

## Spatiotemporal Variation Characteristics of Soil pH around the Balikesir City, Turkey

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**Abstract :** Determination of soil pH surface distribution in urban areas is substantial for sustainable development. Changes on soil properties occur due to functions on performed in agriculture, industry and other urban functions. Soil pH is important to effect on soil productivity which based on sensitive and complex relation between plant and soil. Furthermore, the spatial variability of soil reaction is necessary to measure the effects of urbanization. The objective of this study was to explore the spatial variation of soil pH quality and the influence factors of human land use on soil Ph around Balikesir City using data for 2015 and Geographic Information Systems (GIS). For this, soil samples were taken from 40 different locations, and collected with the method of "Systematic Random" from the pits at 0-20 cm depths, because anthropologic sourced pollutants accumulate on upper layers of soil. The study area was divided into a grid system with 750 x 750 m. GPS was used to determine sampling locations, and Inverse Distance Weighting (IDW) interpolation technique was used to analyze the spatial distribution of pH in the study area and to predict the variable values of un-exampled places with the help from the values of exampled places. Natural soil acidity and alkalinity depend on interaction between climate, vegetation, and soil geological properties. However, analyzing soil pH is important to indirectly evaluate soil pollution caused by urbanization and industrialization. The result of this study showed that soil pH around the Balikesir City was neutral, in generally, with values were between 6.5 and 7.0. On the other hand, some slight changes were demonstrated around open dump areas and the small industrial sites. The results obtained from this study can be indicator of important soil problems and this data can be used by ecologists, planners and managers to protect soil supplies around the Balikesir City.

**Keywords :** Balikesir, IDW, GIS, spatial variability, soil pH, urbanization

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