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INFLUENCE OF ANTHROPOGENIC FACTORS ON THE SOIL CONDITION OF THE N.V. TSITSIN MAIN BOTANICAL GARDEN, RAS

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Territory of N.V. Tsitsin Main Botanical Garden of the Russian Academy of Sciences is subjected to significant anthropogenic stress, which affects the state of valuable collections of tree and shrub species. The state of the collection of suckers is of particular concern, since the territory where they are located is exposed to anthropogenic effects of various intensities. One of the most dangerous consequences of anthropogenic impact is soil compaction. To study these negative phenomena, three sampling areas were laid, differing in the degree of anthropogenic impact. Sampling area No. 1 characterized the zone of maximum anthropogenic impact. The zone of moderate anthropogenic impact was represented by the sampling area No. 2. Sampling area No. 3 acted as a control, where the anthropogenic impact was the smallest. All studied soils were assigned to soddy-slightly podzolic medium loamy soils. Fundamental differences in the morphological properties of the studied soils consisted in the fact that gley spots were observed from a depth of 40 cm in soils located in the zone of maximum anthropogenic impact, unlike other soils. An increase in the values of soil density in undisturbed state corresponded to an increase in the degree of anthropogenic impact. This phenomenon led to a decrease in the total soil porosity. Soil compaction contributed to a marked decrease in moisture content in the upper horizons. At the same time, the deterioration of subsoil runoff contributed to the emergence of gley-forming processes in the illuvial part of the profile. The use of cluster analysis methods showed a good grouping of the dependence of the studied indicators on the degree of anthropogenic impact. There was a separation of the studied indicators depending on their type and position in the profile. The study made it possible to evaluate the most important physical and water-physical properties of soils of a part of the territory of the Main Botanical Garden of the Russian Academy of Sciences, occupied by a valuable collection of suckers. Based on the results of the study, a set of measures is proposed that can significantly reduce the revealed negative effects and generally improve the condition of the studied soils and plantings growing on them.

Key words: *soil density, anthropogenic compaction, soils of botanical gardens, Main Botanical Garden RAS*

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