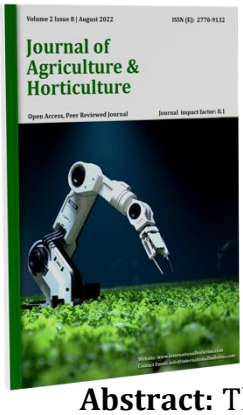

THE EFFECT OF PRE-PLANTING TREATMENT OF DIFFERENT GRAPE CUTTINGS ON ROOTING AND SEEDLING DEVELOPMENT

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https://doi.org/10.5281/zenodo.15666016

Abstract: The results of the study showed that pre-planting treatment of grape cuttings has a significant impact on rooting and seedling development. Experimental results revealed that mechanical treatment (such as removing the two lower buds of the cuttings, making several incisions between the buds, and callusing) plays an important role compared to the control variant in the development of roots, callus tissue, and both the above-ground and underground parts of the grape cuttings.

Keywords: Research, cuttings, mechanical, two buds, field experiments.

In farms specializing in grape seedling production, various methods are used to accelerate root formation in the cuttings.

Before planting, vine cuttings are treated to create a good foundation for their growth and development. The main goal is to accelerate root formation in cuttings and ensure high germination. Some of the untreated cuttings may die after planting, while others may dry up after the shoot and leaves have not developed roots. The main reason for this is poor root development [1;2;]. Cuttings grow due to the nutrients and moisture that they have accumulated the previous year. If the balance between root development and the growth of new shoots and leaves is disturbed, that is, if the root is formed later, the cuttings will die [1;5;]. Several methods are used in farms engaged in various types of vine breeding to accelerate root formation in cuttings.

Research Objective: The objective of the study is to investigate the impact of mechanical treatment (such as removing the two lower buds, making several incisions between the buds, and callusing) on root development in grape cuttings under the soil and climatic conditions of the Syrdarya region.

Research Tasks: To determine the most effective mechanical treatment method for improving the rooting and development of grape cuttings.

Research Materials and Methods: The main field experiments were conducted based on the recommendations described in M.A. Lazarevskiy's methodology guide *"Methods of Botanical Description and Agro-Biological Study of Grape Varieties"* (1946) [3].The statistical analysis of the experimental data was carried out using the method recommended by B.A. Dospekhov [4].

Grape Cuttings Preparation and Pre-Planting Treatment**:**Grape cuttings are taken from their storage site (where they were buried in the fall) about 15–20 days before planting in early spring (late March to early April). Each cutting is carefully inspected for damage; only healthy ones are selected. The lower end of the cuttings is freshly recut just below the bottom bud and soaked in water for one or two days. After soaking, the cuttings are bundled and placed vertically—bottom end up—into a specially prepared trench for callusing (kilchevka). The trench should be 55–65 cm deep and 1.2–1.5 meters wide. The bundles are

arranged evenly, and the upper part is covered with 9–10 cm of loose soil. To accelerate the callusing process, a layer of sand, decomposed manure, husks, or straw is added on top of the soil and the trench is covered with greenhouse frames.

Figure 1. Cuttings treated before planting.

Research results: When studying the effect of grafting on the germination rate of grape cuttings, it was found that in the control variant of planting grafts of the grape variety Taifi pink in the usual way, the lowest indicator was 137 out of 200 grafts, or 68.5%, while the highest indicator compared to the control variant was 162 grafts, resulting in a germination rate of 81.0%. This indicator was found to be 12.5% higher than the control variant (Table 1).

The lowest germination rate in the Kishmish Sogdiana grape variety was 134 seeds and 67% in the control variant of planting seedlings in the normal way, while the highest germination rate was 163 seeds and 81.5% in the control variant of grafting seedlings. This was 14.5% higher than the control variant.

Dependence of processing of vine cuttings on the capacity of vine cuttings (year 2021-2023).

Table 1

Variants	Planting Date	Amount of seedlings, pcs		Adhesion, %
		total	caught	
"Taifi Rozovy table grape variety"				
"Planting cuttings using the standard method – control"	1.04	200	137	68,5
Removal of the two lower buds	1.04	200	143	71,5
Longitudinal incisions between two buds	1.04	200	149	74,5
Callusing (kilchovka) treatment	1.04	200	162	81,0
"Kishmish Sogdiana variety"				
"Planting cuttings using the standard method – control"	1.04	200	134	67,0
Removal of the two lower buds	1.04	200	138	69,0
Longitudinal incisions between two buds	1.04	200	145	72,5
Callusing (kilchovka) treatment	1.04	200	163	81,5
"Bayanshira Wine Grape Variety"				
"Planting cuttings using the standard method – control"	1.04	200	145	72,5
Removal of the two lower buds	1.04	200	152	76,0
Longitudinal incisions between two buds	1.04	200	157	78,5
Callusing (kilchovka) treatment	1.04	200	168	84,0

When different treatment methods were applied to cuttings of the Bayanshira wine grape variety, the following results were obtained. In the control variant, where grapevine cuttings were planted using the conventional method, the lowest level of rooting was observed—145 cuttings, accounting for 72.5% adhesion. In comparison, the highest result was recorded in the variant where callusing (kilchevka) treatment was applied, with 168 cuttings taking root, which corresponds to an 84% adhesion rate.

Conclusion. When studying the effect of mechanical treatments on the rooting rate of grapevine cuttings, it was observed that in the control variant, the *Taifi Rozovy* variety showed a rooting rate of 68.5%, while the application of callusing (kilchevka) increased this to 81.0%. In the *Kishmish Sogdiana* variety, the rooting rate was 67.0% in the control, which increased to 81.5% after callusing Similarly, for the *Bayanshira* variety, the control variant showed a rooting rate of 72.5%, while callusing led to the highest result of 84%. These results indicate that mechanical treatments, particularly callusing, significantly enhance the rooting and survival rates of grapevine cuttings.

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