

## Annotation

to the Cycle of Works “Anthropogenically Transformed Soils: Diagnosis and Classification”

Submitted for the Award of the Saint-Petersburg University for Research Work

This cycle of works present the results of fundamental investigations of the authors on actual issues of the soil science – classification, diagnosis, mapping and assessment of anthropogenically transformed soils properties.

For the first time in the world practice, the competitors have defined the principles of creating a soil map of urbanized territories and developed a large-scale soil map of a megalopolis – the city of Saint-Petersburg. Such map serves as the basis for development of parameters for assessment of environmental foundations of the urban population life quality. Actually, about 70 pct of Russian population and about 50 pct of world population reside in cities and towns. The authors have developed the diagnosis and classification of soils in urbanized territories, that were taken as a principle for mapping. The results of this work have been approved at international soil congresses: the 20<sup>th</sup> World Congress of Soil Science (June 8-13, 2014, Jeju, Korea) and the 9<sup>th</sup> International Soil Science Congress “The Soul of Soil and Civilization” (October 14-16, 2014, Antalya, Turkey).

The whole cycle of works submitted for the award includes 3 monographs, 3 soil maps and 11 articles, including 4 papers in English.

Most of the works of this cycle are devoted to investigation of soil variety in Saint-Petersburg and its surroundings. Based on modern research methods, we gave the characteristic of chemical and physicochemical properties of the city’s soils, including its ancient suburbs – Petergof, Pavlovsk, the former Manor of Sheremetievs, and others. A special attention was paid to the environmental assessment of park soils; we detected the contents of heavy metals in the surface horizons (Zn, Pb, Co, V, Cu) and the change in the contents of the same in terms of the soil profile depth.

We identified the trends of soils and soil cover evolution since the settlement of the first people in the territory of the future megalopolis, based on the comparative-historical and comparative-geographical research methods. A series of Saint-Petersburg soils maps was created for the first time for different periods of the city development.

The authors analyzed the trends of the soil cover development – the transformed territories of the famous Russian monasteries: Solovki, Valaam, Iberian and Nilov desert. Anthropogenically transformed soils of medieval monasteries are examples of a high culture of agricultural technology and agriculture in general.

The paper includes a characteristic of the main types of soil profiles in monasteries and soils under various kinds of land, reveals the regularity of their space distribution, assesses the level of resilience of the main soil properties and processes to a long-term anthropogenic load.

The cycle of works submitted for the award is concluded by a monography that discusses the contribution of Saint-Petersburg soil scientists in the development of the soil science theory.