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Modern techniques for walnut propagation

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Statement of the Problem: Propagation of walnut (*J. regia* L.) is more difficult compared to most of the fruit species. It is due to the low rate of callus formation and the presence of high concentration of phenolic compounds. Because of walnut heterozygosity, propagation by seeds does not lead to inheritance of the characteristics of a certain variety. For that reason, different methods of walnut propagation have been investigated all around the world.

Aim: The aim of the present study is to discuss the modern techniques for walnut propagation.

Methodology & Theoretical Orientation: Two new methods of walnut propagation were presented in the survey – hot callus and epicotyl grafting. All the details of the technological process were discussed – rootstock production, scion selection, technique and time of grafting, temperature conditions, etc. The results obtained were compared to other widely accepted and popular methods and theoretical and practical conclusions were made, which result in increasing the percentage of successfully propagated walnut plants.

Conclusions & Significance: It was concluded that the described methods of epicotyl grafting and hot callus are suitable for walnut propagation and they can be applied in practice in industrial scale propagation of the fruit species.

Recent Publications

1. Gandev S V and V Arnaudov (2011) Propagation method of epicotyl grafting in walnut (*Juglans regia* L.) under production conditions. Bulgarian Journal of Agricultural Science. 17(2):173-176.
2. Gandev S (2014) State-of-the-art and problems of walnut propagation methods. Agro-knowledge Journal. 15(1):95-110.
3. Gandev S (2016) Walnut propagation: an overview. Bulgarian Journal of Crop Science. 53(4):3-10.
4. Gandev S, Isuf E and Tsaikin N (2016) Fruit distribution within walnut tree canopy depending on light exposure. Bulgarian Journal of Crop Science. 53(4):11-14.
5. Gandev S (2017) Behavior of some local and foreign walnut cultivars under the climatic conditions of south Bulgaria. Fruits. 72(1):31-35.

Biography

Stefan Ivanov Gandev is a Full-Time Professor at the Fruit-Growing Institute in Bulgaria. He is the Head of the Department of Propagation, Breeding and Biotechnologies and the Director of the Institute. In the past decade he has focused his research on walnut propagation and growing. His scientific interests are also focused on problems related to fruit tree architecture, pruning for better fruit-bearing and organic production of fruits. He is the author of over 80 publications and three monographs. He is a Member of international committees and has chaired a many scientific sessions in international fora.

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