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АЛМАТЫ ТЕХНОЛОГИЯЛЫҚ УНИВЕРСИТЕТІ**

**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РЕСПУБЛИКИ КАЗАХСТАН
АЛМАТИНСКИЙ ТЕХНОЛОГИЧЕСКИЙ УНИВЕРСИТЕТ**

**MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
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THE REASONING OF GRAPECHOICE FOR ICEWINE PRODUCTION IN UKRAINE

*¹Ostapenko V., ²Tkachenko O., ¹ PhD student, ²D.Sc., Prof.
Department of wine technology and oenology,
Odessa national academy of food technologies, Odessa, Ukraine
E-mail: ostapenkoviktoriya7@gmail.com, obtkachenko@gmail.com*

The choice of suitable cultivar is one of the main direct to obtain harvest for icewine which made from frozen grapes have been harvested during low temperatures. The most of producers freeze white varieties on vines largely Riesling, Vidal Blanc, Chardonnay, but recently dark-skinned grapes are begun to use in premium technology[1]. The main aim of current study was to determine appreciated cultivar for technology in order to produce the high quality icewine in Ukraine.

The four grape varieties such as Riesling, Rkatsiteli, TeltiKuruk and Marselan were chosen for experiment in vineyards of winery «Shabo», Odessa region. To understand the suitability of proposed cultivars for icewine crop they were observed during grape season 2016 every week beginning from 26 August. The sugar content of grape berries was measured by Refractometer PAL1 (Atago CO., LTD, Japan), the concentration of titratable acidity (TA) was determined according to method of Ukrainian national standard and pH - using pH-meter S220 (Mettler-Toledo International Inc., Switzerland). The means and standard deviations of TA and pH were calculated by Excel software (Microsoft Office, USA). The amount of precipitation was given from metacenter of village Shabo.

The choice of concerned varieties is assignable. Riesling is considered as king-cultivar for icewine in the world[2]. According to statistic[3] under Rkatsiteli the biggest plants are in Ukraine and it is one of important grape for table white wines. TeltiKuruk is the autochthonous white cultivar of country and appeal to study especially premium wines from native varieties are popular among consumers[4]. Red cultivar Marselan was chosen by 2 reasons: it is late maturing and has the thick skin of berries that is necessary for protecting of undesirable climate factors. Despite of Riesling other grapes were chosen for conducting of experiments for icewine technology first time.

Grape season of 2016 was characterized by higher amount of rainfalls in Odessa region, particularly at the end of September and on October calculating more than 200 mm in totality. The most significant indicator for availability of cultivar predestinated for icewine production is sugariness of must from frozen berries and its initial concentration before frosts. The dynamics of sugar content during grape growth of four varieties are shown in Figure 1.

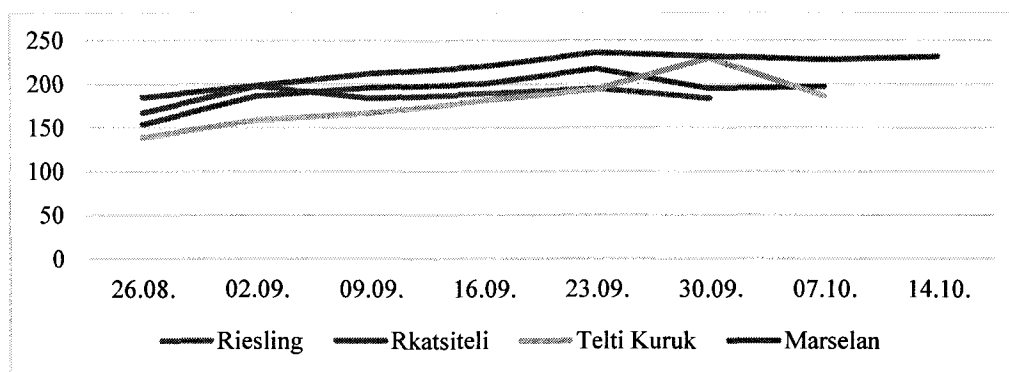


Figure1. The sugar content of four grapes from 26.08.-14.10.2016 in Shabovineyards, g/dm³.

