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## ADVANTAGES OF BIOSTIMULANTS IN GROWING PROMISING PUMPKIN VARIETIES

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### ABSTRACT

This article presents the results of the use of biostimulants "Uchkun", "Gossipren" and "Verva" on the yield of pumpkin variety Spanish 73 and Palov kadu 268 in the Andijan region. It was established that pre-sowing treatment with biostimulants contributed to the enhancement of seed germination and growth processes. The study proved that under the influence of polyprenols contained in the biostimulator "Uchkun", as a result of the complete assimilation of minerals during the germination of pumpkin seeds, the growth and development of the plant is accelerated, resistance to diseases is accelerated and increased.

**Keywords:** biostimulant, Uchkun, pumpkin, germination, productivity, polyprenols, assimilation.

Public health is a major concern with today's demand for organic products. The need of the population for pumpkin has increased dramatically, especially in the winter-spring period, when the range of vegetables is significantly limited, pumpkin is widely used for food.

Pumpkin fruits have great nutritional and medicinal value. It should be noted that it contains unique compounds such as carbohydrates, pectin, organic acids, carotene and ascorbic acid. Much attention is paid to the issues of expanding the range of cultivated pumpkins, improving the quality of marketable products. The demand for it is constantly growing, especially for table varieties with high palatability [1,2].

The purpose of this work is to study the change in qualitative and biochemical indicators of growth, yield, pumpkin fruits of Spanish 73 and Palov kadu 268 varieties under the influence of the Uchkun biostimulant, in the Andijan region. Andijan is

located in the eastern part of the Ferghana Valley at an altitude of 330-100 m above sea level, on the ancient deposits of the Andijansay River.

The land used for agriculture is 61.1% of the total land area. The soil of the Andijan region is characterized by the presence of a gley horizon in the lower part of the profile, and is often saline, humus horizons are well developed. The climatic features of the region are high summer temperatures and dry air, sharp fluctuations in daily and seasonal temperatures [3,4].

The use of environmentally friendly technologies in the cultivation of pumpkin is a promising direction. Such technologies include the use of biostimulants, which significantly increase the adaptive properties and immunity of agricultural plants, increasing their yield and product quality.

### Research Methods

The studies were carried out on the site of the Andijan branch of the Tashkent Agrarian State University 2.5 hectares and in the farm site 5.0 hectares "Nainovo okshomi" of the Shakhrikhan district.

The scheme of the experiment provided for the presowing treatment of pumpkin plants with biostimulants:

Control - treatment with water;

2. Gossypren 1l/t;

3. Uchkun 1l/t;

4. Verva - reference 5,1/t.

In particular, the experiments were carried out on the basis of the recommendations of the Research Institute of Vegetable, Polyculture and Potato, on the basis of the recommendations of agricultural technology for growing crops in 3 ways: soaking (or encrusting) seeds; spraying during the growing season (before flowering) and a mixed method that includes soaking and spraying. Accounting for the yield of pumpkins was carried out by the mathematical method of dispersion analysis according to Dospekhov [5,6].

In the course of the research work, generally accepted research methods of biochemistry, bioorganic chemistry, plant physiology, and methods of plant biotechnology were used.

To assess the effect of biostimulants on seed germination and the quality of pumpkin seedlings, pre-sowing seed treatment was carried out, which consisted of soaking them for 12 hours in solutions of growth biostimulants, spraying during the growing season (before flowering 6-7 weeks after plant emergence) and in a mixed way (soaking + spraying). Phenological observations were made during the growing season. Sowing was carried out in the second half of April.

### Research Results

Pre-sowing treatment with biostimulants contributed to the reduction of the emergence of seedlings, the strengthening of growth processes [7].

In continuation of our research, we studied the effect of biostimulants on the germination energy and growth of pumpkin seeds. As a result, during the pre-sowing treatment of seeds with biostimulants, it was found that at the early stages of plant growth and development, the indicators of the Uchkun preparation are higher than the control and are not inferior to the reference preparation Verva. During phenological observations of the experimental samples, a significant difference was observed in the 10 and 75% variants of the germination of pumpkin seeds of the Spanish 73 variety (see Table 1)

Table 1 Germination energy and field germination of pumpkin seeds varieties Spanish 73 and Palov kadu 268

