



## Soil and Climatic Bonitation of Agricultural Lands of the Steppe Zone of Ukraine

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**Abstract:** Spatial modeling was performed by using methods of geostatistics and algebra of maps of ArcGIS 10.1. software product. As a result of geomodeling, raster models were created and spatial patterns of distribution of the four components of the zonal soils bonitation were established: the total value of soil properties, humidity index, coefficient of climate continentality, average annual amount of active temperatures greater than 10°C. It was determined that in the territory of the studied steppe region, the agricultural lands of average quality prevail. Depending on the type of crops growing, their area varies from 32.0 to 72.2 per cent, with low quality from 1 to 13 per cent, with high and high-end quality from 15.5 to 67.2 per cent. Bonitation points are established on the basis of a unified scale of assessment of land quality, which allows to objectively calculate the bioproductive potential of the territory, to determine the area of agricultural lands in terms of their qualitative characteristics, to clarify the normative monetary assessment and to determine the optimal level of agricultural land tax, to adjust irrigation rates in order to reduce the volume of water intake from natural water sources, to justify measures and terms for the reclamation of degraded lands.

**Keywords:** Soils, Climate, Bonitation, Agricultural lands, Crops, Steppe zone of Ukraine, Geomodeling, GIS-technologies

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