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STUDY OF THE EFFECT OF DEEP SOFTENING ON FERTILE VINEYARDS ON ROOT REGENERATION AND YIELD

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ABSTRACT:

Vine roots' regenerative capacity improves by an average of 17.3% when roots, which close to the vine, are cut. In addition, in this case, thicker roots are pruned, which have a better ability to regenerate than thin roots. In deep loosening of the soil, high-order branched roots make up 70-81.4% of the total length of the newly formed roots, i.e., the root suction system is strengthened and approaches the bush. As a result of the rejuvenation of the root system and strengthening of the active part, as well as improvement of physical properties of soil water, the vine develops well and increases productivity.

KEYWORD: Vine roots have a great potential for regeneration in the condition of Uzbekistan. Deep plowing has been adopted as the main method of preparing the soil before planting for the establishment of vineyards. This method promotes the development, growth, and productivity of young vines.

INTRODUCTION:

Viticulture is one of the oldest profitable branches of agriculture in the country. Growing a variety of grapes and their products, which are necessary for the national economy, is important and beneficial for the economy. However, caring for this plant and preparing raisins from its crop requires knowledge and experience from farmers

In the condition of Uzbekistan, the main method of preparing the soil for planting before planting is deep plowing. This method contributes to the development, growth, and productivity of young vines. However, as a result of repeated tillage and irrigation of the soil of fertile vineyards, the soil under the furrow layer, where the vine root system is located, becomes compacted, which leads to a decrease in yield. One of the effective agrotechnologies that allows to improve the water and air regime of the soil is the deep loosening of the soil of the resulting vineyards. But root damage is inevitable when the soil is deeply loosened, so these agro technologies have not been widely applied to production until now. It was therefore necessary to study its effect on the regenerative capacity of roots and the yield of vines when the soil was deeply loosened. The regenerative capacity of vine roots varies under different conditions and many factors depend on soil conditions, vine variety, plowing technology, and so on. In the course of our experiments, we set ourselves the task of determining the effect of fertilization at different distances from the shatamb on the regenerative capacity of vine roots at the same time as deep loosening the soil according to root diameter, pit softening time, and so on.

Our experiments were carried out in the Andijan branch of the Scientific Experimental Station of Horticulture, Viticulture, and Enology named after Academician Mahmud Mirzaev and in the vineyards of Isakojon Sapling Farm in Bulakbashi district. Studies show that in

Uzbekistan, vine roots have a great ability to regenerate.

Observations show that as the diameter of the roots increases, their ability to regenerate improves. Roots with a diameter of 30-44 mm have good regenerative capacity. Indicators of regenerative capacity indicate the need for periodic pruning of aged thick roots to rejuvenate the root system and increase their absorption surface.

Table 1 Reproduction according to the diameter of the roots

№	Diameter of cut roots, mm	Number of new roots	The total length of new roots relative to a single root, m
1	1.6	1-3	1.6 – 3,7
2	2.2	4-8	6,5 – 9,0
3	3	6-9	5,8 – 12,4
4	5	10-13	13 – 19,2
5	7.4	14-16	18,5 - 26,6
6	11	14-20	24,1 - 27,4
7	17	22-24	30,1 - 36,1
8	27.3	48-53	38,1 - 44
9	30.5	39-41	71,4 - 80,8
10	44	44-47	60,9 - 67,5

The data show that when roots close to the vine body are cut, their regenerative capacity improves by an average of 17.3%. In addition, in this case, thicker roots are pruned, which have a better ability to regenerate than thin roots. In deep loosening of the soil, high-order branched roots make up 70-81.4% of the total length of the newly formed roots, i.e., the root suction system is strengthened and approaches the bush. As a result of the rejuvenation of the root system and strengthening of the active part, as well as improvement of physical properties of soil water, the vine develops well and increases productivity.