Based on results represented in Figure1 concentrations of sugar of investigated varieties are different, but tendencies are the same: the highest accumulation of sugar was observed in the middle of first month of autumn and its decrease was after pour rain occurred on evening of 23 of September (100mm). The increasing of sugar content on October was continued only in Marselan grapes that confirmed its maturing and hardiness to negative climate conditions. Riesling and Ukrainian native variety were the most vulnerable to precipitation whose sugariness reduced by 10g/dm³ on average. Should be noted that Riesling after abovementioned rainfall was rotten almost completely that it is not propriety for future icewineyield. The maximum of sugar degree was reached by dark-skinned cultivar (236,6 g/dm³), the biggest concentrations of sugar of TeltiKuruk was 229,7 g/dm³, Rkatsiteli and Riesling had 218,2 g/dm³ and 195,3g/dm³ respectively.

Table1 demonstrates means of TA and pH and its standard deviations of investigated grapes where Rkatsiteli concentrations have the highest variances by 2 chemical parameters. The pH of Marselan berries was the most compared to ones. In general, red cultivar has the lowest value of TA and its standard deviations that can be explained by longer period of maturing and accumulation of sugar in berries. Variables of TA and pH of current grapes are characterized by different time of maturing and individual responses on precipitations.

Table 1. Means and Standard deviations of variables TA and pH of four varieties

Grape variety	TA, g/dm ³	pH
Riesling	8,31 ± 2,010	2,84 ± 0,148
Rkatsiteli	8,63 ± 2,717	2,88 ± 0,182
TeltiKuruk	7,45 ± 1,991	3,01 ± 0,148
Marselan	7,42 ± 0,995	3,12 ± 0,127

The observations of red grapes were continued along of deficiency of spoilage and good appearance of berries. The investigations of Marselan attributes had been promoting until first frosts, from October to December (Table 2). The accumulation of sugar during late autumn and first dates of winter are pointed out in Figure2.

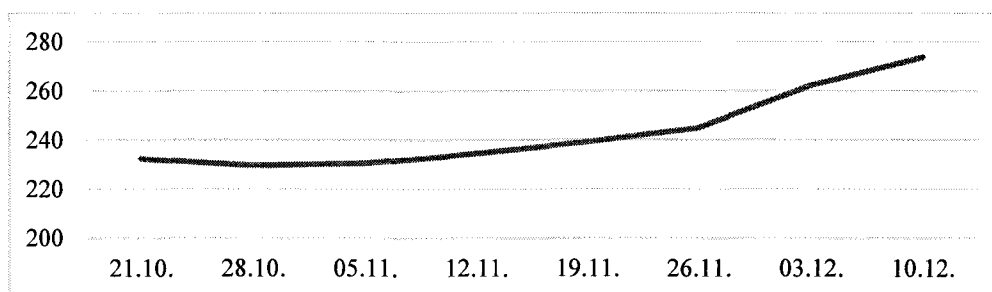


Figure 2. The sugar content of Marselan grapes from 21.10.-10.12. 2016, g/dm³

Table 2. Means and Standard deviations of variables TA and pH of Marselan variety

TA, g/dm ³	pH
7,45 ± 0,994	3,15 ± 0,224
7,9 ± 0,845	3,16 ± 0,00
7,4 ± 1,478	3,35 ± 0,981

The sugar content of red cultivar during second month of autumn was similar. It is probably that full technological maturation was reached resulting in stop of accumulation of sugar level. While the air temperature was decreasing, the sugar degree was increasing, in particularly in the first days of December. Table 2 shows the results of study of chemical characteristics where concentrations of TA reduced and sugariness raised at the same time. The value of pH was not associated with other chemical indicators. Also the amount of precipitation during November and December was minimum.

The main chemical parameters including sugar content, TA and pH of three white and one red grape varieties during autumn 2016 in Odessa region were determined to predict its endurance before first frosts. According to summary results Marselan grapes showed better quality versus others and can be appreciated for icewine production in Ukraine.

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