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COLLECTION DE PAPIERS SCIENTIFIQUES

SUR LES MATÉRIAUX DE LA I CONFÉRENCE SCIENTIFIQUE ET PRATIQUE INTERNATIONALE

DÉBATS SCIENTIFIQUES ET ORIENTATIONS PROSPECTIVES DU DÉVELOPPEMENT SCIENTIFIQUE

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SECTION XII.
BIOLOGIE ET BIOTECHNOLOGIE

SECTION XIII.
SCIENCES AGRICOLES ET DES DENRÉES ALIMENTAIRES

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SOIL SALINITY AND WATER EXCHANGE OF AUTUMN WHEAT VARIETIES

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Nowadays, a great attention is being paid to the agricultural sector in order to develop the economy of the republic, and to provide the population with quality food products. In order to meet the needs of the population for quality food products, the main goal should be to obtain high and quality crops from winter wheat varieties even in conditions of soil salinity. Climate change will inevitably lead to a deterioration of the ecological situation, and the drying of fertile soils will in turn lead to a further increase in salinity, which will lead to large crop losses.

Soil salinity is common in many countries around the world. They cover a quarter of the land surface, including half of irrigated land, and a gradual expansion of saline areas is observed. In arid climates, almost all irrigation water evaporates and soil salinity gradually increases.

Excessive accumulation of soluble salts in the soil has a detrimental effect on plants. Salts that do not have a negative effect at low concentrations also accumulate in the cells and become toxic once the concentration is high. These include sodium chloride and sodium sulfate salts [1-3]. The study of the problem of salt resistance of plants in the world is of great theoretical and practical importance. Increasing soil salinity from year to year has a negative impact on high and quality yields from a number of agricultural crops. Saline soils are common in hot and dry climates, accounting for almost 25% of the world's land area [4].

Plants are divided into two main groups, halophytes and glycophytes, in relation to soil salinity. Plants that grow in saline soils and adapt to the high salinity of the soil due to the signs and properties that appear during evolution under the influence of living conditions during their ontogeny are called halophytes [5].

Salt tolerance varies according to the developmental stages of cotton plants. Young plants are resistant to salt, especially during the flowering stage, when the plants are adversely affected by salt. They grow poorly due to their sensitivity to salt, and as the plant grows, its resistance to salinity increases [6]. Excessive accumulation of salts in the soil is harmful to most cultivated plants. In saline soils, salt-tolerant plants called halophytes grow. They differ from other plants by their many anatomical and physiological features [7,8]. Excessive salinity of the soil is harmful to plants o n both sides. On the one hand, the accumulation of salts increases the osmotic pressure of the soil solution. This pressure prevents the swollen movement of the roots, making it difficult for the plants to get water [9-14]. However, the excessive accumulation of soluble salts in the soil, in addition to the osmotic effect, also has a toxic effect on plants. Even salts that are neutral at weak concentrations are toxic at dark concentrations [10,11. Starshina, Pervitsa, Grom and Shams varieties of winter wheat were used during the harvest. The experiments were conducted in areas where soil salinity is low and moderately saline meadow-alluvial soil type. During the studies, the amount of bound water, the water potential of the tissues, and the degree of thickening of the cell sap, which characterizes the water exchange of the varieties, were determined [.

In experiments other than those that studied the irrigation regime, soil moisture was maintained at not less than 70% of the limited moisture capacity. In experiments other than those in which the irrigation regime is studied, the soil moisture is maintained at not less than 70% of the limited moisture capacity. All technological methods, except for the ones studied in the experiment, were carried out on the basis of general agro-techniques adopted in the region.

Observations and biometric measurements are performed on model plants in odd returns. Phenological observations are carried out according to the methodology of Variety Testing of Agricultural Crops. In all experiments, the variants are placed in tiers on a sequential basis, with three repetitions. Irrigation norms were determined based on the lack of soil moisture (600-700m^3/ha).

According to the data obtained, the attitude of the studied wheat varieties to soil salinity levels was different. In the control variant, the growth and development of all wheat varieties grown, the activation of the sum of physiological processes were determined. In the variants with low and medium soil salinity levels, sharp differences were observed in wheat varieties, especially in water exchange rates. With increasing soil salinity, an increase in the amount of bound water and cell sap density in all varieties was noted, while a decrease in tissue water potential was noted. Such changes varied depending on the biological and individual characteristics of the varieties. In particular, in the varieties Starshina, Pervitsa, Grom and Shams it was found that the value of the above indicators is also directly related to the activity of water exchange.

Thus, in the conditions of saline meadow-alluvial soils of different levels, the negative impact of salinity on the water exchange of all studied varieties was observed. It was noted during experiments that such negative impact strength was less in Shams and Starshina varieties.

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