

# Influence of the placement and growing methods on the productivity of grape varieties

<sup>1</sup>Gulyamov Azamat Baxtiyarovich, <sup>2</sup>Enileev Najdat

<sup>1</sup>Scientific Researcher, Tashkent State Agrarian University,  
Agency for Implementation of Projects in the Field of Agroindustry and Food Security  
P/O 100000, 1A, block "A", Labzak Street, Tashkent, Uzbekistan  
alp.lentinus@yandex.ru

<sup>2</sup>Assistant Professor, Candidate of Agricultural Sciences, Department of Fruit growing and viticulture,  
100140, University str., 2, Kibray district, Tashkent region, Uzbekistan

**Abstract:** *The scientific article provides experimental material on the study of the cultivation of table and raisin grape varieties with extensive and intensive growing technologies in the conditions of the Tashkent region in 2016-2018. Within the study, eight table and five raisin grape varieties which were grown in canopy with five wire and traditional bush vine, were used as an object of research. Experiments show that the productivity does not exceed 4.2 t/ha within the traditional variety without trellis. This is due to the inefficient use of the flow of salt to the plants. The use of canopy with five wire allows producing grape varieties up to 35.7 t/ha. Ketmon Sopi, Black Kishmish, Aktash, Kishmish Botir and Baladi give the highest yields within the last mentioned system.*

**Keywords:** *pruning, body of trees, planting scheme, bush, shoot, canopy, trellis, traditional bush vine, yield, weight, berries, bunch.*

## 1. INTRODUCTION:

Modern designs of viticulture, their layout and system of plant care during the entire period of ontogenesis must meet the requirements of rational use of land and minimize the irreplaceable losses of physiologically active solar radiation falling on the open area of the rows. Different combinations and levels of manifestation of agricultural and ecological factors stipulate a differentiated approach in determining the planting scheme for grapes. In Uzbekistan, trellis planting is more suitable for open vineyards. Experiments were conducted according to the methodology of Y.Djavakyanz long-term experiences of increasing the productivity of grown in canopy with five wire systems of grapes and with deep loosening of tillage [2, 3].

## 2. MATERIALS AND METHODS:

The study was conducted in 2016-2018 at the central experimental base of the Research Institute of Horticulture, Viticulture and Winemaking, eight table and five raisin grape varieties at the age of five (1, 4, 5) were used as an object of research. The plants were grown in canopy pruning on a trellis with the horizontally stretched wire on 1-5 rows as well as traditional bush vine. Layout of bushes in the plantations of 1.3x1.3 and 2.6x1.3 meters, respectively, with a density of 5917 and 2959 bushes per 1 ha. Russian scholar studied the grape pruning to increase the yield of comparison by the system of traditional bush vine and five wire trellis culture [1, 4].

During the study period, plant productivity with yield from a separate bush (kg) and units of the plantation area (t / ha) were conducted taking into account the each system.

## 3. RESULTS AND DISCUSSIONS:

Experimental studies showed that the productivity of plants depends not only on the varietal morphological and biological features, but also on the layout and methods of managing the bushes in the plantation. Thus, when growing the Black Kishmish variety with the placement patterns in the plantations of 1.3x1.3 and 2.6x1.3 meters within traditional bush vine, approximately the same productivity was obtained from the bush as well as from a unit area, respectively, 11.2 and 12.5 kg/bush and 3.9 and 4.2 t/ha. Such a low yield of plants, in our opinion, is associated with the insufficiently efficient assimilation system of flow of solar to plants both with a more sparse placement of bushes (2959 pcs/ha) and a dense planting (5917 pcs/ha).

Growing the Black Kishmish variety within canopy, using a single-wire trellis has a significant impact on the development of plants during vegetation, as well as productivity. The yield per bush increases 2.5 times and reaches to 26.1 kg, with a total productivity per unit area of plantation of 8.8 t/ha within canopy than traditional bush vine.

In order to use the full biological potential of the variety, we gave the plants stronger vine loads with two to five wire trellis. It established that the most intensive increase in the grape harvest was from one wire trellis up to four wire trellis. In our experience, each storied increase in the rows of wire provided an increase in the yield of Black Kishmish at 0.9 t/ha. Optimal conditions for obtaining the maximum yield of the Black Kishmish was 33.6 t/ha under a layout of 2.6×1.3 meters using five wire trellis (Table 1).

