

EFFECT OF GROWTH REGULATORY DRUGS ON CUCUMBER PRODUCTIVITY AND QUALITY

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Abstract. *The article presents the results of the effectiveness of growth-controlling drugs on cucumber crops in field and laboratory conditions. Cucumber has a special place in human life among the plants belonging to the family of gourds. Cucumis Sativus Z is the most widespread vegetable in Uzbekistan, therefore, the area of open fields and greenhouses for their cultivation is increasing every year.*

The agrotechnics and system of cucumber cultivation have been improved, soil fertility has been improved and new high-yielding hybrids and varieties are recommended in order to increase productivity. Cucumber is a heat-loving plant, requires high air humidity and grows rapidly in conditions with high soil fertility. The effectiveness of the tested drugs "Biosil" and "Buton" is 71.9%, which is 43.5% higher than the control. It was observed that the yield of Buton drug was 65.9%, which is 6% less than that of "Biosil".

The results showed that high economic efficiency was achieved by using natural and artificial growth regulators. Preparations have been proven to accelerate the growth and development of crops, with the possibility of quick ripening and long-term yield, as well as economic efficiency.

Keywords: *germination, biosil, "buton" drug, vegetation, arable layer.*

Introduction. Vegetable farms growing cucumbers in Uzbekistan expand production by increasing land area and increasing productivity. To increase productivity and adapt to adverse conditions, modern growth regulators are applied to plants. Growth regulators improve the yield and quality of products by enhancing metabolic processes, ultimately increasing the resistance of crops to stress factors [1,2].

Materials and research methods. The purpose of the research is to study the effect of Biosil and Buton, growth regulators, on the yield and quality of cucumber crops in open field conditions [6,7]. The experiment is conducted at the TashSAU experimental farm. Research was conducted with the following cucumber varieties: 1. Avante F₁, 2. Roki F₁, 3. Shakti F₁.

Climatic conditions in the 2019-2020 agricultural years were satisfactory for the growth and development of cucumbers, rainfall was observed at an optimal level. It was noted that the spring temperature before planting was 3-4°C higher than the annual temperature.

According to the analysis of the agrochemical laboratory, the amount of humus in the arable layer of the land was 1.2%. The pH indicator of the soil solution was 6.0-6.5.

Research results. Experiments were conducted in field conditions in 2019-2020 at TashSAU sites. Cucumber variety "Orzu", after germination, it took 45-50 days before it began to bear fruit. The length of the fruit is 8-12 cm, the weight is 60-90 g, the taste is excellent, it is resistant to diseases. The above-mentioned variety is recommended for salting and canning.

Research was conducted in 3 different options:

Option 1 – by control - without growth regulators.

Option 2 - by spraying "Biosil" drug in the amount of 15 ml/ha

Option 3 - use of "Buton" drug on cucumbers by spraying in the amount of 20g/ha.

Spray three times with growth regulators. 1st spray with the appearance of the first true leaf, 2nd spray at the flowering phase and 3rd spray at the full flowering phase of the cucumber. Repeat three times. Observations were made daily on 15 plants. The location of the units was systematically planned. Experimental sections were 5x5 meters.

The total research area is 25m², working solutions were prepared on the days of spraying. Phenological observations were made during the growing season to determine the effectiveness of the drugs used.

When considering productivity, the weight of cucumber fruits in each section was measured separately. Notovar cucumber fruits were weighed separately. Harvested 35 times during the growing season. Cucumber vegetation in the open field was 98-115 days. Economic efficiency was determined in a general way.

The drugs selected for research actually had a significant effect on the growth, development and productivity of crops (Table 1).

