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RESEARCH PAPER

Quality assessment of underground water nearby the Ganga canal, Muzaffarnagar, Uttar Pradesh for drinking and irrigation purposes

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Abstract **:** Water is the most important natural resource which needs to be properly and scientifically utilized for improving the productivity, environment and economic condition of the rural area. The present study is conducted to assess the underground water nearby the Ganga canal, Muzaffarnagar, Uttar Pradesh for drinking and irrigation. Water samples were analyzed for their chemical properties i.e. pH, total salt (electrical conductivity), Anions (Cl^- CO_3^{--}, HCO_3^-, SO_4^{--}, NO_3^-), Cations (Ca^{++}, Mg^{++}, Na^+, K^+), TDS, water quality indices, toxic element and heavy metals. Water samples pH varied from 7.22 to 8.78and electrical conductivity of water varied from 0.11 to 1.02 dSm^{-1}. Sodium, potassium content of water samples varied from 1.7 to 8.0 and 1.9 to 7.6 mg L^{-1}. Chloride content ranged from 0.11 to 0.53 g L^{-1}. The TDS value varied from 83 to 635 ppm. The carbonate and bicarbonate sample varied from 3 to 18 and 3 to 18 me L^{-1}. Correlation was also worked out between different parameters. The nitrate, sulphate, chloride, potassium, negative correlation electrical conductivity, sodium, TDS bicarbonate, Ca + Mg and As were associated positively and significantly.

Key Words **:** Water, Quality assessment, Drinking, Irrigation purpose and Ganga Canal

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INTRODUCTION

Water is essential for life. It is used for irrigation, drinking, industrial and another various daily necessities. If the quality of water happens to be below the standard prescribes, for drinking purpose from time to time, with respect to its different chemical constituents, it is likely to affect human health and life span. The main factors responsible for deterioration in water quality are excess of soluble salts, disproportion of dissolve ions, industrial effluents. Whatever may be the source of water i.e. river, canal, well and tanks etc. some soluble salts sodium, potassium, calcium, magnesium, chloride, ferrous copper, Zinc, fluoride lithium, silicon, sulphate and phosphorus etc. are dissolve therein, depending upon the nature of the source, geological surroundings and climatology conditions determines the quality of water.

Excess of soluble salts adversely affect the human health and in case of some constituents even amount in excess of a few ppm causes serious diseases. The well water if saline and used for irrigation purpose, it not only adversely affects the soil properties and crop productivity but also the quality of produce and indirectly health of the consumers with the

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