Spatial variability of physical properties of salt affected soil

Sabiuddin Khan Gauri, R K Sharma, S C Gill and R S Chhockar
Directorate of Wheat Research, India

The study area was Main Experiment Station Farm of N.D.U.A &T, Kumarganj, Faizabad (U.P) covering about 72.0 hectares. The soil samples were collected under cultivated area of the farm during 2011-12 from 24 points. The sampling was done at a grid of 50m from three soil depth viz. 0-15, 15-30 and 30- 60 cm. Soil samples were taken with manually driven soil screw auger and processed for soil analysis. Undisturbed soil samples were collected with a soil core of 7cm diameter and 10 cm height for measurement of bulk density and saturated hydraulic conductivity. The soil samples were analyzed for particle size distribution, bulk density and saturated hydraulic conductivity. The parameters of semi-variogram are used for interpolation of soil-properties at un sampled values. The results clearly showed that physical properties of soil varied horizontally and vertically. The cultivated area is also not uniform because phase wise reclamation has been done and still part of MES land has much sodicity. The particle size distribution is varied with space. In general the sand content has decreased with increasing soil depths while silt and clay content has increased with increasing soil depths in all the situation of cultivated area. This is because of the fact that in deeper layers smaller size particles is expected due to smaller size of pores and compactness. Increase in clay in sub surface soil indicates the presence of argillic horizon. The coefficient of variation for silt and clay decreased with depth indicating the less variations at lower depths as compared to surface soil. Bulk density of surface soil in all the situations was observed to be variable. This may be due to that in cultivated area because of tillage as well as cultural practices and continuous crop production since last 30 years soil has gone under many changes. It was observed that at the location where concretions were more the bulk density was less due to less mass per unit volume of soil concretions. The hydraulic conductivity at the locations where bulk density is higher was less due to slow rate of entry of water because of compactness that is at many locations due to more sodium content that causes dispersion.

Biography

Sabiuddin Khan Gauri has completed his MSc(Ag.) soil science at the age of 23 years from Narendra Deva University of Agriculture & Technology, Faizabad, India. Currently he is working as Senior research fellow at Directorate of Wheat Research, Karnal (India).

gaurinduat@gmail.com