

## BEHAVIOUR OF SOME GRAPES VARIETIES FOR WHITE WINE IN SEASON PHENOLOGICAL IN SANDY SOILS CONDITIONS FROM SOUTH-WESTERN OLTENIA

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### Abstract

Observations carried out in the period 2012-2016, on a number of grape varieties with 17 for white wines, showed that, in specific climatic conditions sandy soils of south-western Oltenia, the vine in the growing season took place in April, trigger date being different depending on the climatical conditions, the time of month when performing the higher temperatures may be the first or second decade, and variety. Sprays against pests of blooming occurred at the end of May, the earliest, on May 17, in 2013, the Selena. In the period under review there has been a single deviation from this rule, in 2014 year, when the blooming was June 1 at the varieties Fetească regală Cl. 21 Bl., Selena, Neuburger and June 3 at the Chasselas d'oré variety. Grapes varieties are entered from ripening at the the second decade of July until the first decade of August. The ripe was triggered, the early at Chasselas d'oré și Alb aromat varieties, on July 12. 2012. Harvesting of grapes, was conducted in the first decade of September the years 2012, 2014, 2015 and 2016, and in the second decade of September, 2013. In terms of sandy soils in south-western Oltenia analyzed varieties were matured their grapes earlier than other areas of our country.

Keywords: sandy soils, vegetative phase, vine.

### 1. INTRODUCTION

Vine, loving – plant, pursue growth phases in the light of certain biological thresholds minimum temperature and of achieving a ranks temperature, specific of each phenological phases of each variety (Martin, 1972). In the case of each the process intensity is highest at the optimal temperature and decreases to zero as the temperature tends to the minimum or maximum level (Oslobeanu et al., 1980). During the period of active growth is strictly determined by climatic conditions (Tardea and Dejeu, 1995). The default number of flowers and production of grapes are affected by changes in climate and temperature in the time of blooming (Keller et al., 2010; Băducă Câmpeanu et al., 2016). The grape maturation is dependent on the conditions of temperature and precipitation which recorded in this period (Bălan and Popa, 2005).

### 2. MATERIALS AND METHODS

The experience was founded in 2010. In 2012 the plantation was found in the third year after planting and 2013 was the first year of fruiting. Were planted the following varieties: Columna, Donaris, Fetească albă 1 Od., Fetească regală 21 Bl, Pinot gris, Riesling italian, Riesling de Rhin,

Neuburger, Chasselas d'ore, Muscat Ottonel, Sauvignon blanc, Alb aromat, Grasă de Cotnari, Brumăriu, Blasius, Sauvignon, Selena. Planting density is 3787 vines/hectare, density that results from planting distances of 2.2/1.2 m. In the 2012-2016 period, they occurred less favourable conditions for vines. In 5 years, only one was normal, in terms of climate, vine, 2013 year, when the absolute minimum temperature was  $-18,1^{\circ}\text{C}$ , temperature did not affect the viability of primary buds. In 3 years of recorded temperatures were below strength buds and other organs of the vine, namely in 2012, when the absolute minimum temperature was  $-24,3^{\circ}\text{C}$ , 2015 year 2015 with an absolute minimum temperature of  $-25,1^{\circ}\text{C}$  and 2016 year when the absolute minimum temperature was de  $-23,4^{\circ}\text{C}$ . In these three years resistant only some of the buds, that were located in snow layer, which was 25-30 cm thick. In 2014 year, although the vines did not suffer due to low temperatures, grape production was affected by the large amount of rainfall, 994 mm annual and 640,7 mm in vegetative period, over the rainfall multiannual average. They made observations and determinations experimental on the main stages of vegetation (enter in vegetation, blooming, the ripening and grape maturation).

### 3. RESULTS AND DISCUSSIONS

The main climatic data from the 2012-2016 period, we have analyzed were average monthly temperature and monthly rainfall (table 1). Hence, in all the years there have been favourable climatic conditions for carrying out the optimal or near optimal vegetation vines.

