); 104.02 and 99.95% of the table Grapes respectively wine (4,035 and 3,877 kg/ha). The southwestern Region Oltenia, is at national level, an actor of average importance for the wine market, starting from the region's weights, on the global market, 18.48% under the Wine patrimony.*

**Key words:** Surface, total production, medium production, vine types, grape types

### INTRODUCTION

The importance of wine production for the Romanian profile units is a polyvalent one: food, industrial, technical-technological, ambient, export products and profit source [8]. The wine sector is constituted in an alternative of reducing, at present, unemployment [5]. In the EU, Romania falls into the top five vine growers [9]. The importance of viticulture is enshrined at international level [7].

Vine, is a culture that is at the sharp mechanization of culture technologies, this aspect resulting in reduced production costs [6]. At the same time, the vine is a culture that can be affected by a multitude of diseases and pests [3]. The production of grapes is influenced by climatic conditions and the achievement of the activity [11]. Thus, drought periods influence production yield for mass grapes [12].

At the level of the wine-growing market, the offer is determined by the production potential, underlined by the actual quantities that can be obtained [1]. The wine market can

be constituted in a factor of healthy growth, for the economic development of a region, where the vine is cultivated [2].

The quality of grape production is influenced by a number of endogenous and exogeneous factors [4].

The work, seeks to emphasize the location of the south-west Oltenia region in the national grape supply.

### MATERIALS AND METHODS

In the drafting of the paper were extracted from the specific database [10]. Consequently, they were used: surface (ha), total production (t) and average production (kg/ha). These indicators are presented at the general level, by types of vines (i.e. hybrid, grafted) and types of grapes (wine and table, respectively). The indicators were mentioned both at regional level, but also for counties composing the region (Dolj, Gorj, Mehedinţi, Olt and Vâlcea).

Data processing was performed after the related documentation, dynamic series with four third-party (years 2015, 2016, 2017 and

the average period) were established. Structures were formed at surface level and total production, and the comparison with reference levels (national and regional) for the average production on the productive unit was achieved.

The research method used is the comparison, carried out both in time (indices with the mobile base) and in space (analyses of the national and regional situation).

The work aims to highlight the position of the south-western Development Region Oltenia in the context of the existing national realities.

## RESULTS AND DISCUSSIONS

Table 1 present the area of regional viticulture patrimony, by types of vines and production directions.

Table 1. Region South-West Oltenia. Area of wine patrimony

Specification	Year								Period average **			
	2015		2016			2017			Eff. (ha)	Str. (%)	average/2017	% compared to the national level
	Eff. (ha)*	Str. (%)**	Eff. (ha)*	Str. (%)**	2016/2015**	Eff. (ha)*	Str. (%)**	2017/2016**				
Total	32,760	100	33,090	100	101.01	32,748	100	98.97	32,866.00	100	100.36	18.48
Grafted Vineyards	10,540	32.17	10,898	32.94	103.40	10,602	32.37	97.28	10,680.00	32.50	100.74	11.58
Hybrid Vineyards	22,220	67.83	22,192	67.06	99.87	22,146	67.63	99.79	22,186.00	67.50	100.18	25.92
Table grapes	511	1.56	529	1.56	103.52	416	1.27	78.64	485.33	1.48	116.67	7.07
Wine grapes	32,249	98.44	32,561	98.40	100.97	32,332	98.73	99.30	32,380.67	98.52	100.15	18.94

Sources: \*<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> (26.02.2019), \*\* own calculation.

In the case of 2015, a total area of 32,760 hectares of vine plantations, of which 10540 ha grafted vineyards (32.17%), 22,220 ha hybrid vineyards (67.83%), is found. On production directions, the surfaces were 511 ha – table grapes (1.56%) and 32.249 ha – wine grapes (98.44%).

For the year 2016, the weights of 32.94 and 67.06% are found for grafted and hybrid vineyards, which held areas of 10,898 and 22,192 ha, so that the total viticulturally patrimony had an area of 33,090 ha. Of the total surface, the table grapes held 1.56% (529 ha) and the wine grapes 98.40% (32,561 ha).

At the level of 2017, a total area of 32.748 ha is found, of which 32.37% grafted vines (10.602 ha) and 67.63% hybrid vines (22,146 ha), respectively 1.27% table grapes (416 ha) and 98.73% wine grapes (32,332 ha).

