JAP&T
TPA-Timişoara

Available online at http://journal-of-agroalimentary.ro

Journal of Agroalimentary Processes and Technologies 2011, *17*(4), 434-438

Journal of Agroalimentary Processes and Technologies

Climate conditions for years 2009 and 2010

Maria Cosmina Marginean [1*], Maria Cristina Tana [1*], Ovidiu Tita[2]

[1] *S.C. Jidvei S.R.L., Romania*
[2] *"Lucian Blaga" University of Sibiu, Faculty of Agricultural and Food Industry and Environmental Protection, 7 – 9 Dr. I. Ratiu street, 550012, Sibiu, Romania*

Received: 17 May 2011; Accepted: 31 September 2011

Abstract

The objective of the thesis is the study of the influence of environmental conditions (global radiation, temperature, humidity and precipitations) on vine and grape over the years 2009 and 2010.

Keywords: dietary fiber, viscosity, molecular weight, barley, triticale, oat, wheat

1. Introduction

Vine is a plant with the growth and fructification which, during its evolution, has adapted to environmental conditions. Climatic factors, through their actions have a decisive importance on the culture of the vine.

In all geographics, Transylvanian plateau shows a chain of hills south-west general direction. The plot is kneaded and includes all forms of relief.

The climate is typical continental with an average annual temperature of 8.6º C. Average daily temperature above 10 ° C was registered in the second half of april and fall below this limit, since the second half of october. Warmest months are july and august.

Annual precipitations varies between 542-570 mm during the vegetation period.

In 4 years of 20 there are negative temperatures of -20 °C and in 11 years of 20 were temperatures from -15º C to -21º C. Also, the hoarfrost and late spring and early frosts of autumn have a high frequency.

Lowest temperature was recorded in the Jidvei station, near Blaj (from -32º C to -35º C) and the highest 39° C, recorded in july 1931.

In autumn there are warm days, with clear skies. Strong rains fall mostly in winter, as snow. The snow that blanketed the winter varies between 5 and 35 cm. Hail is a rare phenomenon and recorded mostly in summer months, when large losses occur, especially vine crops [1-5].

2. Materials and Method

For monitoring the enviromental conditions, in Jidvei center vineyard, in 2001 to purchase a system AGROEXPERT which consists in a number of 9 measuring meteorological and transmission stations (air temperature, soil temperature at 10 cm, 20 cm and 30 cm deep, atmospheric humidity, precipitation, humidity on the leaves) in different growing areas (farms). Calculate the incubation periods of diseases, suggests the best moment to start applying control measures and not least record all data on climate and comparative studies between different years.

Major climatic factors are global radiation, temperature, relative humidity and precipitations.

3. Results and Conclusion

*Global radiation.*Is the main source of energy received by earth surface and its effect heat and light affect the growth and development of vineyards.

Corresponding author: *e-mail:* cristinaburnete@yahoo.com

Thus, radiation is used by the vine as a source of energy received from the sun, with heat and light effect. During the vine growing season, the global radiation measuring values which are increasing to 86.5 kcal/cm2 in the Transylvanian plateau.

The higher values stimulates an earlier release of flowering and ripening grapes. It should be noted that therefore the reducing radiation intensity, on the same variety of grapes the sugar content decreases and increases acidity.

GLOBAL RADIATION IN 2009

Month	Minimum	Maximum	Average	Amount
January	0,0	456,0	41,0	121888,0
Februaru	0,0	480,0	64,4	179160,0
March	0,0	571,0	78,7	233786,0
April	0,0	716,0	100,6	289369,0
May	0,0	794,0	149,0	443276,0
June	0,0	812,0	159,6	459786,0
July	0,0	802,0	144,0	429206,0
August	0,0	718,0	137,2	408419,0
September	0,0	456,0	67,8	195126,0
October	0,0	323,0	45,0	116512,0
Noiember	0,0	307,0	27,4	78899,0
December	0,0	274,0	23,9	71187,0

