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## RESEARCH REGARDING THE INFLUENCE OF WATER ON GRAFTING FOR THE PLUM SPECIES IN THE NURSERY

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**Abstract:** *In the culture of fruit trees and shrubs, the planting material becomes necessary to replace cleared orchard areas through the replacement rate, to expand the orchard heritage by establishing new plantations, to restore the density of existing plantations by filling in gaps, to promote the production of varieties recommended for each area and culture area in part, the multiplication and promotion in culture of valuable genotypes such as varieties newly created in our country or introduced from abroad, newly selected clones and in general material with high biological value. The importance of water as a vegetation factor in plant life has been known and appreciated as such since the time when man began to practice agriculture. With fruit trees in the nursery, as with all cultivated plants, the growth process depends to the greatest extent on the climate and soil conditions available to them. Of these, along with heat, light, air and mineral substances, water plays a very important role. Plum rootstocks are demanding in terms of water, their culture being extended over larger areas in areas with a richer pluviometric regime. For the current research carried out in the nursery, were analyzed two varieties of plum, Stanley and Cacanska Lepotica.*

### • Introduction

Similar to other branches of agricultural production, modern fruit growing cannot be conceived without ensuring a water regime corresponding to the requirements of the cultivated species and the culture system used. Through the strong root system that makes it possible to explore a large volume of soil and the increased absorption capacity of the roots, many of the fruit tree species ensure the achievement of favorable results even in areas with a lower pluviometric regime or when plantations are located on sloping land and on dry sands, where water is retained more difficult. However, being plants with increased specific water consumption, for the development of the growth and fruiting processes at the appropriate level, in the crop areas where drought periods have a relatively constant frequency and with extensions over longer time intervals, completing the water deficit through irrigation in fruit plantations becomes a necessary, if not indispensable, agro-phytotechnical measure.

### • Material and method

The key research methods employed were analysis and synthesis, analogy, and graphics to resemble the results. The research was carried out in Bihor county, in a private nursery. The respective nursery includes tree planting material of the following species: apple, pear, plum, apricot, cherry, peach, almond, cherry, quince, walnut. The study was carried out on the basis of a trifactorial experiment of the 4 x 2 x 4 type, organized on five repetitions, with plots comprising four trees planted at 0.7 x 0.25 m, with irrigation as the primary factor. In order to determine the significance of the differences between the gradations and the combinations of the varietal factors and irrigation, the processing of the experimental data was done through the analysis of variance. The initial biological material was represented by rootstock seedlings that belong to the "Certificate" biological category. Irrigation was carried out using a drip hose with a diameter of 16 mm and a thickness of 0.4 mm, equipped with droppers spaced at 25 cm, each dropper having four exit holes and a flow rate of 2 l/ha at a pressure of 1 bar. The daily duration of watering for the administration of the different watering rates was 3.5 hours for irrigation with the 10 mm rate, 7 hours for the 20 mm rate and 10.5 hours for the 30 mm rate.

### • Results and discussions

As for the unilateral effect of irrigation, the percentage of grafting of the trees showed a variation amplitude of 9.80%, with average values between 88.70% in the case of the non-irrigated variant and 98.50% in the case of applying the watering norm of 30 mm, under the conditions of a reduced variability of 4.56% between the four irrigation treatments. At the level of the entire experience in this year's climatic conditions, irrigation showed a significant effect on the grafted trees' grip, corresponding to increases between 2.58 and 9.80%. The increase in watering norms from 10 to 20 mm and from 20 to 30 mm, respectively, also had a significant influence on the grafting of grafted trees, realized through increases of 3.47-3.75%. Regarding the interaction between varieties and irrigation, it can be seen that in both varieties, irrigation and respectively the progressive increase in watering rates showed significantly positive influences on the grafting of the trees, against the background of higher effects in the Stanley variety.

### • Conclusions

Irrigation showed the highest contribution to the variability of the grafting percentage (44.70%), significantly superior to the effect of variety (13.27%). In general, the variety Cacanska Lepotica showed a superior grip of the grafted trees, compared to the variety Stanley;

At the level of the entire experience in the climatic conditions of 2019, irrigation showed a significant effect on the grafting of grafted trees, corresponding to increases between 2.58 and 9.80%. Increasing the watering norms from 10 to 20 mm and from 20 to 30 mm, respectively, have a significant influence on the grafting of grafted trees, realized through increases of 3.47-3.75%. The variety Cacanska Lepotica presented a significantly higher grip of the grafted trees in the non-irrigated version and under the effect of the 10 mm watering norm. The grafted trees from the two varieties utilized irrigation at a similar level in the case of watering norms of 20 and 30 mm.