



MEDICINAL PLANTS INTRODUCED IN SALINE SOILS

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Article history:		Abstract:
Received:	28 th March 2026	The article presents an analysis of data on plant growth during the period of adaptation of saline soils, conducted research in the field of introduction. Also, the characteristics of seed germination of chemically composed plants, seedling germination, growth, development and reproduction of medicinal plants selected as salt-tolerant plants - <i>Glycyrrhiza glabra</i> , <i>Mentha piperita</i> , <i>Rubia tinctorum</i> are described.
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Cultivation of salt-tolerant plants in saline soils is a key step in the process of soil assimilation. During the assimilation of saline soils, plants grow and their productivity increases. In the area, the halophyte plant cover is replaced by glycophyte plants. The microclimate on the field improves [1].

Tukhtaev B.Yo. Medicinal plants introduced in saline lands belong to 37 families and 90 genera and consist of 111 species. Among them, 29 families, 72 genera and 92 species were introduced in moderately saline soils, while 31 families, 64 genera and 68 species were introduced in highly saline soils[6].

Medicinal plants introduced in saline soils were divided into 10 groups according to their chemical composition. According to it, 42.85% of the introduced medicinal plants are essential oil plants, 14.29% are alkaloidal plants, 8.93% are glycosidic plants, and the remaining species belong to other chemical compositions[2,3].

In the course of scientific experiments, the germination of seeds of plants with different chemical composition, greenness and preservation of seedlings were observed. The preservation of plants in saline soils is -44.4-85.7% for glycosides, -75.0-50.0% for saponins, -30.2-60.0% for essential oils, -50.0-50.0% for acids, -33.3-66.7% for vitamins, and -16.7-40.0% for flavanoids, with different chemical compositions. was low in plants. When we compared the preservation of plants based on their chemical composition, it was found that plants containing vitamins, saponins, glycosides, essential oils and flavanoids are relatively resistant in saline soils[4].

According to the results of the introduction, we monitored the growth, development and reproduction of three types of medicinal rhizomes selected as salt-tolerant plants - *Glycyrrhiza glabra*, *Mentha piperita*, *Rubia tinctorum*. In this part of the scientific work, we describe the changes in the evapotranspiration process under the influence of changes in the microclimate in the area where salt-tolerant medicinal plants were grown. The soil of the experimental area on the use of smooth licorice as an absorbing plant, according to the classification of B. V. Fedorov (1955), belongs to 5 points and is characteristic of strongly or very strongly saline soils. Before the experiments, the dense residue of water-soluble salts in the soil arable layer was on average 2.95%, and chlorine (Cl) anions were 0.300-0.400%. These indicators include 2.52% dense residue and 0.258% chlorine (Cl) anions in the 0-100 cm soil layer[2,3,6].

In the first vegetation year, in order to promote plant growth and adaptation to conditions, a large amount of irrigation (7-8 times = 5600-7000 m³) was carried out. Due to the large amount of irrigation, the amount of water-soluble salts in the soil in the 1st vegetation year decreased relatively, as shown in Table 5.6. That is, in the 0-100 cm soil layer, the amount of water-soluble salts was 2.13% and chlorine (Cl) anions was 0.076%. In the 2nd vegetation year, as the growth of plants accelerated and they adapted to the conditions, the number of irrigations was reduced to 4. However, due to the fact that the soil surface is not fully covered by plants (only 50-60%), and at the same time, due to the fact that the underground water is located close to the soil surface, the evaporation of water from the soil capillaries (evaporation) accelerates[2,3,6].

Therefore, although a decrease in the salt content was observed in the surface parts of the soil, the amount of water-soluble salts increased in the 0-100 cm soil layer. Therefore, at the end of the 2nd vegetation year, the dense residue of water-soluble salts in the soil was 2.75% in the surface layers and 2.57% in the 0-100 cm layer. The highest indicator of illumination under the plant cover of the Sillik sugarcane plantation was 26.2 thousand lux in the 2nd vegetation year and the lowest indicator was 16.5 thousand lux, and in the 3rd vegetation year these indicators decreased by 3-4 thousand lux. Also, the wind speed is very low during the vegetation season and throughout the years[4,5,6].

During the observations, attention was paid to changes in air and soil temperature in the plantation. It was noted that air temperature indicators increased from 23.9°C at the beginning of the 2nd vegetation year to 33.8°C in the middle, and decreased to 27.9°C at the end of the season. Soil temperature indicators, accordingly, changed from 19.4°C to 28.3°C and 18.2°C. In the following year of vegetation, as the number of plant stems increased and the

vegetation cover in the field thickened, the microclimate changed in a positive direction (lighting decreased by 1.5 times, air and soil temperature decreased by 3.0-5.0°C). Changes in microclimate indicators were also observed in the fields where pepper was grown, and the painted pepper. It was observed that the microclimate indicators in the field where the plants were growing changed very slowly [1,2,3].

In the 2nd year of vegetation, the average illumination index was 33.88 thousand lux in the peppermint field, and 42.56 thousand lux in the field of sedum. The wind speed indicator did not exceed 0.05 m/sec in the licorice plantation, while it was 0.10-0.33 m/sec in the peppermint plantation and 0.30-0.38 m/sec in the dyed royan plantation. Also, it was observed that air and soil temperature indicators are high in the fields where peppermint and dyed royan are grown. So, the temperature of the air in the 2nd vegetation in the peppermint field decreased by 30.76°C in one year and by 3-4°C in the following year. In the area of Boyokdar Royan, these indicators were 30.04°C and 28.58°C respectively [1,2,5].

With a decrease in air temperature in the field and a thickening of the plant cover, a decrease in soil temperature is also observed. These indicators were 26.58 ° C in the pepper field or 28.66 ° C in the painted field in the 2nd vegetation year, and 24.9 ° C - 26.7 ° C in the 3rd vegetation year, respectively. Thus, microclimate changes were observed in the plantations of three types of plants grown as absorbers on moderately saline soils, only the indicators in them were different. Due to the rapid growth and development of smooth licorice, the plant cover in the field is high (up to 80-90%), and the microclimate changes rapidly. The growth and development of pepper and red pepper are relatively slow, and only in the third year of vegetation does the plant cover in the field reach 60-70%. The microclimate indicators in the experimental field are gradually changing in a positive direction [2,3,6].

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