*Table 1. The main climatic data from 2012-2016 period*

Climatic element	Year	Month												Average /sum
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Average temperature ( $^{\circ}\text{C}$ )	2012	0.7	-6.6	7.1	13.9	17.2	23.3	26.8	24.3	19.9	15.8	6.7	2.3	12.6
	2013	-1.1	5.1	5.6	14.3	20	21.5	23.5	24.1	17.8	11.4	8	1	12.6
	2014	1.9	2	9.9	12.6	16.6	20.7	23.1	23.7	18.3	12	5.4	1.1	12.3
	2015	0.7	2.2	6.8	12.5	19.2	20.5	24.8	24.3	20.1	11.2	8.5	4.1	12.9
	2016	-3.1	7.1	8.3	15	16.9	23.6	24.8	24.3	20.1	10.8	5.38	0.10	12.8
Annual rainfall (mm)	2012	64.6	0	0.4	66.6	93.8	32.4	8.2	21.8	8	30.6	31.7	25.4	386.5
	2013	3.4	4.7	46.4	38.6	61	105.2	36.2	30.8	36	50.2	38.4	0.6	451.5
	2014	41.9	27.8	62	123.8	117.4	92	125.6	16	165.9	42.8	40	138.8	994
	2015	45.5	31.2	52.6	67.2	52.4	134.2	11	48.4	84.8	93.8	87.8	26.2	735.1
	2016	81.4	40.2	113.2	60.2	104.4	53.2	31.6	10.4	37.6	123.5	66.4	11.2	733.3

Entry vine in vegetation occurred in April, once the beginning is different, depending on climatic conditions, time of the month when making the big temperatures, which may be first or second decade, and variety (table 2).

*Table 2. The start of vegetation at some varieties of vine grapes for white wines during 2012-2016 period*

Variety	Year					Multiannual interval
	2012	2013	2014	2015	2016	
Riesling italian	14.04	18.04	17.04	14.04	07.04	7-18.04
Columna	13.04	19.04	13.04	16.04	05.04	5-19.04
Donaris	12.04	19.04	12.04	14.03	05.04	5-19.04
Feteascălbă Cl. 1 Od.	14.04	19.04	16.04	14.04	06.04	6-19.04
Feteascăregală Cl. 21 Bl.	14.04	20.04	15.04	14.04	04.04	4-20.04
Pinot gris	12.04	21.04	17.04	17.04	08.04	8-21.04
Riesling de Rhin	14.04	22.04	18.04	17.04	07.04	7-22.04

Neuburger	16.04	19.04	18.04	17.04	07.04	7-18.04
Chasselas d'oré	10.04	18.04	16.04	15.04	06.04	6-18.04
Muscat Ottonel	14.04	19.04	18.04	17.04	07.04	7-19.04
Sauvignon blanc	11.04	18.04	18.04	16.04	07.04	7-18.04
Albaromat	11.04	17.04	15.04	15.04	06.04	6-17.04
Grasă de Cotnari	13.04	20.04	15.04	15.04	05.04	5-20.04
Brumăriu	09.04	17.04	22.04	17.04	06.04	6-22.04
Blasius	14.04	19.04	22.04	16.04	07.04	7-22.04
Sauvignon	13.04	19.04	19.04	16.04	07.04	7-19.04
Selena	05.04	16.04	15.04	15.04	03.04	3-16.04

The earliest entry in vegetation was started in 2016, when the average monthly temperature was 15<sup>0</sup>C, with temperature higher than other years with 0,7<sup>0</sup>C, comparative 2014 and 2,5<sup>0</sup>C, comparative 2015 year. Variety that went into the early growing season was Selena variety, namely into the item on April 3, 2016. The same variety entered in vegetation on April 16, 2013. The later entered in vegetation, on April 22, variety Riesling de Rhin, in 2013, and Brumăriu and Blasius, in 2014 year.