The average of the period reached 32,866 ha, with the following weights: 32.50 and 67.50% of the grafted vineyards respectively hybrid (10,680 and 22,186 ha); 1.48 and 98.52% of the table grapes respectively wine (485.33 and 32,380.67 ha).

The evolution over time of the total vinicultural surface was uneven. Thus, in the

year 2016 there is an increase of 1.01% when we are comparing to the first dynamical series term, in 2017 year a decrease of 1.03% compared to the previous term, and the average of the period exceeded by 0.36% the basis of comparison (year 2017).

With regard to areas occupied by grafted vineyards, a trend similar to that shown above is noted. The reference terms are overfulfilled in 2016 year as for the period average (with +3.40 and +0.74%), and recording decreases for 2017 year (-2.72%). If we take in consideration the dynamics of the surfaces of hybrid plantations, it is noted a decreasing evolution, with annual successive decreases for 2016 and 2017 years (99.87 and 99.79%). Period average shows a value above the reference one with 0.18% (100.18%).

In the case of table grapes, there is an increase of 3.52% of the surface in the year 2016, compared with the reference term, after which for 2017, a decrease of 21.36% occurs. Under these conditions period average exceeds the reporting base 1.16 times. Surfaces that are areas related to grapes for wine increased for 2016 year by 0.97% when are compared to the first term of dynamical series, then they

decrease for 2017 year (-0.70%), and in this time, the period average exceeds by 0.15% the previous term of dynamical series.

As regards the county structure of the regional wine patrimony, this is contained in Table 2.

Table 2. Region South-West Oltenia. Area of wine patrimony – County structure (average period 2015-2017)\*

Specification	Total		Grafted Vineyards		Hybrid Vineyards		Table Grapes		Wine grapes	
	Effective (ha)	Str. (%)	Effective (ha)	Str. (%)	Effective (ha)	Str. (%)	Effective (ha)	Str. (%)	Effective (ha)	Str. (%)
Total region	32,866.00	100	10,680.00	100	22,186.00	100	485.33	100	32,380.67	100
Dolj County	12,881.00	39.19	4,376.00	40.97	8,505.00	38.33	124.67	25.69	12,756.33	39.39
Gorj County	3,399.33	10.34	-	-	3,399.33	15.32	-	-	3,399.33	10.50
Mehedinți County	5,842.00	17.78	1,824.33	17.08	4,017.67	18.11	173.66	35.78	5,668.34	17.51
Olt County	5,753.00	17.50	1,286.67	12.05	4,466.33	20.13	57.67	11.88	5,695.33	17.59
Vâlcea County	4,990.67	15.19	3,193.00	29.90	1,797.67	8.11	129.33	26.65	4,861.34	15.01

Source: \* own calculation from <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> (26.02.2019).

It is noteworthy from the outset that Gorj County does not have areas occupied by grafted vineyards or areas of table grapes.

In the case of total patrimony, Dolj County is predominant with 12,881 ha (39.19%), followed by the counties of Mehedinți and Olt (5,842 and 5,753 ha, respectively, and shares of 17.78 and 17.50%). Vâlcea County, contributes 4,990.67 ha to the formation of regional patrimony (15.19%), while Gorj County is characterized by a total area of 3,399.33 ha (10.34% - Fig. 1).

For the grafted vineyards, the structure was as follows: 12.05% Olt County (1,286.67 ha), 17.08% Mehedinți County (1,824.33 ha), 29.90% Vâlcea County (3,193 ha) and 40.97% Dolj County (4,376 ha – Fig. 1).

Taking in consideration the data for hybrid vineyards, the weights are variable from 8.11% for Vâlcea County (1,797.67 ha) to 38.33% at Dolj county level (8,505 ha). The rest of the counties held weights, somewhat, close: 15.32% Gorj (3,399.33 ha), 18.11% Mehedinți (4,017.67 ha) and 20.13% Olt (4,466.33 ha - Fig. 1).

Considering the surfaces occupied by table grapes, Mehedinți County is predominantly 35.78% (173.66 ha), followed by Vâlcea County – 26.65% (129.33 ha), Dolj County – 25.69% (124.67 ha) and Olt County – 11.88% (57.67 ha - Fig. 1).

The regional area for the production of wine grapes presents the following structure: 10.50% Gorj County (3,399.33 ha), 15.01% Vâlcea County (4,861.34 ha), 17.51% Mehedinți County (5,668.34 ha), 17.59% Olt

County (5,695.33 ha) and 39.39% Dolj County (12,756.33 ha - Fig. 1).

