The salinization and land degradation processes in recréticoalophyte (Tamarix sp.) plant communities

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Tamarix species are widespread in deserts, semi-deserts and steppes of Europe, Asia and North Africa. Drought tolerance, ability to grow in saline soils and high decorative make Tamarix species very promising for greening the desert and semi-desert areas. Tamarix species grow on marginal lands with various salt content (19.29 - 58.97% in 5-10 cm soil horizons) and withstand a different content of toxic salts.

The aim of the study
- Determine the chemical composition of soils under Tamarix in different plant communities
- Characterize the specific features of excreted salts and their accumulation in Tamarix
- Evaluate the effect of Tamarix as the habitat-forming factor

Soil and plant samples were sampled in the south of Aral-Caspian region.

Methods
- Macromorphological and micromorphological studies (with an optical microscope Olympus BSX1).
- The submicroscopic method with the use of scanning electron microscope SEM JSC-6610LV with an X-ray microanalyzer INCAx-act to determine the elemental composition of pedofeatures and minerals of different sizes.
- The chemical and physicochemical analyses were performed in the Analytical Laboratory of the Dokuchaev Soil Science Institute according to the routine methods accepted in Russia (Vorobeva 1998).
- The analysis of water extracts from soils (1-5); from Tamarix (1-10)

Comparing the chemical composition of salts excreted by Tamarix and the composition of the soil salts, we were obtained the following patterns: 1) Tamarix grows in soils with different salt content and chemical composition of salts (soda, chloride, sulfate-chloride or chloride-sulfate). 2) The content of salts excreted by Tamarix is higher than that accumulated inside the plant; sodium chloride (halite) is predominant. 3) Whatever the chemical composition of solonchaks, the excretion of chloride in Tamarix is higher than that of sulphate. 4) Tamarix has a habitat-forming role in desert areas - it can salinize non-saline soils. That is, promote land degradation.

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