No	Options	Number of seeds. PCS.	Sowing	Germination	10%	75%	Germination
<b>Spanish 73</b>							
1	Control	120	20,04	29,04	05,05	08,05	80
2	Gossypren 1 l/t	120	20,04	28,04	04,05	07,05	90
3	Uchkun 1 l/t	120	20,04	27,04	03,05	06,05	95
4	Verva 5 l/t	120	20,04	27,04	04,05	07,05	94
<b>Palov kadu 268</b>							
1	Control	120	20,04	29,04	06,05	09,05	78
2	Gossypren 1 l/t	120	20,04	28,04	05,05	08,05	89
3	Uchkun 1 l/t	120	20,04	27,04	04,05	07,05	95
4	Verva 5 l/t	120	20,04	27,04	06,05	08,05	90

These indicators were 15 and 18 days in the control variant, 13 and 16 days in the Uchkun variant, and 14 and 17 days in the Gossipren and Verva variants, respectively. When determining the field germination of seeds in the experiment of the pumpkin variety Palov Kadu 268, the minimum field germination was noted in the control variant of 78%. In the case of Gossipren and Verv, seed germination was in the range of 89-90%, and in the case of Uchkun it was 95%. In the Uchkun variant, 10% seed germination was observed after 14 days, and 75% germination after 17 days.

The reason that the process of photosynthesis proceeds mainly in leaves and partially in young branches is the presence of chloroplasts in them. Based on the fact that the synthesis and destruction of chlorophyll occur as a result of a complex metabolic process in living cells, we determined the content of chlorophyll in pumpkin leaves treated with a mixed method of local biostimulants Uchkun, Gossipren and the reference drug Vervoy (Table 2).

Table 2 Effects of biostimulants on chlorophyll content in leaves mixed processed pumpkins

Samples		Solution volume	Hl. a,	Hl. b,	Quantity hl(a+b)	Amount of carotenoids
		ml	mg/g	mg/g	mg/%	mg/%
<b>Spanish 73</b>						
1	Control	50.0	1.54	0.40	1.96(100)	0.71(100)
2	Gossypren 1 l/t	50.0	1.66	0.48	2.12(108.2)	0.73(102.8)
3	Uchkun 1 l/t	50.0	2.16	0.64	2.80(143.3)	0.74(104.2)
4	Verva 5l/t	50.0	1.68	0.48	2.14(109.3)	0.73(102.5)
<b>Palov kadu 268</b>						
1	Control	50.0	1.44	0.36	1.76(120.6)	0.70(100)
2	Gossypren 1 l/t	50.0	1.60	0.40	2.00(113.6)	0.71 (101.4)
3	Uchkun 1 l/t	50.0	2.00	0.56	2.52(145.4)	0.72(104.2)
4	Verva 5l/t	50.0	1.92	0.52	2.44(138.6)	0.72(102.8)

When we analyzed the amount of chlorophyll from leaf pigments by spectrophotometry, the results showed that all biostimulants used had a positive effect on the amount of pigments in pumpkin leaves. Among them, the best result was obtained in the variety Spanish 73 43.5% and in the variety Palov Kadu 268 45.5% compared with the control in the biostimulator Uchkun.

We can attribute this result to the composition of the Uchkun biostimulant.

One of the positive features of pumpkin fruits is the content of sufficient amounts of pectin. Pumpkin is a relatively inexpensive source of dietary pectin[8].

The amount of pectin contained in pumpkin fruits was obtained by extracting polysaccharides from an alcohol extract by a known method. [9].

The amount of pectin in the fruits of various varieties of pumpkin ranges from 0.25% to 0.86%. The World Health Organization recognized pectin as a completely toxicologically safe product recommended as a substance that restores human health. According to the results obtained, the biostimulator Uchkun contributed to the accumulation of pectin in the Spanish 73 variety by 25% more compared to the control, and in the Palov kadu 268 variety by 18.3% (Table 3).

Table 3 The effect of biostimulants on the change in the content of pectin in pumpkin fruits

Objects	Control		Gossypren 1 l/t		Uchkun 1 l/t		Verva 5l/t	
	gr	%	gr	%	gr	%	gr	%
<b>Spanish 73</b>	6.4	100	6.9	107.8	8.0	125.0	7.2	112.5
<b>Palov kadu 268</b>	6.0	100	6.4	106.7	7.1	118.3	6.6	110.0

It is noted that when cotton seeds are treated with the Uchkun preparation before sowing seeds of wheat and multicolor crops, all phases of growth and development are accelerated, and productivity increases. It has been observed that cotton seeds increase the amount of nuclear protein biosynthesis as a result of primary processing and, as a result, increase its resistance to drought [10].

Comparison of the above results shows that polyprenols in Uchkun 1l/t exhibit immunomodulatory properties and have synergistic properties and have a positive effect on plant growth, development, and productivity.