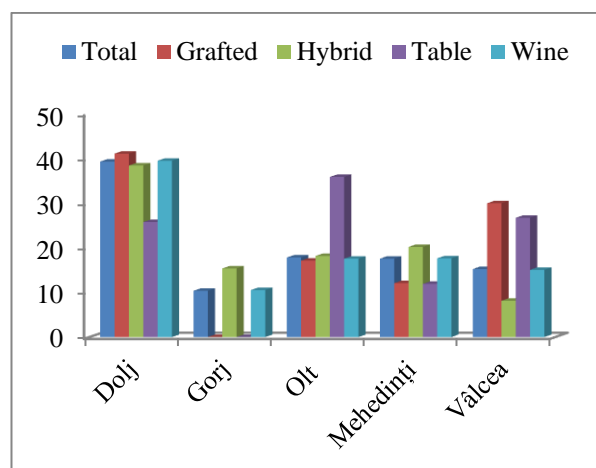


Fig. 1. County structure of regional viticulture patrimony, by types of vines and production directions – average period (%)

Source: Own design based on the own results.

Total grape production is presented in Table 3. For the year 2015, the weights of 32.72 and 62.79% are found for grafted and hybrid vineyards, which produced 38,044 and 64,190 t productions, so that the total wine production was 102,234 t. Of total production, table grapes held 1.71% (1,752 t) and wine grapes 98.29% (100,482 t).

At the level of 2016, there is a total production of 95,559 t, of which 37.17% grafted vineyards (35,518 t) and 62.83% hybrid vineyards (60,041 t), respectively 1.82% table grapes (1,737 t) and 98.18% wine grapes (93,822 t).

In the case of 2017, a total production of 184,684 t of grapes is found, of which 59,018

t from grafted vineyards (31.96%), 125,666 t from hybrid vineyards (68.04%). On production directions, the indicator reached 2,386 t – table grapes (1.29%) and 182,298 t – wine grapes (98.71%). The average of the period was 127,492.33 t, with the following weights: 34.66 and 65.34% grafted vineyards respectively hybrid (4,419.33 and 83,299 t);

1.54 and 98.46% of the table grapes respectively wine (1,958.33 and 125,534 t). Total production decreased in the year 2016 by 6.53% compared to the previous year, increased by 93.27% in 2017 compared to the level in 2016, and the average of the period was less with 30.97% compared to the specific level of 2017.

Table 3. Region South-West Oltenia. Total grape Production

Specification	Year								Period average**			
	2015		2016			2017			Eff. (t)	Str. (%)	average/2017	% beside the national level
	Eff. (t)*	Str. (%)**	Eff. (t)*	Str. (%)**	2016/2015**	Eff. (t)*	Str. (%)**	2017/2016**				
Total	102,234	100	95,559	100	93.47	184,684	100	193.27	127,492.33	100	69.03	14.69
Grafted Vineyards	38,044	37.21	35,518	37.17	93.36	59,018	31.96	166.16	44,193.33	34.66	74.88	8.73
Hybrid Vineyards	64,190	62.79	60,041	62.83	93.54	125,666	68.04	209.30	83,299.00	65.34	66.29	23.05
Table grapes	1,752	1.71	1,737	1.82	99.14	2,386	1.29	137.36	1,958.33	1.54	82.08	4.57
Wine grapes	100,482	98.29	93,822	98.18	93.37	182,298	98.71	194.30	125,534.00	98.46	68.86	15.22

Sources: \*[http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table\(26.02.2019\)](http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table(26.02.2019)), \*\* own calculation.

In the case of grafts, for the year 2016 there is a decrease of 6.64% when is compared to the first term of dynamical series, followed by an overrun of 1.66 in 2017 of the comparing bases. So, the period average is reduced by 25.12% compared to the situation specific for 2017 year. The production of hybrid calves is inferior in 2016, with 6.46% compared to the level in 2015, it increases substantially in 2017 (+109.30%) Compared to the situation in the case of year 2016, and the average period is reduced by 33.71% from the reporting base. The total production of table grapes decreased by 0.86% in for 2016 year beside the level that are recorded in 2015, it

increases by 1.37 times for year 2017 compared to the reference term. The average period is lower than the reporting base by 17.92%. Wine grapes are characterized by fluctuating developments in total production. Thus, the indicator is reduced by 6.63% in 2016 compared to the characteristic situation of 2015, it is pushing 1.94 times the comparison period at the level of year 2017, while for the period average there is recorded a decrease of 31.14% compared to the previous term of Dynamic series. In Table 4, the county structure of regional grape production is presented, by types of vine and production directions.

