

## ABSTRACT

Metals by virtue of their amount in living system are non toxic rather helping in several physiological functions. However, when they are accumulated at a level beyond the permissible limits are declared toxic and injurious to health of plants and human beings. Samples of food grains (Wheat, Rice, Maize) alongwith soil and underground water of 12-sites were collected from six districts of Punjab (Pakistan). The materials were tested metal concentrations by using most advance analytical technique ICP-OES. The highest values of metals in under-ground Water were (4.08 K), (51.59 Na), (1.122 Li), (501.0 Ca),(13.15 Mg), (0.00 Be), (2.72Al), (0.049As), (0.061 Co), (0.111 Pb), ( 0.019 Cd), (0.220 Ni), (0.120 Cr), (0.202 Mn), (0.202 Zn), (7.110 Fe), (0.231Cu) and (0.029 Se)  $\mu\text{g/ml}$  . The sodium adsorption ratio (SAR) values for all water samples were normal and within the permissible limits.The highest values of metals in soil were (215 K), (935 Na), (0.780 Li), (6019 Ca), (58.00 Mg), (0.00 Be), (0.760 Al), (0.012 As), (0.093 Co), (1.010 Pb), (0.921 Cd), (0.721 Ni), (0.230 Cr), (11.17 Mn), (0.990 Zn), (239.0 Fe), (3.100 Cu) and (0.093 Se)  $\mu\text{g/g}$  . The soils were free from salinity and sodicity hazards .The highest values of metals for food grains **wheat** were (2815 K), (368 Na), (568 Ca), (10.10 Mg), (31.32 Al), (0.017As), (0.009 Co), (0.034 Pb), (0.029 Cd), ( 0.042 Ni), (0.012 Cr), (49.29 Mn), (35.00 Zn), (50.79 Fe), (5.330Cu), and (0.008 Se)  $\mu\text{g/g}$ .The highest values of metals for food grains **rice** were (1643 K),(178 Na) ,(3049 Ca) ,(0.89 Mg) ,(0.00 Be) ,(11.01 Al) ,(0.09 As) , (0.013 Pb) ,( 0.012 Cd) ,(0.021 Ni) , (11.00 Mn) ,(11.00 Zn) ,(29.00 Fe),( 0.099 Cu) and ( 0.001 Se )  $\mu\text{g/g}$ . The highest values of metals for food grains **maize** were ( 915 K) ,(350 Na) ,( 855 Ca) ,(20.00 Mg) ,(38.19 Al) ,(0.032 As) ,(0.009 Co) ,(0.071 Pb ) ,(0.050 Cd) ,(0.060 Ni) ,(0.025 Cr) ,(61.00 Mn ) ,(52.00 Zn) ,(65.00 Fe) ,(2.400 Cu) and( 0.032 Se)  $\mu\text{g/g}$  . The concentration of trace metals in all samples of underground water, soil and food grains(**wheat**,**rice** and **maize**) were within permissible limits of FAO/WHO committee on food stuffs (1999).However, excessive use of pesticides, insecticides and chemical fertilizers refers a thirst for continuous research and probing in context of food-quality and safety.

**Key words:** ICP-OES, Metals, Underground water, Soil, and Food grains.