

Vascular system anatomy and frequency of vessels in grapevine rootstocks

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The vascular system analysis of rootstocks can assist on the selection of genotypes and on the understanding of the physiological changes after grafting. The aim of this research was to quantify the vegetative growth and the vascular system tissue on grapevine rootstocks. The experiment was conducted in the period of 2009-2010; where the rootstocks vascular system of three parts of the stem (apex, middle and base) was evaluated. Paulsen 1103 (*Vitis berlandieri* x *Vitis rupestris*), Mgt 101-14 (*Vitis riparia* x *V. rupestris*) and SO4 (*V. berlandieri* x *V. riparia*) genotypes were used in this research. The experiment was arranged as completely randomized design, with 4 replications and 12 vines per plot. Quantitative data were subjected to ANOVA and the means were subjected to multiple comparison tests using the Tukey test at 5% of probability. Variables of vascular system, such as pith, xylem and phloem area, diameter and frequency of vessels were assessed by photomicrograph in different portions of stem. As a result, the vascular system was altered according to the rootstock, and the xylem tissue showed the major quantitative differences. Due to the xylem secondary growth, the differences in the vascular system have become larger, whereas SO4 and Paulsen 1103 genotypes showed greater area and xylem vessel diameter in relation to Mgt 101-14. The pith tissue, phloem and perimeter of the shoots do not suffered significant changes, except for the relationship xylem/phloem. The biggest xylem area, the diameter and the frequency of vessels are related to the higher rootstocks' vigor and vegetative growth. The vascularization pattern changes according to the genotype. This physiological factor should be considered in the rootstock-scion interaction and in the selection of rootstocks genotypes.

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