Table 4. Region South-West Oltenia. Total grape production – County structure (average period 2015-2017)\*

Specification	Total		Grafted Vineyards		Hybrid Vineyards		Table Grapes		Wine grapes	
	Eff. (t)	Str. (%)	Eff. (t)	Str. (%)	Eff. (t)	Str. (%)	Eff. (t)	Str. (%)	Eff. (t)	Str. (%)
Total region	127,492.33	100	44,193.33	100	83,299.00	100	1,958.33	100	125,534.00	100
Dolj County	49,031.34	38.46	18,490.67	41.84	30,540.67	36.66	554.00	28.29	48,477.33	38.62
Gorj County	13,509.33	10.60	-	-	13,509.33	16.22	-	-	13,509.33	10.76
Mehedinți County	19,856.33	15.57	6,086.33	13.77	13,770.00	16.53	400.33	20.44	19,456.00	15.50
Olt County	20,967.33	16.45	4,469.67	10.11	16,497.67	19.81	229.67	11.73	20,737.67	16.52
Vâlcea County	24,128.00	18.92	15,146.66	34.28	8,981.33	10.78	774.33	39.54	23,353.67	18.60

Source: \* own calculation from [http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table\(26.02.2019\)](http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table(26.02.2019)).

It is noteworthy, from the outset, that Gorj County does not obtain productions from

grafting calves or in the case of table grapes. In the case of total production, Dolj County is

predominant with 49,031.34 t (38.46%), followed by the counties of Vâlcea, Olt and Mehedinți (24,128, 20,967.33 and 19,856.33 t, respectively, shares of 18.92, 16.45 and 15.57%). Gorj County is characterized by the realization of a total production of 13,509.33 t (10.60% - Fig. 2).

For the grafted vineyards, the structure was as follows: 10.11% Olt County (4,469.67 t), 13.67% Mehedinți County (6,086.33 t), 34.28% Vâlcea County (15,146.66 t) and 41.84% Dolj County (18,490.67 t - Fig. 2).

If we refer to the situation of hybrid calves, there are variable weights from 10.78% in the case of Vâlcea County (8,981.33 t) to 36.66% at the Dolj county level (30,540.67 t). The rest of the counties held weights, somewhat, close: 16.22% Gorj (13,509.33 t), 16.53% Mehedinți (13,770 t) and 19.81% Olt (16,497.67 t - Fig. 2). With regard to the grapes productions for table, Vâlcea County is predominantly 39.54% (774.33 t), followed by Dolj County – 28.29% (554 t), Mehedinți County – 20.44% (400.33 t) and Olt County – 11.73% (229.67 t - Fig. 2). The total regional production of wine grapes presents the following structure: 10.76% Gorj County (13,509.33 t), 15.50% Mehedinți County (19,456 t), 16.52% Olt County (20,737.67 t), 18.60% Vâlcea County (23,353.67 t) and 38.62% Dolj County (48,477.33 t - Fig. 2). The data related to the average production levels are presented in Table 5. At the level of 2015, an average production of 3,121 kg/ha is found, compared to which the grafting vines carried out 115.63% (3,609 kg/ha) and the hybrid vines 92.57% (2,889 kg/ha), respectively 109.87% of the table grapes (3,429 kg/ha) and 99.83% of the wine grapes (3,116 kg/ha) and 99.83%

of wine grapes (3,116 kg/ha). In the case of 2016, an average production of 2,888 kg/ha is found, compared with which the grafted vines achieved 3,259 kg/ha (112.85%) and the hybrid vineyards 2,706 kg/ha (93.70%).

On production directions, the indicator levels were 3,284 kg/ha for table grapes (113.71%) and 2,881 kg/ha in wine grapes (99.76%). For the year 2017, positioning is found at 98.71 and 100.60% for grafts and hybrid vineyards, which produced average yields of 5,567 and 5,674 kg/ha, so that the average overall production was 5,640 kg/ha. Compared with the national indicator level, table grapes achieved 101.70% (5,736 kg/ha) and wine grapes 99.96% (5,638 kg/ha).

