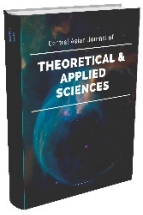

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 02 Issue: 09 | Sep 2021 ISSN: 2660-5317

Research on Conducting Green Operations in Vineyards of Non-Irrigated Area of the Republic

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

Khuzhamberdieva Shohista Mamatalievna
Master of the Tashkent State Agrarian University, Tashkent

Received 17th Jun 2021, Accepted 4th Jul 2021, Online 27h Sep 2021

Annotation *The scientific article provides experimental material devoted to the study of the influence of green and other surgical operations in the bushes of seedless grape varieties on productivity and quality of plant yield.*

It was found that the variety KishmishCherniy shows a high positive reaction to the pruning of excess shoots with thinning of leaves, as well as pruning of shoots with banding of branches and thinning of leaves. When they are carried out, the mass of the bunch and the yield from the bush in the experimental plants in comparison with control ones (without surgical operations) increases by 26,0-38,2 and 10,5-14,9%, respectively.

KishmishBeliy varieties effectively respond to such surgical operations as banding of branches with thinning of leaves and pruning of excess shoots with thinning of leaves. In this case, the increase in the mass of berries in comparison with control variant makes 21,2-41,0%, bunches – 55,7-74,7%, with an increase in yield from a bush of 33,1-36,8%.

Carrying out of green operations, providing good phytological conditions for plant life, contributes to the intensive accumulation of sugar in the berries of both grape varieties, the content of which increases by 20,8-27,2 mg/l in comparison with control variant (without green operations).

Key words: *grapes, bush, banding, pruning of leaves, notching, growth, development, harvest, berry, bunch, quality*

Introduction

Grapes are one of the most valuable dietary and food products. Grape berries contain up to 30% of easily digestible sugars - glucose and a small amount of sucrose, as well as a large set of organic acids and mineral salts. Grapes are high in vitamins of A, C, P and B groups (1, 2, 3).

Wine, bekmes, halva, churchikhela, sherbet, grape honey, syrup, jam, marmalade and other valuable nutritious products are made from grapes. Grape processing waste is widely used in production. Alcohol,

enant ether, oil, vinegar, tartaric acid, feed yeast, grape skin extract, and other products are obtained from them (4, 5).

Dried grape product - raisins - are of no less nutritional and dietary value. Depending on the ampelographic variety and the degree of berries ripeness, it can contain 65-77% of sugar. Therefore, dried grapes have a high calorie content of 3200-3400 k/cal-kg.In addition to sugars, dried grapes contain nitrogenous substances -1,4-1,7%, organic acids -1,2-2,0%, tannins and others. The value of dried grapes also lies in the fact that they can be stored for a long time and are easily transported (6, 7).

Research methodology. The study was carried out in 2019-2020 on the experimental base of the Research Institute of Horticulture, Viticulture and Winegrowing named after M. Mirzaev.

In the experiment, the zoned grape varietiesKishmishCherniy andKishmishBeliywere used as the object of research.

The experience was laid according to the following scheme:

1. Control - without green operations.
2. Banding of branches.
3. Pruning of shoots + thinning of leaves
4. Pruning of shoots + banding of branches.
5. Banding of branches + thinning of leaves.
6. Pruning of shoots + banding of branches + thinning of leaves.

Banding of branches was carried out (one circular incision in the bark, the bark is not removed) before the ripening of the berries. Such an incision in the bark heals very well and quickly without harming the plant.

During the study period, the number of shoots in the bush, their length and ripening by the end of the growing season were counted; the mass of berries and bunches; yield per bush and unit of area; output of standard products; the content of sugars and vitamin C in berry juice; acidity of the juice were determined.

Research results. Banding of grape shoots is a relatively new technique in viticulture. The biological basis for the banding of vine is that the mineral salts, absorbed by the roots, move to the leaves through the xylem tissues, located in the central parts of the trunk, branches, arrows and shoots of the grape plant. The plastic substances produced by the leaves during photosynthesis make their way back through the phloem tissues located under the bark. Banding can be applied on a shoot, arrow, branch or trunk of a plant at the beginning or after flowering and before the start of berry ripening (Stoev KD).

Studies have shown that the banding of vine, regardless of varietal characteristics of the plants, mainly affects the physical indicators of the grape harvest. In experimental plants, when applied, in comparison with control plants, the mass of berries increases by 21,1-26,8%, bunches - by 15,3-28,2% and overall productivity - by 22,3-24,3%.

Along with this, there is a significant improvement in the commercial quality of berries. So, for example, in the variety KishmishBeliy, the marketability of the crop in comparison with control one increased by 36,7%, and in KishmishCherniy - by 60,4%.

No changes in the content of sugars and vitamin C from the use of banding between cultivars were found in the experiments. However, in comparison with the control ones, their content increased slightly and amounted to 1,45-1,65%(table 1).

Table 1 Quantitative and qualitative indicators of the harvest of raisin grape varieties when banding vines.

Indicators	KishmishBeliy		KishmishCherniy	
	control	banding	control	banding
Berry weight: g	2,166	2,623	2,933	3,720
%	100,0	121,1	100,0	126,8
Bunch weight: g	159,1	183,4	152,5	195,5
%	100,0	115,3	100,0	128,2
Productivity: kg/bush	2,910	3,558	3,303	4,105
t/ha	7,275	8,895	8,254	10,262
%	100,0	122,3	100,0	124,3
Standard products, t/ha	5,856	8,005	4,383	7,840
to control,%	100,0	136,7	100,0	160,4
Non-standard products, t/ha	1,419	0,890	3,369	2,422
Sugar, g/l	152,5	162,8	184,4	205,2
Glucose,%	8,20	9,65	8,27	9,75
Fructose,%	8,44	10,0	8,49	10,05
Acidity, g/l	6,6	5,8	7,9	7,5
Vitamin C, mg%	5,52	5,69	5,58	5,77

Under the influence of banding in the experimental plants, the number of shoots and the total growth of shoots in the bush increased, and the quality of shoot ripening improved. Of the varieties we tested,KishmishBeliy grape variety was distinguished by the best indicators on this basis. In comparison withKishmishCherniyvariety, its excess of shoot growth was -19,8 cm, and ripening -38,0% (table 2).