Phenophase early flowering took place in end May, the earliest on May 17, 2013, the variety Selena (table 3). During this period it was registered only deviation from this rule, namely in 2014, when the starting date of flowering was June 1st at varieties Fetească regală Cl. 21 Bl., Selena, Neuburger and June 3, at Chasselas d'oré, variety.

*Table 3. The start of blooming phenophase at some varieties of vine grapes for white wines during 2012-2016 period*

Variety	Year					Multiannual interval
	2012	2013	2014	2015	2016	
Riesling italian	20.05	19.05	31.05	25.05	27.05	19-31.05
Columna	23.05	19.05	30.05	25.05	25.05	19-30.05
Donaris	20.05	19.05	31.05	23.05	25.05	19-31.05
Fetească albă Cl. 1 Od.	19.05	19.05	28.05	23.05	27.05	19-28.05
Fetească regală Cl. 21 Bl.	19.05	19.05	01.06	23.05	27.05	19.05-01.06
Pinot gris	19.05	19.05	29.05	24.05	26.05	19-29.05
Riesling de Rhin	20.05	20.05	30.05	24.05	26.05	20-30.05
Neuburger	19.05	19.05	01.06	24.05	28.05	19.05-01.06
Chasselas d'oré	18.05	19.05	03.06	24.05	26.05	18.05-03.06
Muscat Ottonel	20.05	19.05	29.05	24.05	28.05	19-28.05
Sauvignon blanc	20.05	18.05	30.05	25.05	27.05	18-30.05
Albaromat	18.05	19.05	02.06	24.05	27.05	18.05-02.06
Grasă de Cotnari	21.05	20.05	31.05	24.05	26.05	20-31.05
Brumăriu	21.05	18.05	31.05	24.05	24.05	18-31.05
Blasius	22.05	18.05	30.05	25.05	30.05	18-30.05
Sauvignon	22.05	18.05	31.05	25.05	27.05	18-31.05
Selena	21.05	17.05	01.06	25.05	28.05	17-28.05

During the same year, between the start flowering dates, at varieties analyzed, there was a difference of 3-6 days. In 2014 year, the start of flowering took place later in the analyzed period. In the 2012-2016 periods, the varieties of grapes for white wines entered in ripening from the second decade of July until the first decade of August (table 4).

**Table 4. Entry in ripening phase at some varieties of vine grapes for white wines during 2012-2016 period**

Variety	Year					Multiannual interval
	2012	2013	2014	2015	2016	
Riesling italian	20.07	29.07	27.07	29.07	28.07	20-29.07
Columna	22.07	24.07	01.08	25.07	23.07	22.07-01.08
Donaris	21.07	25.07	01.08	28.07	19.07	19.07-01.08
Feteascăalbă Cl. 1 Od.	20.07	20.07	01.08	24.07	25.07	20.07-01.08
Feteascăregală Cl. 21 Bl.	20.07	22.07	04.08	24.07	27.07	20.07-04.08
Pinot gris	20.07	21.07	04.08	27.07	26.07	20.07-04.08
Riesling de Rhin	20.07	25.07	31.07	29.07	28.07	20-31.07
Neuburger	19.07	25.07	04.08	16.07	23.07	16.07-04.08
Chasselasd'oré	12.07	17.07	04.08	16.07	17.07	12.07-04.08
Muscat Ottonel	22.07	20.07	27.07	16.07	17.07	16-27.07
Sauvignon blanc	21.07	27.07	07.08	24.07	21.07	21.07-07.08
Albaromat	12.07	19.07	29.07	24.07	25.07	12-25.07
Grasă de Cotnari	19.07	27.07	04.08	30.07	23.07	1-.07-04.08
Brumăriu	22.07	25.07	04.08	05.08	27.07	22.07-05.08
Blasius	23.07	22.07	31.07	18.07	25.07	18-31.07
Sauvignon	21.07	26.07	29.07	28.07	26.07	21-29.07
Selena	20.07	25.07	03.08	26.07	26.07	20.07-03.08

The ripening began, the early at Chasselas d'oré and Alb aromat varieties, on data of July 12, 2012, the third year after planting, when grape production was lower.