GLOBAL RADIATION IN 2010

Month	Minimum	Maximum	Average	Amount
January	0,0	454,0	32,8	97531,0
Februaru	0,0	425,0	49,5	133026,0
March	0,0	565,0	81,9	243532,0
April	0,0	629,0	107,0	307790,0
May	0,0	719,0	119,8	356422,0
June	0,0	699,0	134,1	386116,0
July	0,0	712,0	136,6	406438,0
August	0,0	572,0	124,5	370381,0
September	0,0	579,0	91,9	264777,0
October	0,0	464,0	69,3	206105,0
Noiember	0,0	358,0	44,4	127875,0
December	0,0	293,0	27,7	75888,0

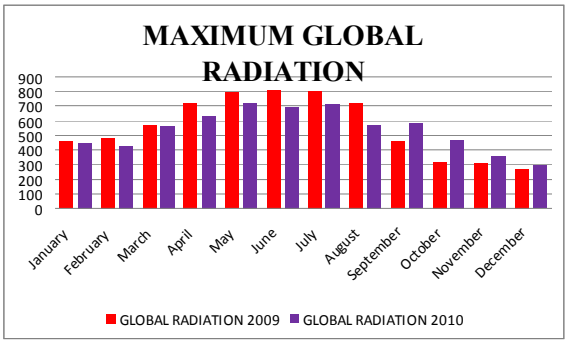
Temperature, relative humidity and precipitations in 2009

Month	Air temperature in 2009			Relative humidity in 2009			Precipitations in 2009 (l/m^2)
	Minimum	Maximum	Average	Minimum	Maximum	Average	
January	-6,4	13,0	3,5	53,2	99,7	78,9	17,0
Februaru	-5,2	14,1	3,7	28,4	99,9	75,4	30,6
March	-2,0	19,8	7,8	20,3	99,8	61,6	24,8
April	-0,6	22,9	11,0	15,1	97,7	50,9	18,2
May	-0,4	31,4	17,5	18,8	99,8	64,8	131,8
June	10,9	34,3	20,5	27,9	98,8	66,2	47,2
July	9,4	37,4	22,1	15,6	97,8	58,9	71,2
August	8,5	35,6	20,1	34,7	98,3	77,5	100,0
September	3,2	26,5	13,7	35,1	98,5	78,3	97,8
October	-1,3	22,1	9,9	32,4	99,5	82,3	28,0
Noiember	-8,8	11,7	2,3	39,2	99,5	83,3	39,4
December	-14,3	11,5	-2,5	60,8	98,6	89,9	28,0

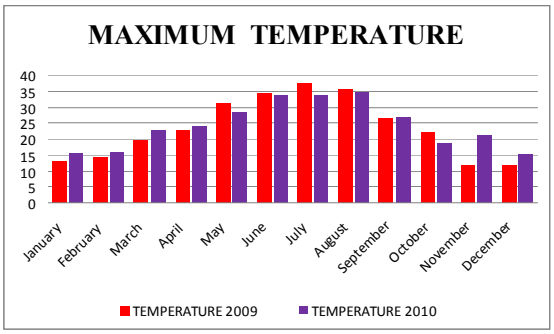
Temperature, relative humidity and precipitations in 2010

Month	Air temperature in 2010			Relative humidity in 2010			Precipitations in 2010 (l/m^2)
	Minimum	Maximum	Average	Minimum	Maximum	Average	
January	-23,8	15,5	-3,1	43,5	99,9	90,4	41,4
Februaru	-15,5	16,1	0,9	36,9	99,9	84,8	19,8
March	-11,9	23,0	4,1	20,0	99,9	74,9	45,0
April	-2,6	24,0	10,0	23,2	99,9	76,0	79,8
May	3,7	28,5	15,3	26,7	99,9	77,5	104,0
June	5,2	33,9	18,6	28,8	99,5	79,0	213,6
July	10,2	33,8	20,6	32,1	98,3	77,8	83,8
August	8,5	34,6	21,0	27,2	98,5	75,1	31,4
September	5,2	26,8	14,7	34,0	99,7	78,8	33,0
October	-4,0	18,6	7,3	25,6	99,9	78,5	28,2
Noiember	-4,6	21,2	8,2	31,6	99,9	76,0	36,8
December	-15,0	15,4	-1,5	56,7	99,9	89,2	31,2

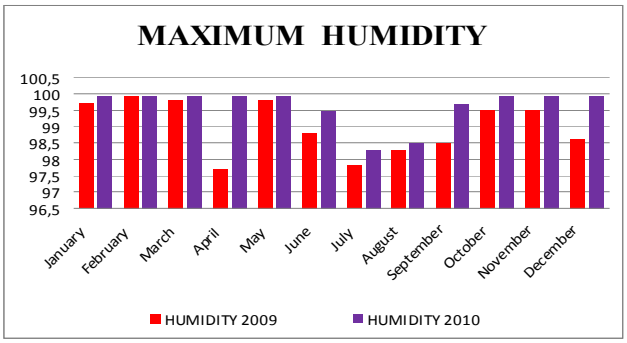
From the above tables we observed that exist a increase of global radiation in 2010, compared to 2009, which starting in September.



