The Impact of Climatic Factors on the Rootstock Quality, in the Blaj Vineyard Center

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ABSTRACT

Obtaining efficient yields in the wine center Blaj, as well as quality vine grafts is conditioned by a complex of technological and climatic factors. Knowing the maturation degree of the wood contained in the graft and rootstock cords (the content in carbohydrates: soluble sugars and starch) can be considered an important indicator that shows the deployment of the physiological processes taking place during the vegetation period. The quality of the rootstock is determined by the agro technical methods that were used, but the climatic factors from the active vegetation period and the resting period also have an important role.

Keywords: *carbohydrate, grapevine planting material, rootstock, quality*

INTRODUCTION

The quality of material for grafting is determined by a complex of factors of which the maturation degree of the scion and rootstocks cuttings has a determinant role (Țăra *et al.*, 1992). Until the formation of the root system, starting the shoot, achieving welding between scion and rootstock and vascularization of tissue shall be made largely based on the reserve substances synthesized and accumulated by plants during the growing period (Iliescu *et al.*, 2010) of the previous year (Țăra *et al.*, 1999). There are years when climatic conditions (Tab.1) and technological conditions (large nebulosity, prolonged drought, deficit soil management, etc.) affects growth strings and especially wood maturation in mother plantation suffer (Iliescu *et al.*, 2011, 2012).

AIMS

In the paper are analyzed the implications of viticulture practices used and the climatic conditions in recent years, on maturation degree of strings of different rootstock clones existing and cultivated at SCDVV Blaj.

MATERIALS AND METHODS

The study was conducted in the period 2011-2013 in mother plantations for rootstock string provider from "Certificate" biological category of SCDVV Blaj. Determining the quality of rootstock used in the production of grapevine planting material was done by determining the carbohydrate content (anthrone reagent method), on three lengths (0-120 cm, 121-240 cm and 241-360 cm). During the study period the carbohydrates contained in the rootstock varieties: 'SO4-4' (clonal selection from Berlandieri x Riparia sel. Openheim 4), 'C71' (clonal selection from Berlandieri x Riparia Teleki sel. Buftea) and 'C25' (clonal selection from Berlandieri x Riparia Kober 5BB) from the Târnave Vineyards was dosed and it was correlated with the suitability of the meteorological factors.

RESULTS AND DISCUSSION

If initially Transylvania was placed in middle-class favorability for rootstock culture, due to climate change felt at national and regional level, the suitability of the area for this crop has

Tab. 1. The maturation of rootstocks strings in Blaj viticulture center (Iliescu *et al.*, 2010)

Rootstock variety	Carbohydrate content - depending on favorability of meteorological factors (g%)		
	deficient year	normal year	favorable year
SO 4-4	10 – 12	13 – 16	16 – 18
C 71	11 – 12	14 – 17	17 – 18
C 25	11 – 12	15 – 17	17 – 18

Fig. 1. The average temperature (left) and precipitation (right) during 2011-2013, in Blaj Vineyard Center**Tab. 2.** The rootstock maturation by string lengths (0-120 cm, 121-240 cm and 241-360 cm), in condition of Blaj wine center, during 2011-2013

Rootstock variety	Carbohydrate content – averages (g%)								
	2011			2012			2013		
	basis	middle	top	basis	middle	top	basis	middle	top
‘SO 4-4’	12.60	11.95	11.70	16.22	15.77	13.55	15.39	13.99	13.45
‘C 71’	13.70	12.10	10.70	16.58	15.14	14.05	16.34	12.15	11.92
‘C 25’	13.05	11.90	11.50	16.12	15.03	14.00	15.24	13.42	13.21

increased. Thus, during the study has registered a useful heat balance between 1507 °C (2011) and 1875 °C (2012) with a vegetation period of about 180 days (Fig. 1).

The dosage of carbohydrates is the most reliable laboratory indicator for assessing the maturation degree of the vines strings and rootstock strings used for grafting (Iliescu *et al.*, 2010, 2011, 2012).

CONCLUSION

In the Blaj wine center, the quality of rootstock is mainly influenced by climatic factors but through the adoption of suitable vineyard practices (application of foliar fertilizers, increasing the number of green works in applied to plant, etc.), is obtained a material according to the requirements of specific vineyard. In addition, between the rootstocks analyzed, in 2012 and 2013, was noted ‘SO4-4’ and ‘C 25’, by accumulating carbohydrates above the threshold 14 g % and a diameter of strings between 7.2 cm and 12.5 cm. Rootstock clone ‘C 71’ has achieved a good wood maturation

for the analyzed period, but had a higher sensitivity to some climatic phenomena.

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