



THE QUALITY OF GRAPE SEEDLINGS DEVELOPMENT, DEPENDING ON THE SCHEME OF PLANTING CUTTINGS IN THE SUBSTRATE

Adilov Hikmatilla Abudkhalilovich

Tashkent State Agrarian University, Docent of the Department Horticulture and Viticulture

Ochildiev Utkir Ollanazarovich

Scientific Research Institute of Horticulture, Viticulture and Wine-growing named after Academician M. Mirzaev Head of the Department of Viticulture and Micro-wine doctor of philosophy of agricultural sciences Senior Researcher

Article history:		Abstract:
Received	August 30 th 2021	The article provides scientific experimental material on the selection of the optimal layout of green grape cuttings placement when growing seedlings on an artificial substrate. It has been established that optimal conditions for the development of seedlings are created when the feeding area of the cuttings is from 150 to 225 cm ² . Such placement is recommended for growing grape seedlings, zoned in the republic. For the cultivation of grape seedlings of new valuable varieties, as well as hybrids of domestic and foreign selection, cuttings are recommended to be placed according to the 15x5 cm scheme, which ensures the output of planting material to a unit area of 110 pcs / m ² .
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INTRODUCTION.

The workers of the nurseries of the republic are faced with great tasks to increase the assortment of volume, improve the quality of the produced planting material and reduce its cost. The production of seedlings is most effective when the optimal technology has been mastered that meets the modern scientific, agronomic and technical level. Therefore, the most important tasks in nursery breeding are the selection, development and implementation of the most economical options for the technology of growing own-rooted seedlings, which make it possible to mechanize the labor-intensive processes of planting material production as much as possible.

RESEARCH METHODOLOGY.

Various methods of vegetative propagation are used to preserve valuable economic and biological characteristics of selected and varietal plants. The most promising of them, from the point of view of biology, agricultural technology and economics, is green cuttings [1,4,5,6,7,9].

An important element of the technology for growing grape seedlings on an artificial substrate from green cuttings is the selection of the optimal feeding area. This largely determines not only the quality of cuttings taking roots, but also the further development of seedlings and the quality of the grown planting material [2,3,8,10].

In the studies carried out in 2020-2021, new large-berry raisin grape varieties were used as an object. In the experiments, the feeding areas of rooted cuttings were studied at 225, 150 and 75 cm, corresponding to the planting plans of 15x15, 15x10 and 15x5 cm.

RESEARCH RESULTS.

Experiments have revealed a high rooting rate of cuttings for all placement schemes. However, the best rooting rate in the experimental variants was obtained with a 15x10 cm cuttings planting scheme. A thicker placement of cuttings - 15x5 cm led to a slight decrease in the rooting rate of cuttings. In our opinion, this is due to the deterioration of the conditions for heat and air exchange in the rooted zone of the cuttings, as well as overmoistening of the substrate.

The feeding area of green cuttings had a definite influence on the development of seedlings root system. When planting cuttings 15x15 and 15x10 cm, the root system of rooted plants had similar indicators in the number of orders of roots branching, the number and length of roots of the first order. A denser planting of 15x5 cm led to a weakening of the development of green cuttings root system by 23.7-31.8%. In this variant, the seedlings showed a decrease in the development of the habit of the plants aboveground part - the number and length of shoots, the assimilation surface of the leaves (table 1).

Table 1

Rooting and development of the root system of Kishmish Chyorniy grapes variety, depending on the planting scheme of green cuttings

Variants of experiment	Rooting, %	Number of branching orders	Roots of the first order		Volume of root system, dm ²
			number, pcs	length, m	
15x15 cm	96,6	4,6	35,2	23,92	0,123
15x10 cm	97,2	3,8	28,4	16,54	0,110
15x5 cm	88,3	3,0	19,3	9,83	0,084

Planting schemes had a definite effect on the ripening of shoots. With a thinned planting, the ripening of shoots increased by more than 15 cm (up to 57-68%).

Thus, an increase in the nutrition area of green cuttings, planted in an artificial substrate, contributes to their better development and obtaining more developed seedlings. The sizes of the root system and the aboveground part of the plants were quite similar to each other when planting according to the 15x15 cm and 15x10 cm schemes. When planting cuttings according to the 15x5 cm scheme, the development of plants was noticeably lower.

In general, in all planting schemes, rather favorable conditions are created for the growth and development of seedlings. However, it should be borne in mind that the main factor in the production of seedlings is the yield of planting material per unit area and its quality. In our experiment, the highest yield of seedlings per unit area was provided by the option with thickened planting of 15x5 cm, in which the rooting rate of cuttings was 83.3%, and the yield of seedlings from each square meter of greenhouse area was 110 pcs. With a placement scheme of 15x10 cm, the rooting rate of cutting was 97.2 %, and the yield of seedlings was 64 pcs / m². With a thinning planting – 15x15 cm, rooting of cuttings was 96.6 %, and the yield of seedlings was 42 pcs / m² (table 2).

Table 2

Development of the aboveground system of grape seedlings, depending on the placement scheme of green cuttings in the substrate (variety Kishmish Chyorniy)

Variants of experiment	Height of plant, sm	Shoots of the first order		Shoots of the second order		Total length of growth, m	Assimilation surface, m
		number, pcs	length, m	number, pcs	length, m		
15x15 cm	72,4	1,8	0,82	1,0	0,24	0,90	0,176
15x10 cm	70,1	3,4	0,72	0,7	0,18	0,79	0,151
15x5 cm	62,0	1,1	0,57	0,5	0,12	0,58	0,132

CONCLUSIONS:

Summing up the research work, it should be noted that the cultivation of grape seedlings by the method of green cuttings on an artificial substrate is a very effective method, which ensures obtainment from 42 to 110 seedlings from each square meter of the used area.

In our opinion, the thickened cultivation of plants according to the 15x5 cm scheme can be effectively used in nursery breeding for propagation of new valuable varieties and hybrids of grapes of domestic and foreign selection, as providing a high yield of planting material per unit area - 110 pcs / m².

For industrial propagation of grape varieties zoned in the republic, it is better to use a more thinned planting scheme - 15x10 cm.

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