Table 2 Growth and ripening of shoots of raisin grape varieties during banding.

Accounts and observations	Experiment variants	
	control without green operations	banding of branches
KishmishCherniy		
The number of shoots per bush, pcs	40,5	44,6
Shoot growth, cm	81,0	80,4
Growth of shoots per bush, cm	3288,0	3584,0
Ripening of shoot, cm	55,4	61,8
Ripening of shoots on a bush, cm	2243,4	2757,0
KishmishBeliy		
The number of shoots per bush, pcs	37,4	32,6
Shoot growth, cm	91,9	111,7
Growth of shoots per bush, cm	3440,0	3641,3
Ripening of shoot, cm	60,8	83,9
Ripening of shoots per bush, cm	2774,0	2737,2

Experiments have revealed some differences in the response of plants to green operations. Thus, the variety KishmishCherniy showed a high positive reaction to the pruning of excess shoots with leaf thinning, as well as the pruning of shoots with banding of branches and thinning of leaves. When they

were carried out, the mass of the bunch and the yield from the bush in the experimental plants to the control ones increased by 26,0-38,2 and 10,5-14,9%, respectively.

For the KishmishBeliy variety, the plants responded effectively to such surgical operations as banding of branches with thinning of leaves and pruning of excess shoots with thinning of leaves. In this case, the increase in the mass of berries in comparison with control variant was 21,2-41,0%, bunches – 55,7-74,7%, and the increase in plant productivity from a bush was 33,1-36,8%.

Carrying out of green operations, providing good phytological conditions for the life of plants, contributed to a more intensive accumulation of sugars in the berries of both grape varieties, the content of which increased in comparison with control by 20,8-27,2 mg/l (table 3).

Table 3 The yield and quality of berries of kishmish grape varieties with the complex application of green operations

Indicators	Experience options				
	control - without green operations	breaking+thinning of leaves	breakage+ banding	banding+thinning of leaves	breaking+ banding+thinning of leaves
KishmishCherniy					
Berry weight, g	2,991	3,80	3,83	4,04	4,00
Bunch weight, g	152,5	192,3	186,9	210,0	210,8
Yield per bush, kg	4,303	4,861	4,602	4,104	4,758
Content in the juice:sugars, g/l acidity, g/l	174,4 7,9	195,2 7,4	196,4 7,2	200,0 7,3	201,6 7,1
KishmishBeliy					
Berry weight, g	2,92	3,54	3,46	4,12	4,18
Bunch weight, g	131,7	205,1	172,8	230,2	2,265
Yield per bush, kg	3,537	4,700	4,623	4,838	4,258
Content in the juice:sugars, g/l acidity, g/l	173,0 7,5	193,2 9,6	185,0 9,5	193,2 9,7	194,2 9,4

Conclusions:

1. When carrying out green operations on raisin varieties of grapes, it is advisable to leave 1200-1300 leaves and 30-40 well-developed shoots in the bushes when pruning, which allows plants to more

efficiently use the water and nutrients coming from the soil, accelerates the ripening of berries by 10-12 days, increases the mass of bunches by 26% and the yield in a bush by 10.5%.

2. Variety KishmishCherniy shows a high positive reaction to the pruning of excess shoots with thinning of leaves, as well as pruning of shoots with banding of branches and thinning of leaves. When they are carried out, the mass of the bunch and the yield from the bush in the experimental plants in comparison with control one increases by 26,0-38,2 and 10,5-14,9%, respectively.
3. Bushes of KishmishBeliy variety effectively respond to such surgical operations as banding of branches with thinning of leaves and pruning of excess shoots with thinning of leaves. In this case, the increase in the mass of berries to the control variant is 21,2-41,0%, bunches – 55,7-74,7%, with an increase in yield from a bush of 33,1-36,8%.
4. Carrying out green operations, providing good phytological conditions for the life of plants, contributes to the intensive accumulation of sugars in the berries of both grape varieties, the content of which increases by 20,8-27,2 mg/l to the control variant (without green operations).

Literature:

1. DzheneevS.Yu., Smirnov K.V. Production of table grapes, kishmish and raisins. –Moscow: Kolos. 1992.-p.154.
2. Molchanov V.L., MolchanovaZ.Ya. Biological bases for increasing the productivity of grapes. - Tashkent: Mekhnat. 1986.- p. 103-121.
3. Nazarov K.K., Dzhuraev R.D. The influence of green operations on the yield and quality ofKishmishCherniy grapes. - Sat. scientific papers. Tashkent. 1987.-p.38-40.
4. Ponamarchuk V.P. and others. Grapes of Kazakhstan. - Alma-Ata: Kainar. 1977.-p.176.
5. Pullo A.D. About the culture of grapes in the city of Tashkent and its environs. -Tashkent. 1976. – p.22.
6. Smirnov K.E. and others. Viticulture. Moscow: Agropromizdat. 1987.-p.310-318.
7. Stoev K.D. Physiological bases of pruning and formation of a grape plant. Physiology of grapes and the basics of its cultivation: Sofia. 1984.V.33.-p.123-127.