Temperature, relative humidity and precipitations: Temperature - is the factor that determines the range of vine culture, its farming system, initiation and completion phases of vegetation. Also, the temperature acts on all physiological and biochemical processes of vine. In ecological interpretation, the temperature may be the biological thresholds for vine, optimal levels and critical moments. Biological thresholds are the temperature levels that trigger stops or slows the various biological and physiological phenomena. Higher air temperature in early January 2009 and preserving the value over 2010 favors starting vine physiological processes in growth and development, sugar accumulation and ripening of grapes.



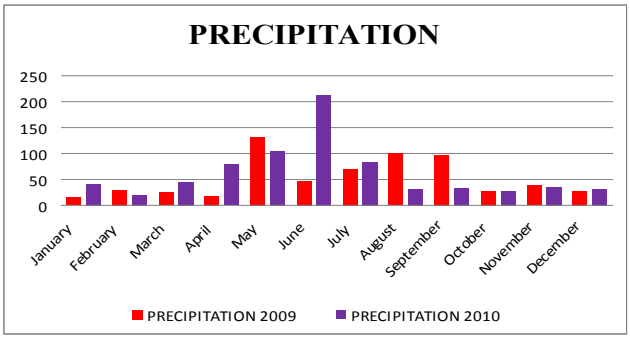
Humidity of soil and habitat influences all the life processes of the vine (absorption, transport and prepared crude sap, photosynthesis, transpiration, respiration, etc.).The vines requirements from water are large, because high water consumption. Vine is considered a drought resistant plant, due to deep and well developed root system. Requirements for humidity are higher at grapes for mass than grapes for wine. Maximum water consumption is recorded in phenophase intense growth of shoots and grains and is low in phenophase flowering, ripening grain and wood. For a good growth and fructification processes, the soil humidity should be 60-80% and 50-80% for air humidity.



Precipitations during the growing season had an big impact on the quantity and quality of grapes. The recorded precipitations and temperatures well proportioned created favorable conditions for ripening grapes and high sugar accumulation in 2009.

The gray mold attack was highlighted, especially towards the end of ripening the grapes in 2010. The attack show a rapid decrease in grain weight, a big consumption and an increase in total acidity of must, leading to a stronger sulphitation grapes.

Excess of precipitations influences negatively the growth and enjoyment of vineyards and production quality, because the accumulation of sugar in beans and grains colour are deficient.



The water-soluble fractions were obtained by a single extraction at a ratio 1/2 (flour/water), by shaking the tubes at 150 rpm, for 60 minutes at 40ºC, using a LabTech LSB-015S water bath. The extracts were centrifuged for 10 minutes at 5,000 rpm and 25°C, using a Hettich 320R centrifuge.The dynamic viscosity was determined using a cone/plate viscometer Brookfield Model DVIII Cone CP-40, at 100 rpm and 25°C. The relative viscosity was calculated.

References

1. Moldovan SD, 1994, Variety resistant vines from Târnave vineyard, *USAMV Iasi*, *series Horticulture*, **1994**, *37*
2. Pop Nastasia, *General Viticulture*, Ed. Eikon Cluj Napoca, 2010, Romania
3. O. Tita, *Technologies for obtaining wines*, Ed. ULBS Sibiu, 2004, Romania
4. Ţârdea C., Tardea Angela, The climatographic characterisation of vineyards from Romania through graphic expression of the correlation between temperature and precipitation, *Rev. Garden, vineyard and orchard*, 1965
5. Ţârdea C., Gheorghe Sarbu, Tardea Angela, Treaty of wine, Ed. Ion Ionescu de la Brad, Iaşi, 2000, Romania