Village tank renovation induced changes in aquatic plant varieties

K.P.L Nishantha[1], M.M.M Najim[2], N.K Dangalla[3]
1. Department of Social Sciences, Faculty of Social Sciences and languages, Sabaragamuwa University of Sri Lanka, Belihuloya.
2. Department of Zoology, Faculty of Science, University of Kelaniya,
3. Department of Geography, Faculty of Social Science, University of Kelaniya.

ABSTRACT

Village tank renovation programs that were implemented in Sri Lanka aimed at increasing in agricultural productivity and alleviating rural poverty. However, those did not consider the probable changes on the surrounding environments. In this study twelve village tanks from Galgamuwa D.S. Division were selected using stratified random sampling technique to assess the renovation induced variations on floral diversity in and around the renovated tanks. A questionnaire survey was conducted among 150 farmers who were randomly selected. Twelve PRA surveys were conducted to cover all the sample village tanks employing 400 randomly selected farmers. Results from questionnaire and PRA surveys were assessed to evaluate the presence and abundance of plant species before and after the tank renovation. This study revealed that the plant varieties Nelumbo nucifera (Lotus), Nemphaea pubescens (Lilly), Nymphoides indica (Blue water Lilly), Pistia stratiotes (Diya gowa), Eichhornia crassipes (Water hyacinth), and Colocasia sp. are available in all the study tanks. Plant species Pistia stratiotes, Colocasia esculenta and Eichhornia crassipes are alien invasive plants which have been a major threat for the existence of the marshland environment and related hydro systems. As per the Mann-Whitney Test at 95% significant level, significant changes in the plant varieties were observed after the tank renovation. Tank renovation has positively controlled the aquatic plants available within the tank. Dredging of the tanks during the renovation process has resulted in the reduction in plant densities. Dredging and deepening the tanks has influenced the distribution of Nelumbo nucifera (lotus) by reducing its distribution. Distribution of Nymphoides indica (Blue water Lilly), Aponogeton crispus, (Kekatiya) Eichhornia crassipes (Water hyacinth) and Musa sapientum (Diyameneri) have significantly decreased due to tank renovation. The aggregated rank mark has reduced to 430 from 517 after the tank renovation and it shows a clear reduction in the distribution of plant species grown in the tanks.