**Table 1**

**The productivity of the Black Kishmish with the layout and formation of bushes in 2016-2018**

|                         | Bush vines |         | Trellis     |          |            |           |           |
|-------------------------|------------|---------|-------------|----------|------------|-----------|-----------|
|                         |            |         | Single Wire | Two Wire | Three Wire | Four Wire | Five Wire |
| <b>Plant spacing</b>    | 2.6×1.3    | 1.3×1.3 | 2.6×1.3     | 2.6×1.3  | 2.6×1.3    | 2.6×1.3   | 2.6×1.3   |
| <b>Plants/ha</b>        | 2959       | 5917    | 2959        | 2959     | 2959       | 2959      | 2959      |
| <b>Yield (kg/plant)</b> | 4.2        | 3.9     | 8.8         | 9.3      | 10.2       | 11.1      | 11.4      |
| <b>Yield (ton/ha)</b>   | 12.5       | 22.9    | 26.1        | 27.5     | 30.3       | 32.7      | 33.6      |

The study of the optimally identified five wire location of the trellis under canopy system, were tested by us on a number of raisin and table varieties. The study revealed that not all varieties respond positively to an increase in the load of the above-ground part of the bushes. In particular, among table grape varieties as Ketmon Sopi and Baladi had the highest productivity where indicator was 29.0 and 22.5 kg per a separate bush. Varieties as Black Kishmish and Kishmish Botir (raisin varieties) were distinguished with a yield of 25.2 kg/bush. According to the overall productivity the following varieties were distinguished: Ketmon Sopi was 35.7 t/ha, Baladi-29.9 t/ha, Black Kishmish -33.5 t/ha, Aktash-26.6 t/ha and Kishmish Botir-30.5 t/ha (Table 2).

**Table 2**

**Productivity of grape varieties with canopy system on five wire trellis, 2016-2018**

| №  | Varieties                | Average mass bunch of grapes, gr | Yield (kg/plant) | Yield (ton/ha) |
|----|--------------------------|----------------------------------|------------------|----------------|
| 1  | White Husseini (control) | 350                              | 15,7             | 20,9           |
| 2  | Ketmon Sopi              | 600                              | 28,0             | 35,7           |
| 3  | Rizamat                  | 300                              | 13,1             | 18,0           |
| 4  | Bostandik                | 450                              | 14,2             | 18,9           |
| 5  | Baladi                   | 320                              | 22,5             | 29,9           |
| 6  | Alicha Izyum             | 250                              | 13,0             | 17,3           |
| 7  | Vatan                    | 470                              | 14,0             | 18,6           |
| 8  | Aktash                   | 300                              | 20,0             | 26,6           |
| 9  | Black Kishmish (control) | 260                              | 25,2             | 33,5           |
| 10 | Kishmish Samarkand       | 250                              | 12,2             | 14,1           |
| 11 | Kishmish Terakli         | 250                              | 17,1             | 15,0           |
| 12 | Kishmish Duoba           | 300                              | 14,7             | 17,0           |
| 13 | Kishmish Botir           | 350                              | 25,1             | 30,5           |
|    | LSD from                 | 45                               | 1,2              | 0,53           |

**4. CONCLUSION:**

1. Testing the canopy system under a different number of layers on a trellis allows increasing the productivity of different grape varieties from 9.9 to 33.5 t/ha. Growing grapes according to the system of traditional bush vine regardless of the level of thickening of the bushes, does not ensure an increase in the overall productivity of plants above 4.2 t/ha.

2. From the tested table and raisin grapes varieties with the canopy system on five wire trellis, high productivity is provided by such varieties as Ketmon Sopi-35.7 t/ha, Kishmish black-33.5 t/ha, Aktash-29.9 t/ha, Kishmish Botir-30.5 t/ha and Baladi-29.9 t/ha.

**REFERENCES:**

1. Alehin K.K. Pruning and the formation of grape bushes. Tashkent, Uzbekistan 2001.-39-53 pp.
2. Djavakyanz Yu.M. Productivity of grapes in different ecological zones of Uzbekistan // Journal of Winemaking and Viticulture. Moscow, Russia. 2008. -(4).-44-45 pp.
3. Djavakyanz Yu.M. and Gorbach V.I. Grapes of Uzbekistan. Tashkent, Uzbekistan. 2001. 56-62 pp.
4. Jukov A.I. Perspective grape formation // Journal of Winemaking and Viticulture. Moscow, Russia. (4).- 2013.- 30 p.
5. Jukov A.I. New ways of doing grape bushes. Anapa, Russia. 2012.-23 pp.
6. Matuzok N.V. Innovative technology of cultivation of grapes in the non-covering zone // Journal of Winemaking and Viticulture.- Moscow, Russia. 2010.-(1).-48 pp.