Table 4 The effect of biostimulants on the average yield of pumpkin varieties in mixed processing

Options	Yield	Yield increase	
	(t/ha)	(t/ha)	%
<b>Spanish 73</b>			
Control	18.6	-	100
Gossypren 1 l/t	27.5	8.9	147.8
Uchkun 1 l/t	30.3	11.7	162.9
Verva 5l/t	29.5	10.9	158.6
<b>Palov kadu 268</b>			
Control	18.9	-	100
Gossypren 1 l/t	27.5	8.6	145.5
Uchkun 1 l/t	31.0	12.1	164.0
Verva 5l/t	29.5	10.6	156.1

Based on the data obtained from field trials, the optimal consumption rates of the Uchkun preparation and methods of processing to increase the yield of pumpkin varieties Spanish 73 and Palov kadu 268 were determined in conditions of moderately saline soils of the Andijan region. The best results were observed with a mixed treatment method (pre-sowing + spraying in the vegetation phase) at a consumption of 1 l/t of the biostimulant Uchkun in all variants.

At the same time, the yield of pumpkin of the Spanish 73 variety, the yield was 30.3 t/ha, and the yield increase was 11.7 t/ha on the Palov kadu 268 variety was 31.0 t/ha, and the yield increase was 12.1 t/ha,. These indicators served as the basis for recommending the biostimulant Uchkun for its use in melon growing. (Table 4).

## Conclusions

1. For the first time, the biostimulant "Uchkun", created on the basis of polyisoprenoids, was used as an effective biostimulant in the cultivation of pumpkin varieties Spanish 73 in the Andijan region and the acceleration of growth and resistance of plants to diseases as a result of the complete assimilation of mineral substances during the germination of pumpkin seeds under the influence of polyprenols contained in the Uchkun biostimulant has been proven.

2. When treated with the Uchkun preparation in a mixed way, the yield of the Spanish 73 variety is 30.3 t/ha, an increase of 11.7 t/ha, an increase of 31.0 t/ha, an increase of 12 t/ha. .1 t/h, and the amount of pectin in fruits increased by 25% in the Ipanskaya 73 variety and by 18.3% in the Palov Kadu 268 variety compared to the control. These indicators make it possible to recommend the Uchkun biostimulator for use in agriculture in melon growing.

### Bibliography

1. Sokolov. S.D., Feldman B.F., Sokolova G.F. Nutritional and medicinal value of gourds // Problems of scientific support of vegetable growing in the south of Russia: a collection of scientific papers. - Krasnodar. - 2009. P. 172-177.
2. Kravchenko. V.A., Pleshkov K.K., Kinoshyan S.N. Features of the technology of pumpkin production for baby food // Proceedings of the International Scientific Conference "Selektshchya i tekhnologiya vyroschuvannya bolshtannykh kul'tury" February 20-21, 1996. Gola Pier. 1996, pp. 133-135.
3. Nomozov.Kh.Q., Turdimatov. Sh.M. Soils of Uzbekistan and their evolution. /Tashkent Science and Technology -2016. 126 p
4. Chub V.E. Natural resource potential of the Republic of Uzbekistan. // Climate change and its impact on the natural resource potential of the Republic of Uzbekistan. - Tashkent Main Department for Meteorology under the Cabinet of Ministers of the Republic of Uzbekistan, 2000. - P. 5-38.
5. Ludilov. V.A., Bykovsky Yu.A. Approbation of gourds. - M.: RAAS VNIIO. 2007. S. 184.
6. Dospekhov.B.A.Methods of field experience, 1985. -352c.
7. A.A. Umarov, Kushaeva F., U Niyazmetov, Khidirova N.K., N.M. MamatkulovaUmarov A.A., Shakhidoyatov H.M. Biological evaluation of the preparation L-2 and its individual components. Reports of the Academy of Agricultural Sciences. 2005. No. 2. pp.13-15.
8. Kizatova M.Zh. Azimova S. T. Omarkulova. N.S. Adilkhanova L.S. Kaumbaeva E.T. Substantiation of the functionality of pumpkin pectin and pectin-containing food products. // Journal: Bulletin of KazNMU. 2018. P. 188-191.
9. Azizova D.Z. Rakhmonberdieva R.K. Malikova.M.Kh. Polysaccharides of the aerial part of *Ferula tenuista*. Institute of Chemistry of Plant Substances named after academician S.Yu. Yunusov of the Academy of Sciences of the Republic of Uzbekistan// Chemistry of natural compounds 2021 No. 4 5-9 pp.
10. Rashkes A.M., Saitmuratova O.Kh., Khidyrova N.K., Leontev V.B., Shakhidoyatov Kh.M. A Natural undecaprenol and its influence on the biochemical reactions of cotton seedling nuclei/Chemistry of Natural Compounds. 1998. V.34. № 48. P. 65.