

# THE SOIL OF THE TERRITORY OF THE ARAL SEA AND ITS CURRENT ECOLOGICAL AND RECLAMATION STATUS

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**Abstract:** The disappearance of the Aral Sea and the emergence of large salt fields in its place are causing significant problems not only for Uzbekistan but also for all Central Asian countries.

**Keywords:** soil, toxic salts, environmental condition, soil fertility, dustAral Sea, saline soil, halophyte, sodium, chloride, plant

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In particular, the increase in the number of dangerous diseases in the Aral Sea region, the extinction of livestock and other animals, and the invalidity of land for agriculture, and other significant problems are included. In October 24, 2019, in Nukus under the United Nations' auspices, an international conference was held entitled "The Aral Sea - the territory of environmental innovation and technology." Experts from many foreign countries, who took part in the meeting, got acquainted with the Aral Sea region's environmental and ecological conditions. About 2.5 million hectares of land released from the Aral Sea are being turned into forests. The areas removed from the sea are mainly saline and brackish-like soils, which are very loamy soils with high agro-physiological properties of sodium or magnesium, absorbed in the soil absorption complex. The soil contains compounds of CO<sub>3</sub> and Cl<sub>2</sub> salts, which are mainly toxic. Magnesium salts are also present. It is natural to find about 2-3% of magnesium in subsea soils, but an excess of the norm is very dangerous for plants. We took soil samples from the Aral Sea territory (90 km inland from the Muynak district) in the Muynak district of the Republic of Karakalpakstan and conducted laboratory tests. The soil contains Cl and Mg salts, nitrates, small amounts of phosphorus, and potassium salts. Chemical elements includes (100 g/soil):: NO<sub>3</sub> - 1.83, P<sub>2</sub>O<sub>5</sub> - 2.15, K<sub>2</sub>O - 113, SO<sub>4</sub> - 206, NH<sub>4</sub> - 0.7, Zn - 0.05, Cl - 1560, CO<sub>2</sub> - 360, Mg - 5.19. Dust from under the sea negatively impacts the ecological and reclamation status of the areas along the Aral Sea. Saline soils have a significant impact on crops, especially during the growing season, reducing the effectiveness of agro-technical measures in agriculture, harming the quantity and quality of crops. There is considerable evidence for several treats of climate change such as increased temperature, salinity and drought with intervening arid

episode. The salinisation of lands has become a major environmental issue and has been recognized as the most important economic, social and environmental problem in many regions of the world. There are several approaches management practices developed to cope with salinity and improve plant growth including identification of saline tolerant crops, crop diversification, reduced tillage, manure application, crop rotation, adaptation of crops and phytoremediation. Planting perennial and annual halophytes in salt affected soils may also help to restore abandoned lands for crop production. Several plants has been used for phytoremediation of salt affected soils and wetlands *Bassia indica* (kochia), *Tetragonia tetragonoides* (New Zealand spinach), *Portulaca oleracea* (Purslane), *Sesbania*, *Medicago sativa* (alfalfa), *Atriplex* (saltbush), *Chenopodium album* (lamb's-quarters), *Suaeda maritime* (seablite), *Sesuvium portulacastrum*, and *Glycyrrhiza glabra* L (licorice). That is the most economically feasible technology in large salt affected area where plants remove salts from soil through their deep and wide root system. *Tetragonia tetragonioides* and *Portulaca oleracea* have been considered as salt tolerant plant which could be used for remediation of salt affected soils of Aral Sea Basin. Phytoremediation of saline soils with halophytic plants can improve the soil nitrogen content, increase the soil organic matter, stimulate soil biological activity and improve soil water-holding capacity. The plants are highly salt-resistant and may accumulate quite high levels of salts and Na + in their shoots and considered as potential tool for phytoremediation of saline-sodic soils. *Tetragonia tetragonioides* has ability to extract salts from the soil, as a result highe

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