FEATURES OF THE GROWTH OF *NITRARIA SIBIRICA* PALL., AT DIFFERENT TYPES AND LEVELS OF SALINITY

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Saltpeter (Nitraria L.) is a representative of the ancient desert flora [1] and belongs to halophytes. Species of this genus grow in the steppe and desert regions of Asia Minor, Central and Central Asia, in Southeastern Europe, North Africa. Their habitats are confined to saline elementary landscapes, represented by closed saucer-shaped depressions with a shallow level of mineralized groundwater, as well as drying lake basins, where intraoral soils are formed - salt flats and salt marshes [2-4].

The growth and development of saltpeter in saline areas are limited by both soil properties and physiological characteristics of plants. The interaction of these two factors determines the ecologically favorable ranges of environmental conditions under which plants can develop sustainably. At the same time, there is no information in the literature on how acceptable this or that type and level of soil salinization is for species of saltpeter growing in Siberia. In addition, the content of easily soluble salts in soils is unstable and can vary significantly during one growing season within one landscape. In this regard, of particular interest is the study of the reaction of coenopopulations of saltpeter to changes in the level of soil salinity.

Studies of soil and ecological conditions of saltpeter growth are becoming more relevant due to the development of desertification and intensification of the processes of halogenation in southern Siberia [5-7], which lead to the formation of

extensive saline areas. Halophyte communities, including populations of saltpeter adapted to extreme levels of soil salinization, are beginning to develop such sites.

Thus, the study of the halo geochemical features of the saltpeter habitats will reveal the types and levels of salinity that affect its vital activity and determine the possibility of its participation in successional processes.

It is known that plants of the genus Nit aria are representatives of the ancient desert flora. Therefore, it is natural that in the studied territory the saltpeter was confined to the soils of saline landscapes: salt marshes of servo and meadow, as well as to cortical and shallow salt marshes.

Studies by various authors have shown that saltpeter is adapted to different types of salinization: chloride, sulfate-chloride, chloride-sulfate, sulfate and soda-chloride - with the dominance of sodium ions in the composition of cations. With all types of salinization, its degree varied from weak to very strong. The chemistry and degree of salinity of the studied soils depended on their association with the types of elementary geochemical landscapes and varied horizontally and intraprofilically. Zonal soils of eluvia landscapes were devoid of signs of salinization, and intrazonal soils of accumulative landscapes, on the contrary, were very saline from the surface.

Salinization of soils is a characteristic feature of the habitats of saltpeter, but at the same time, like any environmental factor, being in excess or shortage, can limit its vital activity. In the literature [8] there is evidence that the presence of a certain amount of salts in the nutrient medium stimulates the growth of halophytes, and an excess or lack of salinity, on the contrary, leads to their inhibition. The conducted studies have revealed indicative environmentally favorable levels of salinity that contribute to the sustainable development of saltpeter.

Thus, with the dominance of chlorine ions in the salt complex, the favorable salinity level falls within the range of 0.2-0.6%, while in the case of the

predominance of sulfate ions, the range significantly expands and amounts to 0.7-3.4%. The salt content in soils outside these limits is critical for saltpeter, its growth in such areas has not been registered by us. Such soils include zonal unsalted, as well as salt marshes with abnormally high concentrations of salts.

The type and level of soil salinity are dynamic characteristics that change over time and in space. Significant changes in these indicators can occur in a fairly short time period (for example, during the growing season) with a significant change in weather conditions (dry weather, heavy rains). Accordingly, plants for their successful development are forced to adapt to such changes using a complex of physiological and behavioral adaptive mechanisms. Among the behavioral adaptations of saltpeter to changes in salinity, we noted: the movement of the population in space in the horizontal direction, the change in the depth of the root system of individual individuals, as well as the effect on soil salinity by changing the micro relief.

One of the ways in which saltpeter plants develop highly saline areas of the soil cover is the retention of mineral particles brought with water and wind in the trunk part, and the formation of hummocks. These formations change the conditions of plant habitats - soil salinization occurs as a result of a decrease in the level of soil and groundwater, a decrease in the evaporative concentration of salts and the removal of their excess by improving drainage with rain and meltwater [9].

Thus, it can be concluded that the habitats of N. sibirica are confined to intraoral soils of saline landscapes - salt marshes of and meadow, cortical and shallow salt marshes. The vital activity of saltpeter is limited by the level of concentration of easily soluble salts in soils. At the same time, the ecologically favorable range of salt content against the background of the predominance of chlorine ions in the salt complex is significantly narrower (0.2-0.6%) than with the dominance of sulfate ions (0.7-3.4%). The absence of salinization does not favor the

growth and development of saltpeter. Also, in response to changes in the degree of salinization of soils, saltpeter exhibits a number of adaptive behavioral reactions, including the movement of the population in space in a horizontal direction to the most heavily saline soils, changes in micro relief in areas with extreme salinization, deepening of the root system on soils undergoing salinization.

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