WATER EXCHANGE CHARACTERISTICS OF MEDIUM FIBER COTTON VARIETIES

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In connection with the independence of Uzbekistan, the need for cotton raw materials, its fibre, and the oil contained in the seed is increasing not only in our country but also abroad. To solve this problem, it is necessary to obtain a higher and better yield from cotton varieties. Disruption of the ecological environment causes a slight decrease in soil fertility and deterioration of its physical and chemical properties [1-2]

The agromelioration method is the main factor in preventing soil salinization. However, even with this method, soil salinity cannot be completely eliminated. That's why it is difficult to get a high and quality harvest from cotton varieties in areas with saline soil. In particular, the heavy labour, expenditure and, most importantly, the consumption of a large volume of fresh water (10-15 thousand m3/ha) in the process of salt washing indicate the seriousness of the problem. In addition, during salt washing, along with harmful salts with a high concentration in the soil, the most necessary macro- and microelements for plants are filtered and added to sewage and wastewater. It also greatly damages the complex of soil microflora, which is active in increasing soil fertility [3-8].

The initial negative effects of soil salinity begin with cotton seed germination and growth. The strongest negative effect is observed during the flowering stage of cotton. The negative effects of salts change the water balance of cotton and limit the plant's supply of sufficient water. As a result, all physiological and biochemical processes in the plant body slow down. In turn, the disruption of water exchange under the influence of salinity has a negative effect on the productivity of cotton [9-13].

Scientific justification of the physiological and biochemical characteristics of newly zoned cotton varieties representing the level of endurance and productivity, as well as the specific adaptation reactions of the varieties, is of great theoretical and practical importance [14-17]

The main goal of the work is to study the specific characteristics of water exchange and soil salinity resistance and productivity of cotton varieties under conditions of different levels of soil salinity.

The characteristics of water exchange of cotton varieties under the conditions of saline soils: transpiration rate, water retention capacity of leaves, amount of water forms in leaves, the concentration level of the cell sap, daytime and residual water deficit in leaves, water potential of leaves, the viscosity of protoplasm were studied.

The reaction norm of newly zoned cotton varieties to soil salinity levels was determined based on the study of several physiological indicators. It was observed that Bukhara-6 and Bukhara-102 cotton varieties have a high level of resistance to soil salinity. As a result of the combined effect of soil salinity and drought, drastic changes in physiological and biochemical parameters were noted in all studied varieties, especially in highly saline conditions.

Bukhara-6 and Bukhara-102 varieties were found to have high biological and agronomic salt tolerance characteristics in saline meadow-alluvial soil and climate. The growth and development of these varieties increased rapidly, and the yield and quality were also high. S-6524 and Okdaryo-6 varieties showed biological salt tolerance in the environment of soil salinity. In both these varieties, agronomic salt tolerance was observed in a low-salinity environment.

The combined effects of salinity levels and soil drought on the physiological basis of water exchange and productivity of new cotton cultivars under different salinity meadow-alluvial soil conditions were studied.

As a result of the influence of soil salinity levels on the water balance of cotton varieties, changes in physiological indicators, namely, a decrease in the rate of transpiration, an increase in the amount of bound and total water in the leaves, a decrease in the amount of free water, an increase in the water storage capacity, the concentration of cell sap and water deficit in the leaves, a decrease in the amount of chlorophyll, albumins an increase in the amount, a decrease in the rate of photosynthesis, etc. were found [18-26].

As a result of the influence of soil salinity levels on the growth and development of cotton varieties, changes in the weight and quality of the biological and especially economic crops were noted, including the slowing down of growth processes, the reduction of leaf surfaces, a decrease in the net productivity of photosynthesis, a decrease in the weight and quality of the crop. Due to the combined effect of salinity levels and soil drought, drastic changes in water exchange and productivity levels of cotton cultivars were found.

To determine the degree of comparative resistance of the studied cotton varieties to salinity levels and based on their resistance characteristics, recommendations were developed for planting in regions with different salinity levels.

Based on the results of the scientific work, it was noted that the protective response of the studied cotton varieties to soil salinity levels is different. It was found that the reaction norms are in a wide or narrow range depending on the biological and individual characteristics of the

varieties. Based on the above characteristics of the varieties, Bukhoro-6 and Bukhoro-102 varieties can be recommended for planting in regions with saline soil. Also, these varieties can be recommended for planting in the border regions of the region, i.e. bordering with desert zones, and desert zones with saline soil, high temperature (40-45 °C), atmospheric and soil dryness, and hot winds. As a result, it becomes possible to maintain a sufficient number of seedlings per hectare and obtain a high yield. Also, the degree of adaptation of the varieties to the above complex stress factors is strong. This also brings great economic benefits to cotton farms.

The scientific and practical significance of the work is that the obtained results can be used as a starting material for cotton selection. The obtained scientific results can be widely used in universities and colleges. The above-mentioned information can be used in the teaching of plant physiology and plant water exchange, ecology, and laboratory exercises. Also, the results of the research can be widely used in lectures and laboratory sessions for masters studying in the field of physiology of plants during the course "Physiology of Endurance".

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