1-table

Effect of number of days of duration of vegetation of preparations on growth and development of cucumber

| Experience options | Germination and Blooming | Germination and fruiting | To 1 harvest | Until the last harvest |
|--------------------|--------------------------|--------------------------|--------------|------------------------|
| Control | 38 | 48 | 58 | 98 |
| Biosil | 30 | 44 | 46 | 115 |
| Buton | 33 | 46 | 50 | 110 |

In the control variant, the period from seed germination to flowering was 38 days. It was observed that this period was reduced to 5-8 days when treated with drugs. A similar trend was observed from germination to fruit set. The period from germination to the beginning of fruit picking was 58 days in the control option, but this period was reduced to 12 days when treated with "Biosil". It was observed that it was reduced to 8 days when sprayed with "Buton" drug. When treated with drugs, the vegetation period is extended, in turn, productivity and profit are increased.

Disease resistance of cucumbers increased when Biosil and Buton drugs were used.

2 table

Effects of drugs on the spread of disease

| Experiment option | Plant disease rate % | |
|-------------------------------------------|----------------------|-------------|
| | Dew | Bacteriosis |
| 1. Control (Idle) | 18 | 13 |
| 2. "Biosil" 15 ml/ha when treated 3 times | 8 | 7 |
| 3. "Buton" 20 g/ha when treated 3 times | 12 | 10 |

Due to the high biological effectiveness of growth-controlling drugs in the fight against diseases, they accelerate the growth and development of cucumbers, making them stronger and increasing disease resistance [3.4]. It was found to stop the disease in open field when treated with Biosil. In the control, 18% of cucumber crops were damaged, when treated with biosil, this

indicator decreased to 9%, and when treated with Buton, it was 5% compared to the control. When treated with these drugs, the incidence of bacterial disease also decreased (table 2).

Cucumber yield is one of the main quality indicators, and as a result of the use of growth regulators, the yield increased by 1.3 kg/m². A dose of 15 ml/ha of Biosil increased the yield by 0.7 kg/m² compared to the control and the yield reached 2 kg/m².

As a result of using Buton drug in the amount of 20g/ha, the yield increased by 0.6kg/m² (Table 3).

3 table

Cucumber yield when using growth regulators (2020)

| Experience options | Repeating | | | Average yield kg/m ² | Additional yield kg/m ² |
|-------------------------------------------|-----------|-----|-----|---------------------------------|------------------------------------|
| | 1 | 2 | 3 | | |
| 1. Control | 1,9 | 2,0 | 2,2 | 2,0 | - |
| 2. "Biosil" 15 ml/ha when treated 3 times | 2,9 | 2,7 | 2,5 | 2,7 | 0,7 |
| 3. "Buton" 20 g/ha when treated 3 times | 2,7 | 2,6 | 2,5 | 2,6 | 0,6 |

Thus, growth regulators had a sufficient effect on the yield of cucumber under open field conditions, and both drugs showed effectiveness. the used preparations did not have any negative effect on the quality of cucumbers. Among the quality indicators, the amount of nitrates is low, while accumulation of nitrates in cucumber fruits is characteristic. Nitrates are distributed differently in cucumber fruits, their amount increases from tip to tail (60 mg to 150 mg).

On the same background of mineral nutrition, the accumulation of nitrates in different hybrids of cucumber is different (2). In the experiment Avante F hybrid, the amount of nitrates did not change 62-68 mg/kg (table 4)

4 table

Amount of nitrates (mg/kg) when growth regulators are applied to cucumber fruits

| Experience options | Amount of nitrates, mg/kg |
|-------------------------------------------|---------------------------|
| 1. Назорат | 62-64 |
| 2. "Biosil" 15 ml/ha when treated 3 times | 65-68 |
| 3. "Buton" 20 g/ha when treated 3 times | 63-66 |

Biosil and Buton preparations did not affect the chemical composition of cucumber fruits. The main task of modern vegetable farms is to grow high-quality vegetables and reduce consumption costs [5,8,9,10].

Thus, it was found that Biosil and Buton, among the growth control drugs used in cucumber cultivation, have high economic efficiency.

It was observed that they accelerate the growth and development of crops, ripen the fruits earlier and give longer fruits, and increase the yield and have an economic effect.

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