

IMPACTS OF PRESENT AGRICULTURE ON TANK ECOSYSTEMS IN SIWALAKULAMA CASCADE, SRI LANKA

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Land encroaching for cultivation and living purposes are leading reasons for deterioration of tank cascade systems threatening to their ecological integrity. This study evaluates the effect of present agriculture on the tank ecosystem in *Siwalakulama* cascade, *Galenbindunuwewa*, *Anuradhapura*. A sample of 120 households was randomly selected from four Grama Niladhari divisions in *Galenbindunuwewa* divisional secretariat division. Data were collected using a pre-structured questionnaire to ascertain the willingness to conserve of tank ecosystem and to compare past and present situations of vegetation in *Kattakaduwa* and *Gasgommana* areas. Data were analysed using a skewed logistic regression and descriptive methods. Further, water samples were collected three times from *Siwalakulama* tank after rainy season to assess physicochemical parameters. pH, EC, TDS, (NO₃⁻-N), (PO₄³⁻-P) and As, Cd, Hg were measured using standard procedures and, compared with the FAO irrigation water quality standards and WHO drinking water quality guidelines. Results revealed, tertiary education level ($p=0.031$), farming as an occupation ($p=0.027$), farming experience ($p=0.017$) have positive significant ($p<0.05$), impacts on willingness to conserve of tank ecosystem. The tested water quality parameters were within the permissible limits of FAO irrigation water quality standards. The mean value of lead (Pb) (0.01mg/L) in water samples was found as similar to the WHO standards(0.01mg/L). Also, there is a difference in vegetation between present and 20 years ago. For tank rehabilitation, 99% of respondents recommend to remove sediments of the tank and 53% recommend to restoration of *Kattakaduwa* and *Gasgommana* areas with commercial perennials. The results revealed that, there is an impact on present agriculture on the tank ecosystem of *Siwalakulama* cascade. The water can be utilized for agricultural purposes during the study period, but not for the drinking purpose. The study recommends to minimize the pollutant loading from farmlands and restoration of tank ecosystem for the sustainable utilization and conservation of the cascade.