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CHANGE OF CELL SAP AND OSMOTIC PRESSURE IN COTTON LEAVES UNDER THE EFFECT OF ZEROX IMMUNOSTIMULANT

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Abstract
In this article, information about the effect of the immunostimulants FITOVAK and ZEROX on the change of cell sap and osmotic pressure in cotton leaves. The obtained results showed that ZEROX immunostimulant played an important role in increasing the resistance of cotton drought resistance compared to Fitovak immunostimulant.

Keywords: cotton leaves, ZEROX immunostimulant, FITOVAK immunostimulant, cell sap, osmotic pressure.

Introduction

Plants are the main producers on earth, and they are the first link in the food chain of living organisms. In order for photosynthesis to proceed in the chlorophyll grains in plant leaf cells, water supply to the leaves is important. If the plant receives 98-99% of water through the roots, only 1-2% is absorbed through dew and raindrops falling on the leaves.

The movement of water received by the plant from the soil through its roots to the leaves depends on certain physiological processes. In particular, as a result of the transpiration process occurring in the leaves, the concentration of cell sap in the vacuole of the leaf cell increases, leading to a high osmotic pressure. The osmotic pressure of the cell is called hydrostatic pressure, which develops as a result of endosmosis being stronger than exosmosis and forms the cell membrane from the inside. With the increase of the osmotic pressure in the leaves, as a result of the plant absorbing a large amount of water from the soil, it is necessary to extend the irrigation periods in cotton [1].

Currently, immunostimulants are widely used in agriculture to improve the growth and development of plants and increase the immune system [2]; [3], [4].

In order to study the effect of ZEROX immunostimulant on the cell sap and osmotic pressure in the leaves depending on the number of seedlings of the Bukhara-10 cotton variety at different rates and periods, research work was carried out.

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Research Methodology

The refractometer method was used in order to carry out scientific experimental work in field conditions [5].

Analysis and Results

In the experiment, the effect of the use of ZEROX immunostimulant at different rates (1-2-3 l/t, l/ha) and periods (2-4 true leaves, shading, flowering, maturing) of the cell sap and osmotic pressure in Bukhara-10 cotton leaves. When determining the impact on the change, it can be seen from the obtained data that these indicators changed differently for 15 options (Table 3.6).

Table - 3. 6. Changes in osmotic pressure and cell sap concentration depending on seedling thickness and application rate of ZEROX in moderately saline soil conditions

№	Options	The number of seedlings	Osmotic pressure of the cell cotton leaves							
			2-4 true leaves		shading		flowering		ripening	
			osmotic pressure atm.	cell sap %	osmotic pressure atm.	cell sap %	osmotic pressure atm.	cell sap %	osmotic pressure atm	cell sap %
1	Control	80-90	5,7	8,7	11,8	22,8	15,0	25,0	16,0	26,0
2		100-110	5,8	8,9	11,8	23,0	15,4	25,4	16,2	26,5
3		120-130	5,9	9,0	12,0	23,4	15,6	26,0	16,5	28,0
4	Fitovak 200 ml/t; l/ha	80-90	5,3	9,3	11,2	19,0	14,5	21,5	15,7	22,6
5		100-110	5,4	9,5	11,4	19,3	14,8	20,8	15,9	23,0
6		120-130	5,5	9,7	11,5	19,6	15,0	22,0	16,0	23,5
7	Zerox 1 l/t; l/ha	80-90	5,3	9,5	10,9	19,0	13,4	21,6	15,0	22,8
8		100-110	5,4	9,7	11,1	20,0	14,4	22,0	15,2	23,2
9		120-130	5,6	10,1	11,4	21,0	14,6	23,0	15,4	23,8
10	Zerox 2 l/t; l/ha	80-90	4,7	8,8	10,8	16,3	13,0	17,5	14,7	18,0
11		100-110	5,1	8,4	10,9	16,5	13,4	17,7	15,0	18,5
12		120-130	5,3	9,9	11,1	16,8	13,7	18,0	15,1	18,7
13	Zerox 3 l/t; l/ha	80-90	5,1	9,2	10,9	17,0	13,8	18,3	14,9	18,9
14		100-110	5,2	9,6	11,0	17,4	13,9	18,7	15,2	19,3
15		120-130	5,3	10,0	11,3	18,0	14,1	19,2	15,4	20,5