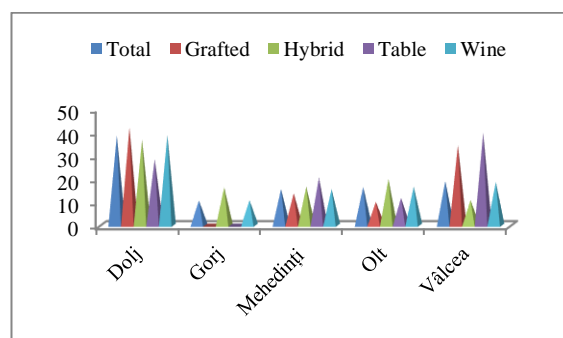


Fig. 2. County structure of total regional production, by types of vines and production directions – average period (%)

Source: Own design based on the own results.

The average of the period, recorded a level of 3,879 kg/ha, with different placements compared to it, by types of vines and production directions: 106.68 and 96.80% of the grafts and hybrids respectively (4,138 and 3,755 kg/ha); 104.02 and 99.95% of the table Grapes respectively wine (4,035 and 3,877 kg/ha).

Table 5. Region South-West Oltenia. Average grape production

Specification	Year									Period average**			
	2015		2016			2017			Eff. (kg/ha)	% beside total	media/2017	% beside national level	
	Eff. (kg/ha)*	% beside total**	Eff. (kg/ha)*	% beside total**	2016/2015**	Eff. (kg/ha)*	% beside total**	2017/2016**					
Total	3,121	100	2,888	100	92.53	5,640	100	195.29	3,879	100	68.78	79.52	
Grafted Vineyards	3,609	115.63	3,259	112.85	90.30	5,567	98.71	170.82	4,138	106.68	74.33	75.41	
Hybrid Vineyards	2,889	92.57	2,706	93.70	93.67	5,674	100.60	209.68	3,755	96.80	66.18	88.94	
Table grapes	3,429	109.87	3,284	113.71	95.77	5,736	101.70	174.67	4,035	104.02	70.35	64.59	
Wine grapes	3,116	99.83	2,881	99.76	92.46	5,638	99.96	195.70	3,877	99.95	68.77	80.37	

Sources: \*<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> (26.02.2019), \*\* own calculation.

Overall, average production decreased by 7.47% for 2016 year when is reported to the first term of dynamical series, in 2017 it has outrun 1.95 times previous level, as for the average of the period, that was less than 31.22% compared to the situation specific for 2017 year.

Taking in consideration the indicator evolution, at the level of grafted vineyards, are found the same trend as the one previously shown (-9.70% for 2016, +70.82% in 2017, -25.67% at period average).

In the case of hybrid calves, two subunit levels of dynamic indices (93.67 and 66.18% in 2016 and the average period respectively) and a super unit level in the case of 2017 (209.68%) are found. For table grapes, there is found an uneven evolution for the indicator, the decreases for 2016 year (-4.23%), being followed by increases in year 2017 (+74.67%) and then decreasing for the period average (-29.65%). Wine grapes present an uneven trend of average production, characterized by

a decrease of 7.54% in 2016 year compared to the situation specific for 2015, an increase of 95.70% in 2017 compared to the previous term of the dynamic series, a decrease of 31.23 % for the average period compared to the reference term.

In Table 6, the position of counties in comparison with the regional situation is presented in the case of average.

In the case of the general situation, there are two counties that have outrun the regional level (Vâlcea and Gorj of 1.24 and 1.02 times – 4,835 and 3,974 kg/ha) and three counties placed under it (Dolj, Olt and Mehedinți – 98.12, 93.97 respectively 87.63%, effective levels of 3,806 , 3,645 and 3,399 kg/ha - Fig. 3).

For the grafting vineyards, the positioning was as follows: 80.62% Mehedinți County (3,336 kg/ha), 83.95% Olt County (3,474 kg/ha), 102.10% Dolj County (4,225 kg/ha) and 114.64% Vâlcea County (4,744 kg/ha - Fig. 3).

