

Assessment of spatial variability of basic soil properties for site specific farming in Chakwal region

**Nosheen Arab Ali¹; Muhammad Tariq Siddique¹; Muhammad Zeeshan¹; Sangar Khan¹;
Muhammad Shakir Farooq¹ and Muhammad Iqbal²**

¹PMAS-Arid Agriculture University Rawalpindi

*²Space and Upper Atmosphere Research Commission (SUPARCO)
lovelynosh390@gmail.com*

Abstract

Soil is a natural non-renewable resource which is responsible to feed the population of globe. In this era population is increasing day by day and our agricultural production is unable to meet the need of population. Agricultural production is dependent on the soil fertility. Soil is a heterogeneous medium and its properties vary from one point to other due to the influence of soil farming factors. As agricultural area cannot be increased so different management practices are adapted to increase the production. Site specific farming is management technique in which management practices are adapted spatially in the field rather than the whole area and it requires the study of spatial variability. The aim of conducted study was to assess the spatial variability of basic soil properties (pH, EC, OM and Texture), to prepare digital maps to distinguish the areas on the basis of these parameters. The study was conducted on university research farm koont, Chakwal, having an area of about 100ha. Soil sampling was done by grid sampling method with specific grid size of 30 m and 842 samples were collected. Global positioning system (GPS) was used to record the location of each sample. All samples were analytically analyzed for pH, EC, OM and texture by using standard procedures. Geostatistical software and krigging were used to predict the status of basic properties in unsampled points and to develop the maps. The digital maps showed that soil pH values varied from 7.20 to 8.31 with an average value of 7.75 ± 0.19 reflects alkaline nature of the soil. Low electrical conductivity (EC) with maximum value of 0.51 dS m⁻¹ indicates that there is no hazard of salinity the surveyed area. The textural class varied from sandy loam to loam in the surveyed area. Soils were low in organic matter (72 %) and maximum value of OM was 0.73%. Semivariogram analysis showed that soil pH and EC were moderate spatially dependent. It is concluded from the research that the site specific agriculture should be adapted and promoted in the area in order to soil fertility management.