Table 2. In deep softening, the process of regeneration of roots cut at different distances from the vine body takes place differently

The distance between the trunk and the vine body, cm	Diameters of cut roots mm	Total length of new roots, m	%
50	5	17,3	100
	11	27,8	
	17	33,6	
125	5	13,7	81.4
	11	22,3	
	17	28,2	

For example, in deep loosening, the total length of the branches increases by 3.9-14.4% in the first year, 11.6-32.4% in the second year, and the leaf surface by -5.5-11.4 and 10.6-21, respectively. Expands by 1%. Productivity data are shown in Table 3.

Table 3. Current yield at deep softening of row spacing (light color variety)

The distance between the current body and the deep softening line, cm	Average weight of one head of grapes, g	Harvest	
		100 kg/ha	% of control
In the first year after deep softening			
50	505,6	139,7	107,5
125	499,3	131,4	101,5
The soil is 25-30 cm			
Depth control performance	491,9	130,1	100
In the second year after deep softening			In the first year after deep softening
50	507,8	131,9	111,4
125	503,3	134,2	103,3
The soil is 25-30 cm			
Depth control performance	491,9	130,1	100

It can be seen from the data that when the soil is loosened deep near the vine bushes

(0.5 m), it has a more positive effect on productivity than when loosened between rows. In the first year, productivity increases by 7.5% compared to control, and in the second year by 22.4%.

Yields increase due to an increase in the number of grape heads, as well as an increase in the average weight of grape heads. Due to the deep softening, the yield of the Bayan Shirey variety increased by 17.2% in the first year and by 39% in the second year. Determining the best timing for deep loosening is one of the most important issues. Deep loosening is associated with root damage, so it is necessary to study the ability of damaged roots to recover at different phases of the vegetative period (Table 4).

Digging and washing the roots showed that when cut in late September, the roots recover better. Good recovery of cut roots after harvest is explained by the fact that new roots begin to grow in the fall under conditions of favorable soil moisture and temperature.

Table 4 Restoration of vine roots at different times of deep softening

Deep softening time	Pheno phases	Number of new roots per 1 root cut first, pcs	Average total length of new roots per 1 root, m
30.IX	After harvesting	41	55.8
10.XI	After the leaves fall off	33	45.2
20.III	During the run of water in the branch	36	39.7
17.IV	When the buds begin to leaf	28	30.8
26.V	When it starts to bloom	30	34.6
10.VIII	When the fruit begins to ripen	11	11.4

In April and August, the damaged roots do not grow well. The data show that the yield is directly related to the deep softening periods in which the roots are cut. When the soil is deeply loosened in November and March, good development of the vine surface is observed. Deep loosening carried out during the period of bud emergence and fruit ripening has a negative impact on vine yield. At deep loosening the growth of active roots increases and their number increases in all layers of the soil. They are most abundant in the 25-50 cm layer, which is 4 times more than in normal tillage of the soil. As a result, the number of active roots in the 0-100 cm layer increases 3 times more than before.

REFERENCES:

1) Sh.Temurov O‘zumchilik[viticulture] « National Encyclopedia of Uzbekistan » Davlat ilmiy nashriyoti Toshkent – 2002
2) Djavakyans Yu.M., Djavakyans J.L., Alyoxin K.K Kornevaya sistema plodovых porod i vinograda v Uzbekistane[Root system of fruit species and grapes in Uzbekistan]. T.: 1981.
3) Mirzaev M.M., Sobirov MD. O‘zbekistonda tokchilik[Viticulture in Uzbekistan]. Toshkent, 1979. B. 19-80.
4) Ribakov A., Gorbach I. va boshk. O‘zbekiston uzumchiligi[Viticulture of Uzbekistan]. Toshkent, 1969. B. 32 45.
5) Mirzaev M.M. Fiziologicheskie osobennosti i texnologiya vozdelыvaniya kishmishnых sortov vinograda[Physiological features and technology of cultivation of raisins grape varieties]. Tashkent: Fan, 2006.