Effect Of Soil Salinity On Cotton Leaf Development And Weight Change

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ABSTRACT

It was found in the experiments that the leaf surface of the Sultan cotton cultivar grown in the conditions of weak, moderately saline and non-saline soils of Andijan region increases with the increase in soil salinity, the leaf plate becomes smaller, and the leaf thickens. In addition, it was studied in the experiment that the concentration of leaf aphid is lower than that of the non-salinity area, and the concentration of aphids before watering the cotton plant is higher depending on the average salinity.

Keywords: Weak salinity area, Moderate salinity area, Sultan cotton leaf sap concentration

This was revealed in our experiments. It was observed that the leaf weight changes depending on the soil salinity in the areas with different levels of salinity, i.e. "Moderately saline", "Weakly saline" and "Non-saline".

Many authors B. A. Keller, D. A. Shutov, V. A. Navikov, V. A. Brovtsina, B. P. Strogonov, and E. F. Ivanitskaya, etc. (a cotton leaf grown in salty soil being thick and watery) is considered as a clearly expressed sign. It was determined that the leaf plate is thickened mainly due to the increase of watery tissue cloudy parenchyma. [1; pp. 547-576].

In our experiments, the total level of the cotton leaf was measured four times on the 1st day of each month, that is, from June to the first day of September. It is known in the researches that the cotton leaf plate increased due to plant development. The size of the leaf plate also depends on the characteristics of the cotton variety, but in our experiment, the same variety was studied, and the soil conditions were three different. Correspondingly, it was determined that the leaf plate of the cotton plant in the area with moderate salinity is relatively large, and the leaf plate of the cotton plant developed in the non-saline area is higher than the leaf plate of the cotton grown in the saline area. [1; pp. 97-99].

Before defoliation, a total of 250 leaf samples of 50 pieces from 5 points were collected from the upper, middle and lower parts of the cotton plant in the 1st decade of August.

From this, 50 leaves taken from the "unsalted" area at the 1st point weighed 191 grams, at the 2nd point 193 grams, at the 3rd point 186 grams, at the 4th point 190 grams and at the 5th point 200 grams, and at 5 points the average weight of the obtained leaf was 192 grams. This indicator was 226.2 grams of the average leaf weight in the "low salinity" area, and 234.8 grams in the "medium salinity" area. In short, as the soil salinity increases, the leaf plate becomes thicker and the leaf surface becomes smaller. Even when grown with the same seedling thickness, the leaf level in saline areas is lower than in non-saline areas [2; pp. 18-20].

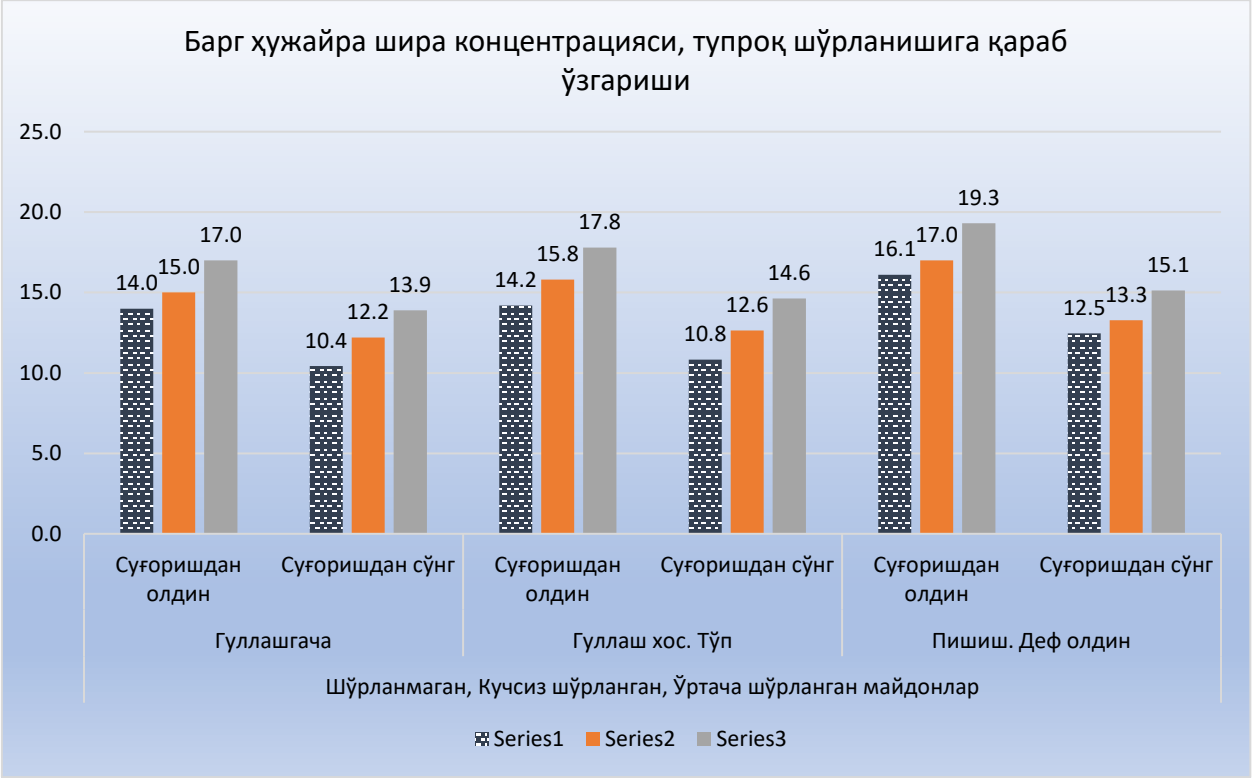
Leaf cell sap concentration (SC) changes depending on the soil salinity level - according to the above information, it was observed that

the leaf plate thickens in saline soils. To further investigate the reason for this, we also studied leaf cell sap concentration (SCS) during our scientific work.

HShK varies according to soil conditions and plant development phases. For example, in gray soils, the fact that cotton leaf HSC reaches 8% before the flowering phase indicates that there is a shortage of water, so it is considered that the period of irrigation has arrived. In the flowering-fruiting phase of cotton, this indicator increases to 10%, and in the ripening phase to 12-14%. These values of HShK are observed when the soil moisture is 65-70% compared to the field moisture capacity. Saline meadow soils have 2-5% more HSC, which corresponds to 70-75% moisture of the soil compared to the field moisture capacity. Not allowing HShK to rise above the specified amounts is a guarantee of high yield. [3; 368-370 p.], [4; 1-7 pp.].

When determining the indicators of the hand refractometer, between 13-15 hours before watering the cotton, from 3-4 places of each option, looking down from the tip of the growing cotton, 2-3 leaves are cut off, squeezed, its juice drips into the glass of the refractometer, and the indicated number is written based on its instructions.

In the experiment, the leaf HShK was studied in all phases, in which before irrigation in non-saline, weak and medium salinity fields, the hand-held refractometer reading showed an average brix of 14.0-14.2-16.1%, and an average brix of 10.4-10 after irrigation, respectively. It was 8-12.5%.1-расм.



Index of leaf cell sap concentration at different salinity sites, pre-flowering, flowering-harvest and ripening phases.

In the flowering and harvesting phase, the average brix before irrigation was 15.0-15.8-17.0%, and the average brix was 12.2-12.6-13.3% after irrigation , by the ripening phase, this indicator was 17.0-17.6-19.3% average brix before irrigation, 13.9-14.6-15.1% average brix after irrigation.

According to the results obtained from fields with different salinity levels, as the salinity level increased in all phases, sap concentration in the leaf also increased.

List of used literature.

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