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## Water quality monitoring and assessment of Lake Kolleru wetland environment, India

Ch Sreenivas<sup>1</sup>, P V Satyanarayana<sup>1</sup> and P Rajendra Prasad<sup>2</sup><sup>1</sup>Acharya N G Rang Agricultural University, India<sup>2</sup>Andhra University, India

Lake Kolleru is the largest freshwater wetland ecosystem in South India. Presently, lake environment is at stake due to conflicting interests of agriculture and aquaculture. Hence an attempt was made to assess water quality of Kolleru Lake, aquaculture ponds, agriculture drain and their role in lake water quality. The methods of study broadly confined to field and laboratory investigation. Monthly water samples were collected from selected 30 bench mark sites from January, 10 to December, 10 covering Kolleru lake area and Upputeru river estuary. The Total Cations (TZ<sup>+</sup>) and Total Anions (TZ<sup>-</sup>) balance show the charge balance error percentage. The error percentage is between  $\pm 1\%$  to  $\pm 10\%$  with few exceptions for certain ions. Sodium is the major cation (61.5%) followed by magnesium (19.9%), calcium (16.7%) and Potassium (1.9%). Whereas, among the anions chloride is the major anion (47.4%) slightly followed by bicarbonate (40.4%), sulphates (11.8%) and carbonates (0.5%). Monthly water quality maps were prepared using surfer software to know the spatial variability. Cations and their ratios were used for assessing temporal variability. Water samples were collected from selected 25 bench mark sites each from Kolleru lake, aquaculture ponds and agriculture fields in and around Kolleru lake. Average salinity of water is more in aquaculture ponds (1480  $\mu\text{mho/cm}$ ) followed by lake water (939  $\mu\text{mho/cm}$ ) and lowest with agriculture (675  $\mu\text{mho/cm}$ ) but all are not suitable for drinking purpose. Eutrophication potential ( $\text{PO}_4^{2-}$ ) is found to be six times higher in aquaculture ponds (0.06 me/l) followed by Kolleru lake (0.03 me/l) than agriculture (0.01 me/l). Mean total bacterial count ( $\times 10^4$ ) is higher in lake (10.87) than aquaculture ponds (2.33) and agriculture fields (1.33). Whereas, fungal count ( $\times 10^3$ ) is highest in aquaculture ponds (8.67) followed by agriculture fields (7.3) and lake (6.38).

csvasu@yahoo.com

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