Table 6. Region South-West Oltenia. Average grape production – County positioning in regional context (average period 2015-2017)\*

Specification	Total		Grafted Vineyards		Hybrid Vineyards		Table Grapes		Wine grapes	
	Eff. (kg/ha)	% compared to region	Eff. (kg/ha)	% compared to region	Eff. (kg/ha)	% compared to region	Eff. (kg/ha)	% compared to region	Eff. (kg/ha)	% compared to region
Total region	3,879	100	4,138	100	3,755	100	4,035	100	3,877	100
Dolj County	3,806	98.12	4,225	102.10	3,591	95.63	4,444	110.14	3,800	98.01
Gorj County	3,974	102.45	-	-	3,974	105.83	-	-	3,974	102.50
Mehedinți County	3,399	87.63	3,336	80.62	3,427	91.26	2,305	57.13	3,432	88.52
Olt County	3,645	93.97	3,474	83.95	3,694	98.38	3,982	98.69	3,641	93.91
Vâlcea County	4,835	124.65	4,744	114.64	4,996	133.05	5,987	148.38	4,804	123.91

Source: \*own calculation <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> (26.02.2019).

If we refer to the situation of hybrid vineyards, there are variable placements from 91.26% for Mehedinți County (3,427 kg/ha) to 133.05% at the Vâlcea county level (4.996 kg/ha). The rest of the counties were positioned as follows: 95.63% Dolj (3,591kg/ha), 98.38% Olt (3,694 kg/ha) and 105.83% Gorj (3,974 kg/ha - Fig. 3).

As regards the production of grapes for the table, the counties of Vâlcea and Dolj are deviating the regional level (1.48 and 1.10 or 5,987 and 4,444 kg/ha), and the counties of Olt and Mehedinți are placed below it (98.69

and 57.13% respectively 3,982 and 2,305 kg/ha - Fig. 3).

Compared to the average regional production of wine grapes, the counties are positioned as follows: 88.52% Mehedinți County (3,432 kg/ha), 93.91% Olt County (3,641 kg/ha), 98.01% Dolj County (3.800 kg/ha), 102.50% Gorj County (3,974 kg/ha) and 123.91% Vâlcea County (4,804 kg/ha - Fig. 3).



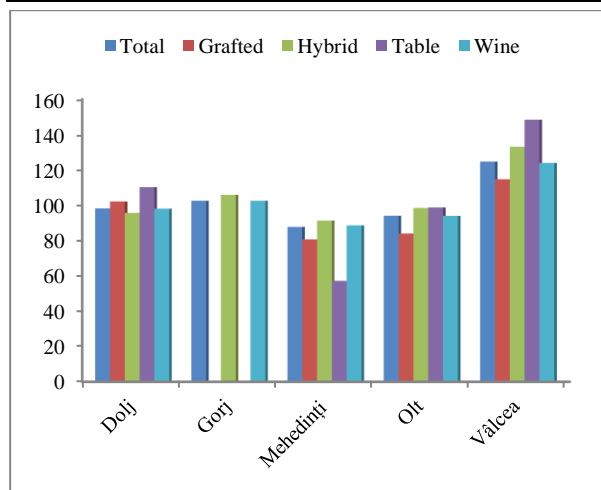


Fig. 3. Average production. Position of counties in relation to regional situation, by types of vines and production directions – average period (%)

Source: Own design based of the own results.

## CONCLUSIONS

For the south-west region Oltenia, a share of 18.48% at national level, in terms of the surface, with weights that can be considered unsatisfactory, at least, for those grafting vines for table grapes (compared to the national situation). It is necessary to improve the weighting (32.50%) Grafting and table grapes (1.48%) In total operating areas. Dolj County is the main vine grower at regional level, excluding table grapes (Vâlcea County), and Gorj County has the smallest area, at its level lacking table varieties and vineyards grafting.

Total regional production, represents only 14.69% of national production, which is worrying (lower than existing at surface level), which highlights different shortcomings of producers in this region (possibly technical, technological, professional, etc.). At county level, the structure of total production is dominated by Dolj County (more for Table grapes-place I County Vâlcea), and in the last position is the county of Gorj to total and for wine grapes, Olt County in the case of grafted vineyards and Table Grapes, Vâlcea County for hybrid Vineyards.

Average production has evolved unevenly, almost similar to the evolution of total production. The performances achieved, on the productive unit, highlight the favorable

situation of Vâlcea County (place I in all cases) and the less convenient situation of Mehedinți County (last place in all cases).

It is noted the need to continue the process of reform of the wine sector, even if it has benefited – on the whole-in the period 2007-2013 adequate support measures through PNDR. This must manifest both in terms of funding (non-refundable funds, subsidies, attractive interest on the credits contracted by producers, attracting foreign investors, etc.), capitalization (modernization and development of Plantations, improvement of the range of mechanical means, construction of suitable storage and processing spaces, etc.), training of the workforce (consultancy, qualification courses, training, etc.).

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