The late-ripening entered the Sauvignon blanc, on 7 August, 2014. Except varieties Chasselas d'oré and Alb aromat, which having the character of earliness, differences of days between dates for the first fruits of varieties analyzed are from 3 to 11 days, depending on the agricultural year.

Harvesting grapes in the five years analyzed, was conducted in the first decade of September the years 2012, 2014, 2015 and 2016, and in the second decade of September, 2013 (table 5). In conditions of sandy soils in south-western Oltenia maturing varieties analyzed their grapes earlier than other areas of our country. The earliest grapes have matured in 2012 when the variety Chasselas d'oré, when the harvest maturity reached on August 15. Vine variety that has swept the grapes too later was Sauvignon blanc, on September 16, 2013. Of late varieties enumerate Selena, Sauvignon, Donaris, Sauvignon blanc. Grape maturation is dependent, to a lesser extent, and the load of grapes per vine, being late for a higher production.

**Table 5. The maturation of grapes at some varieties of vine grapes for white wines during 2012-2016 period**

Variety	Year					Multiannual interval
	2012	2013	2014	2015	2016	
Riesling italian	03.09	14.09	01.09	10.09	09.09	01-14.09
Columna	02.09	12.09	05.09	08.09	08.09	02-12.09
Donaris	02.09	16.09	05.09	08.09	05.09	02-16.09
Feteascăalbă Cl. 1 Od.	04.09	08.09	05.09	06.09	08.09	05-08.09
Feteascăregală Cl. 21 Bl.	05.09	09.09	06.09	05.09	08.09	05-09.09
Pinot gris	04.09	09.09	06.09	08.09	08.09	04-09.09
Riesling de Rhin	03.09	14.09	05.09	10.09	09.09	03-14.09
Neuburger	03.09	14.09	06.09	02.09	08.09	02-14.09
Chasselasd'oré	15.08	03.09	02.09	31.08	05.09	15.08-05.09

Muscat Ottonel	02.09	10.09	01.09	02.09	05.09	01-10.09
Sauvignon blanc	03.09	16.09	06.09	07.09	06.09	03-16.09
Albaromat	15.08	01.09	01.09	05.09	08.09	15.08-08.09
Grasă de Cotnari	04.09	12.09	06.09	10.09	08.09	04-12.09
Brumăriu	04.09	12.09	08.09	12.09	09.09	04-12.09
Blasius	04.09	12.09	05.09	02.09	08.09	04-12.09
Sauvignon	04.09	15.09	06.09	07.09	08.09	04-15.09
Selena	04.09	14.09	06.09	15.09	08.09	04-15.09

#### 4. CONCLUSIONS

In sandy soils climatological conditions in south-western Oltenia entry vegetation vine held in April, once the start is different, depending of climatic condition, time of month when making the highest temperatures, which may be the first or second decade, and variety.

The start of flowering phenophase took place in late May, the earliest on May 17, 2013, the variety Selena. In the analyzed period was registered only deviation from this rule, namely in 2014, when the starting date was June 1st flowering varieties Fetească regală Cl. 21 Bl., Selena, Neuburger and June 3, at Chasselas d'oré variety,.

In 2012-2016 period, the varieties of grapes for white wines entered the ripening phase from the second decade of July until the first decade of August. The ripening was started, the early varieties Chasselas d'oré and Alb aromat, on July 12, 2012.

The harvesting grapes, in the five years analyzed, was conducted in the first decade of September the years 2012, 2014, 2015 and 2016, and in the second decade of September, 2013. In terms of sandy soils from south-western Oltenia maturing varieties analyzed their grapes earlier than other areas of our country.

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