

Estimation of agricultural drainage and phosphorus loading to Embilikala and Malala lagoons in the Bundala wetland system

SC Priyankarage¹, Y Matsuno¹, AP Mallawatantri², KAS Pathiratne³,

1. IWML, 127, Sunil Mawatha, Battaramulla.
 2. USAEP, 44, Galle Road, Colombo 03.
 3. Department of Chemistry, University of Kelaniya, Kelaniya.
-

ABSTRACT

Objectives of this research are to estimate the volume of water and phosphorus loading to Embilikala and Malala lagoons in the Bundala wetland system. Water from Tract 5 (1020 ha), Tract 6 and Tract 7 (670 ha) feed Embilikala lagoon while 6 and 7 (670 ha) and Bandagiriya drainage (850 ha) feed Malala lagoon.

Monitoring stations were established to measure the flow volume and water quality in drainage before entering the lagoons. Water levels (flow volumes) were measured daily and the quality of water was tested biweekly. Ascorbic acid method was used to measure phosphate concentrations. US Army Corps of Engineers FLUX model was used to compute the volume of water and loads of phosphate.

Average monthly total phosphate loading to the Malala lagoon was 1000 kg and 43% of that was orthophosphate. Tract 6 and 7 drainage contributed 63% of the total phosphate loading to Malala while Bandagiriya drainage contributed the remaining 37%. Average drainage volume to Malala lagoon is 2.2 hm³ per month. Drainage to Embilikala lagoon delivered 750 kg total phosphate per month with 77% as orthophosphate and the corresponding drainage volume was 1.4 hm³ per month.

Between March 1999 and August 2000 the average monthly delivery of total phosphate from Tract 5, Tract 6 & Tract 7, and Bandagiriya were 0.94 kg/ha, 0.73 kg/ha and 0.44 kg/ha respectively. The amount of phosphate received by the Malala lagoon is about 1.3 times as that of the Embilikala lagoon.