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PHYTOTOXICITY OF OIL-POLLUTED SOILS IN ARID TERRITORIES: ANALYZING RESULTS OF SIMULATION EXPERIMENTS

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Abstract. *Rationale and Goals.* Recent decades have witnessed an increasing anthropogenic impact on Kalmykia's steppe landscapes. Active oil fields, numerous filling stations and vehicles adversely affect the environment. Oil and oil products impair the growth and development of plants, not to mention that oil products are toxic to plants even at minor concentrations. The study aims at investigating phytotoxic properties of Kalmykia soils when polluted with oil and oil products. *Materials and Methods.* The laboratory studies were performed with the help of methods customary for biology and soil science. The work pays special attention to simulation experiments. The objects of research are key zonal soil types of the Republic of Kalmykia. The experiments have been performed in vegetation vessels and Petri dishes with oil and oil products serving as polluting agents. The target test plant is radish. Numberous research works prove that radish is a good indicator of oil pollution, and its relatively short vegetation period allows using it for laboratory experiments. The phytotoxicity was estimated by numbers of germinated seeds, lengths of sprouts and roots. *Results.* The work provides an insight into phytotoxicity of Kalmykia's oil-polluted soils and reveals the influence of oils with mineralized stratal waters on the growth and development of the target test plant. The paper draws up a data series by degree of influence of oil and oil products on changing phytotoxic properties, supplemented with a data series to characterize Kalmykia soils by degree of oil pollution resistance. *Conclusions.* All the examined oil-polluted soils show severe phytotoxic impact on target test plant organisms, the exception being brown semi-desert soils where low-concentration of oil-fuel and kerosene pollution resulted in some extension of plant sprouts and roots length.

Keywords: phytotoxicity, oil products, pollution, simulation experiment, vegetation vessels, Republic of Kalmykia.