

BIOMASS AND POLLUTANT UPTAKE OF SELECTED PLANT SPECIES IN CONSTRUCTED FLOATING WETLANDS

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Abstract: Constructed Floating Wetlands (CFW) is an innovative to control the pollution in urban lakes. A study was conducted to assess biomass production and pollutant uptake by *Canna iridiflora* and *Cyperus alternifolius* in CFWs in Bogambara Lake, Kandy, Sri Lanka. Tillers of both plants (20 cm height) were potted in floating PVC frame in the lake. Coconut coir was used as the media for each pot. The reference experiment was conducted by maintaining terrestrial conditions nearby the lake. Reference plants were arranged in polyethylene bags and kept to represent the terrestrial condition and watered using lake water. In both experiments, plant samples were collected weekly intervals up to 8 weeks by uprooting. The height, fresh & dry weight of shoots and roots were measured. Total nitrogen (TN), and total phosphorous (TP) contents were also measured in shoot and root samples. The data were analyzed using R software. Results indicated that the biomass of both shoots and roots of *Canna iridiflora* were significantly higher ($P < 0.05$) than *Cyperus alternifolius* in both CFWs and reference. The shoot growth was higher on CFWs, and root growth was higher on terrestrial conditions in both plants. The TN and TP contents in shoots of both plants were higher than the roots for both tested conditions. The uptakes of N ($23.28 \text{ mg plant}^{-1}$) and P ($31.09 \text{ mg plant}^{-1}$) were higher in *Canna iridiflora* compared to N ($14.91 \text{ mg plant}^{-1}$), P ($7.89 \text{ mg plant}^{-1}$) uptake by *Cyperus alternifolius*, in CFW over the terrestrial conditions. It can be concluded that growing *Canna iridiflora* in CFW is one of the best solutions to mitigate the pollution of polluted lakes.

Keywords: Biomass; Constructed floating wetlands (CFW); Nitrogen; Phosphorous; Urban lakes