According to the results of the study, the osmotic pressure of the cell sap in control variants 1-2-3, where three different seedling thicknesses were left in the 2-4 true leaves phase of cotton, was determined using a refractometer device between 800 and 1600 hours, respectively: 5.7-5 ,8-5.9 atm.; 11.8-11.8-12.0 atm. during the shading

period; 15.0-15.4-15.6 atm. during flowering; and in the ripening phase these indicators are respectively: 16.0-16.2-16.5 atm. if it consisted of 1-2-3 l/t of ZEROX at the thickness of the seedling.

The osmotic pressure of the cell sap from the 7th to the 15th variants used in l/ha norms is respectively: 5.3-5.4-5.6 atm.; 4.7-5.1-5.3 atm.; 5.1-5.2-5.3 atm.; 10.9-11.1-11.4 atm during the growing season; 10.8-10.9-11.1 atm.; 10.9-11.0-11.3 atm. -13.4-14.4-14.6 atm. in the phase of flowering formation; 13.0-13.4-13.7 atm.; 13.8-13.9-14.1 atm.; in the last phase of vegetation, these indicators are as follows: 15.0-15.2-15.4 atm.; It was 14.7-15.0-15.1 atm.; 14.9-15.2-15.4 atm. In the standard version, these indicators are of intermediate amplitude (5.3-5.4-5.5 atm.; 11.2-11.4-11.5 atm.; 14.5-14.8-15.0 atm.; 15 ,7-15,9-16,0 atm.).

Among the options tested, the most positive result was observed in option 10, depending on the thickness of seedlings (80-90 thousand plant/ha) and the rate of application (ZEROX 2 l/t; 2l/ha +PAV 0.15 l/ha) It was found that the osmotic pressure of the sap compared to the 1st control was 1.0-1.0-2-1.3 atm. different in all phases of cotton, respectively.

It is known that the cell sap in the leaf directly depends on the water supply, on the one hand, on the activity of metabolic processes in the plant, and on other internal and external factors. It was found that the amount of cell sap varies depending on the seedling thickness and the rate of application of ZEROX in all variants of the experiment (2-4 true leaves) in moderately saline soil conditions. A decrease in the amount of cell sap was observed in the variants treated with different rates of ZEROX immunostimulant and left with a seedling thickness of 80-90,000 plant/ha compared to the control. This pattern was also observed in other options, where the seedling thickness was left in large quantities.

Cell sap in control options 1-2-3 during the ripening phase of cotton, respectively; It was 26.0-26.5-28.0%. In the benchmark variant, these indicators had intermediate values (22.6-23.0-23.5%). ZEROX 1 l/t; 1l/ha + PAV 0.15 l/ha used in the 7-8-9 variants, respectively: cell sap: 22.8-23.2-23.8% and 2-3 l/t of the drug; It was found to be 18.0-18.5-18.7 and 18.9-19.3-20.5%, respectively, from the 10th to the 15th option used in l/ha norms. 2 l/t of ZEROX immunostimulant; 2 l/ha + PAV at the rate of 0.15 l/ha in the treated version, control, standard and ZEROX 1l/t; 1l/ha + PAV showed the most positive indicator compared to the options used at 0.15l/ha.

Conclusion

Cell sap, osmotic pressure in cotton leaves treated with different doses of Zerox immunostimulant is lower compared to the control options, under the influence of immunostimulant, the plant's need for water decreases, and it allows the plant to survive in drought conditions.

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