

Growing Cherry and Plum Grafts from Green Cuttings on an Artificial Substrate

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Abstract: The seedling production process will be effective only if the optimal cultivation technology is used in this, suitable for modern conditions. Therefore, the development and application of promising, innovative and cost-effective technologies that allow the mechanization of working processes related to the cultivation of seedlings in nurseries is an important task.

Keywords: It is known that various methods of vegetative propagation are used to preserve valuable economic and biological signs of varietal plants. Among them, from the point of view of biology, agrotechnics and economic savings, green penciling is the most promising.

The task of dramatically increasing the number and quality of seedlings grown in front of specialists of the farms of our republic specializing in seedlings, and thereby maximizing their cost, is relevant. The seedling production process will be effective only if the optimal cultivation technology is used in this, suitable for modern conditions.

The correct choice of artificial substrates with a sufficient amount of nutrients in this tumor when breeding plants is an important element of this technology. In addition, these nutrients contribute to the substrate's.

An important element of the technology of growing plants in this way is the correct choice of a nutritious artificial environment with a sufficient content of basic nutrients in it and improving the sorption properties of the substrate, and, accordingly, the level of their accessibility to use by the root system of developing plants. In our study, we used vermicompost as an artificial substrate, which, in comparison with other species, has higher nutritional properties and the absence of weeds in it, the presence of which subsequently affects the qualitative indicators of the development of cultivated plants and the economic indicators of the cultivation technology in this way.

In our study, for growing cherry and plum rootstocks from green cuttings, we used as an artificial nutrient medium such components as coarse-grained river sand, well-washed from silt (fraction 2.0-2.5 mm) and various masses of vermicompost from 1.0 to 7 kg/m² mixed with each other. The layer of artificial substrate for growing from cuttings of rootstocks was 15 cm. The cuttings of the rootstocks were placed according to the 15x15 cm scheme.

The study showed that the accumulation of essential nutrients (NPK) in the organs of regenerating cherry cuttings of the Shpanka Chernaya variety varies depending on the norms of additives to the river sand of vermicompost. In our experiment with cherry rootstock P-3, the highest content of essential nutrients accumulated in the leaves and roots, which, in comparison with the stems, respectively, amounted to 3.4 and 1.8 times more.

This trend of NPK content persisted both in the control and in the experimental variants using different norms of vermicompost as a nutrient substrate. The least of all, as expected, contained the main nutrients in the aboveground part of plants when using pure river sand as an artificial substrate.

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Growing cherry rootstocks in such a substrate allowed developing plants at an early stage of development to accumulate in the aboveground part of total nitrogen from 0.22 to 0.36% per dry mass, mobile phosphorus – 0.09 to 0.13% potassium from 0.25 to 0.30%. In the variants of the experiment, where different norms of vermicompost were used, the characteristics of the content of nutrients were significantly large and they increased from the minimum, the norms of the use of vermicompost – 1000 g/m² to the maximum 6000 g/m², respectively, in leaves from 0.56 – 0.81% nitrogen, roots – from 0.29 to 0.53%, stems – from 0.22 to 0.40%. The phosphorus content in terms of the absolute value of these nutrients in individual plant parts was about the same as nitrogen.

Analysis of the potassium content in vegetating rootstocks showed that this element accumulates most actively in leaves and roots, respectively 2.04 – 3.04 and 0.30 – 0.93% per dry mass of substances. The maximum accumulation of essential nutrients (NPK) in the developing rootstocks of P-3 cherries grown from green cuttings was concentrated in the variant of introducing vermicompost into the main substrate (river sand). In this case, the concentration of mobile nitrogen in the leaves of the rootstocks was 0.79%, the roots – 0.53%, the stems – 0.37%.

The development of the root neck in diameter is one of the important criteria for the suitability of the rootstock for high-quality grafting of varietal buds and growing seedlings. In our experience, the standard sizes of this feature by the end of the growing season were achieved in the variants of using vermicompost as a nutrient element in the norms from 6000 to 7000 g/m². When using such norms of the nutrient substrate, the diameter of the root neck of the rootstocks was 7.0-7.1 mm.

The yield of cherry rootstocks grown from green cuttings using river sand as an artificial substrate against the background of 6000 grams of vermicompost per 1m² of the area of a special rootstock growing plant was 44 pieces, which translates to 341 thousand pieces per 1 hectare. In comparison with the control version of the experiment and the minimum rate of vermicompost application, this indicator of cherry rootstock production turned out to be 141 thousand pcs/ha more, respectively.

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