

**THE APPLICATION OF UCHKUN BIOSTIMULATES FOR GROWTH  
AND DEVELOPMENT, PRODUCTIVITY OF SPANISH PUMPKIN  
VARIETIES 73**

**ABSTRACT.** This article presents the results of the use of biostimulants "Uchkun", "Gossipren" and "Verva" on the yield of pumpkin varieties and Spanish 73 in the Andijan region. It was established that pre-sowing treatment with biostimulants contributed to the enhancement of seed germination and growth processes. Uchkun turned out to be the most effective growth stimulant and when treated with biostimulants, on the Spanish 73 variety, **the yield** was 30.3 t/ha, and **the increase** yield 11.7 t/ha.

**Keywords:** biostimulant, Uchkun, pumpkin, germination, productivity, polyphenols.

**Introduction.** Currently, there is an increased interest in pumpkins as a dietary and medicinal food product. Much attention is paid to the issues of expanding the range of cultivated pumpkins, **and improving** the quality of marketable products. The demand for it is constantly growing, especially for table varieties with high palatability [1,2].

Pumpkin **is able to** delay the aging process, **and** has a beneficial effect on the condition of the skin and hair, in addition to **the** pumpkin pulp, pumpkin seeds are very useful as a prophylactic against helminths, and pumpkin juice is involved in hematopoiesis.

The purpose of this work is to study the effect of the biostimulant Uchkun on the growth and development, **of** the yield of Spanish pumpkin varieties when grown in the Andijan region. Andijan is located in the eastern part of the Ferghana Valley at an altitude of 490 m above sea level, on the ancient deposits of the Andijansay River.

Comment [U1]: The abstract does not explain the research method used.

The research objectives have not been explained

Comment [U2]: 1. The introduction does not explain the role of biostimulants for pumpkin

The climatic features of the region are high summer temperatures and dry air, sharp fluctuations in daily and seasonal temperatures. 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, with well-developed humus horizons[3].

The use of environmentally friendly technologies in the cultivation of pumpkins 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 "Naynovookshomi" Shakhrikhan district 2018-2020.

The scheme of the experiment included presowing treatment of pumpkin plants with biostimulants in the control variant - water treatment, and the following were treated with biostimulants Gossipren 1l/t, Uchkun 1l/t, 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[4,5].

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 and Discussion.** Pre-sowing treatment with biostimulants contributed to the reduction of the emergence of seedlings, the strengthening of growth processes [6].

Comment [U3]: Seeto research objectives

Comment [U4]: Reference out of date

Comment [U5]: The method of spraying is also not clear, what concentration is given, when it is sprayed (morning or evening), at what age is it sprayed. Similarly, the mixed treatment needs to be explained in detail.

Comment [U6]: no discussion at all

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.**

<b>№</b>	<b>Options</b>	<b>Number of seeds. PCS.</b>	<b>Sowing</b>	<b>Germination</b>	<b>10%</b>	<b>75%</b>	<b>Germination</b>
<b>Spanish 73</b>							
1	Control (water)	120	20,04	29,04	05,05	08,05	80
2	Gossypren	120	20,04	28,04	04,05	07,05	90
3	Uchkun	120	20,04	27,04	03,05	06,05	95
4	Verva	120	20,04	27,04	04,05	07,05	94

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 Gossypren and Verva variants, respectively.

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 chlorophylls in pumpkin leaves treated with a mixed method of local biostimulants Uchkun, Gossypren and the reference drug Vervoy (Table 2).

The data obtained showed that all biostimulants have a positive effect on the content of leaf pigments and this contributes to the early growth and productivity

of the plant. Among them, the amount of total chlorophyll was higher than 43.3 mg% in the Uchkun biostimulator compared to the control.

**Table 2**

**Effects of biostimulants on the content of chlorophyll in pumpkin leaves treated with a mixed method**

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>						
<b>1</b>	Control	50,0	1,54	0,40	1,96(100)	0,71(100)
<b>2</b>	Gossypren 1 l/t	50,0	1,66	0,48	2,12(108,2)	0,73(102,8)
<b>3</b>	Uchkun 1l/t	50,0	2,16	0,64	2,80(143,3)	0,74(104,2)
<b>4</b>	Verva 5 l/t	50,0	1,68	0,48	2,14(109,3)	0,73(102,5)

When using the drug "Uchkun" in the cultivation of pumpkin plants, an increase in yield and increase was observed. In this case, polyphenols can be considered as one of the main active substances contained in biostimulants. 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 cottonseed increases the amount of nuclear protein biosynthesis from primary processing and, as a result, increases its drought tolerance [7].

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

As a result of the experiments, the positive effect of the Uchkun preparation on the increase in the sympodial branches of plants and the formation of generative organs was determined (Table 4).

The data given in the tables show that under the influence of the Uchkun biostimulator in two varieties, an increase in the number and weight of fruits, as well as the weight of seeds, was observed.

Comment [U7]: out of date reference

**Table 4**

**Influence on the growth and development of pumpkin varieties with mixed treatment with biostimulants (2020).**

Options	Height, cm	Number of seeds (PCS.)	Average fruit weight (kg)	Number of seeds (pcs.)	Weight of 1000 seeds	Infected plants (pcs.)
Control	106±0,13	3,9±0,11	3,0±0,16	146±0,15	335,3±0,11	5
Gossypren 1 l/t	102±0,16	4,1±0,13	3,1±0,15	148±0,15	344,6±0,18	2
Uchkun 1 l/t	117±0,15	4,9±0,17	3,6±0,13	1155±0,17	383,9±0,16	0
Verva 5 l/t	104±0,11	4,3±0,15	3,2±0,18	150±0,15	345,6±0,18	1

The best result was obtained under the influence of the drug Uchkun, where the number and weight of fetuses were 25.6% and 20.0% higher compared to the control, compared to the reference (standard) drug Verva by 13.9% and 12.5% respectively in Spanish 73 variety.

**Table 5**

**The effect of biostimulants on the average yield of pumpkin varieties when processed in a mixed way.**

Options	Yield		Yield increase	
	(t/ha)	(t/ha)	(t/ha)	%
<b>Spanish 73</b>				
Control	18,6	-	-	100
Gossypren 1 l/t	27,5	8,9	8,9	147,8
Uchkun 1 l/t	30,3	11,7	11,7	162,9
Verva 5l/t	29,5	10,9	10,9	158,6

Based on the data obtained from field tests, the optimal consumption rates of the Uchkun preparation and methods of processing to increase the yield of pumpkin varieties Spanish 73 in the conditions of moderately saline soils of the Andijan region were determined. The best results were observed with a mixed

method of processing (encrustation+spraying in the vegetation phase) at a consumption of 1 l/t of the Uchkun biostimulant in all variants (Table 5).

At the same time, the yield of pumpkin variety Spanish 73, the yield was 30.3 t/ha, and the yield increase was 11.7 t/ha.

### **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 Spanish 73 pumpkin varieties in the conditions of the Andijan region, and it was proved that the growth and resistance of plants to diseases were accelerated as a result of the complete assimilation of minerals during the germination of pumpkin seeds under the influence of polyisoprenols, contained in the biostimulator "Uchkun".

2. For the first time it was determined that with mixed treatment: incrustation of seeds and spraying of leaves during the growing season with the Uchkun preparation, the yield of Spanish 73 variety, the yield was 30.3 t/ha, and the yield increase was 11.7 t/ha. These indicators serve as the basis for recommending the biostimulant Uchkun for its use in melon growing.

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