

**SPATIAL HETEROGENEITY OF THE OF CLAY AND SILT DISTRIBUTION IN PROFILES OF GRAY
FOREST SOILS OF THE NORTHERN TRANS-URALS**

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For the sustainable use of gray forest soils in the landscape agriculture, it is necessary to develop an optimization model of the soil fertility. The fundamental parameter of such models, which is necessary to be studied first, is the soil particle size distribution. In this regard, the aim of the present study was to assess the spatial heterogeneity of the clay and silt distribution in the profiles of gray forest soils in the Northern Trans-Urals. After 330 full soil profiles were studied, it was found that in the Northern Trans-Urals light gray and gray forest soils were represented mainly by sandy loam and loamy sand varieties while the dark gray forest soils were characterized by heavy texture. The light gray forest soils were characterized by significant spatial variability of the texture in terms of the clay (CV = 40%) and silt (CV = 53%) content. Such high variability in the soil texture is also typical for the gray forest soils, which makes it possible to develop a unified farming system for these soils. The dark gray forest soils were characterized by a smaller spatial heterogeneity of the texture, which distinguished them from the other varieties of gray forest soils of the Northern Trans-Urals, and therefore, an individual farming system had to be developed for them.

Keywords: particle size distribution, clay particles, silt particles, gray forest soils, genetic horizons.