Mapping aquaculture potential areas in flood-prone areas of Nilwala river basin in Matara, Sri Lanka

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The present study was aimed at identifying aquaculture potential in flood-prone areas of the Nilwala river basin in Sri Lanka. The five most flooded DS divisions of the Matara district; Thihagoda, Malimbada, Athuraliya, Matara, and Kamburupitiya were focused for the study. Land use maps of Matara DS division produced by the Department of survey Sri Lanka in 2016 and Inundation area maps of Nilwala Ganga basin were produced for the flood that occurred in May 2017 by the Department of Irrigation Sri Lanka were overlaid to create new digital maps for aquaculture potential areas in flood-prone areas of Nilwala River basin. Aquaculture potential concerning land use patterns was calculated employing Arc GIS 10.2 software. The study identified the highest aquaculture potential areas in the Matara DS division (9.64 km^2) followed by Thihagoda (6.25 km^2), Athuraliya (2.13 km^2), Malimbada (2.08 km^2), and Kamburupitiya (1.53 km^2) respectively. The total area with aquaculture potential in the study site was 21.63 km^2 representing about 22% of the total flooded area in five DS divisions. The highest aquaculture potential areas were in abandoned paddy lands (10.52 km^2) followed by marshlands (7.38 km^2), rivers & canals (2.6 km^2), and minor reservoirs (0.59 km^2). A total of 3.92 km^2 of marshy land in the Matara DS division, 5.06 km^2 of abandoned paddy lands in the Thihagoda DS division, 0.42 km^2 of minor reservoirs in the Kamburupitiya DS division, and 1.0 km^2 of rivers and canals in the Thihagoda DS division were identified high aquaculture potential areas. Present findings will help decision-makers and fish farmers sustainably use the unutilized resources and overcome the challenges in fish farming in flood-prone areas of the Nilwala river basin, Sri Lanka.

Keywords: aquaculture, flood- prone, GIS, Nilwala river basin

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