

Estimation of phosphorus and nitrogen nutrient loads and drainage water volume to Bundala wetland system from Lunugamwehera Right Bank and Bandagiriya agricultural systems

Nitrogen and phosphorus in agricultural drainage from Lunugamwehera and Bandagiriya irrigation systems affect ecology of Bundala National Park wetlands. Quantitative estimates of nutrient loads and volume of needed for environmental and agricultural management. Drainage systems to Bundala wetlands are Tract 5 (1020 ha), Tract 6 and 7 (670ha) together and Bandagiriya (850ha). Water flow and water qualities were measured since November 1998. Temperature, pH, conductance and DO were measured in the field and nutrient concentrations were measured in the laboratory within a week using the preserved samples. Potassium persulfate digestion technique for nitrogen and ascorbic acid method for phosphorus was used. US Army Corps of Engineers FLUX model was used to computer nutrient loads using flow and concentration. Average monthly nitrogen loading to Bundala wetlands was about 5,400kg. Track 5 drainage accounted for 47% of nitrogen load while Track 6& 7 contributed 27% and Bandagiriya contributed about 26%. Average monthly nitrogen delivery was 2.5kg/ha, 2.1kg/ha and 1.6kg/ha, respectively. Monthly phosphorus load was about 1,590kg as phosphate, and variation between track 5, tracks 6 and 7 and Bandagiriya were 45% , 42% and 14%, respectively, Average monthly phosphorus delivery was 0.70kg/ha, 0.95kg/ha, and 0.26kg/ha. Average monthly drainage volume was about 3.1hm³. On the average agricultural lands loose about 2 kg/ha of nitrogen and 0.6kg/ha of phosphorus as phosphate, monthly. Nutrient delivery from Lunugamwehera system is about 1.5 times higher in nitrogen and approximately 3 times higher in phosphorus compared to the Bandagiriya.