

IMPORTANCE OF LIMNOLOGICAL CHARACTERISTICS FOR THE DEVELOPMENT OF CULTURE-BASED FISHERIES IN NON-PERENNIAL RESERVOIRS OF SRI LANKA

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Culture-based fisheries development in non-perennial reservoirs of Sri Lanka is an important strategy for the enhancement of inland fish production. However, little emphasis has been laid on the limnological aspects for planning this extensive aquaculture procedure. The present study was carried out to investigate the possibility of using limnological characteristics of non-perennial reservoirs for future management of their culture-based fisheries. Forty-five reservoirs were randomly selected to study their limnology, of which 32 were stocked with fish fingerlings of Chinese and Indian carps, GIFT variety of *Oreochromis niloticus* and freshwater prawn at stocking densities ranging from 218 to 3900 fingerlings (or post-larvae) ha⁻¹. Of these, 23 reservoirs were harvested at the end of the culture period (6 – 10 months). Thirteen limnological parameters were measured during the water retention period of each of the 45 reservoirs, between November 2001 and January 2004. Mean values of limnological parameters were used to ordinate reservoirs through principal component analysis. Ordination showed productivity gradient among reservoirs where Secchi disc depth, total phosphorous, chlorophyll-a, inorganic turbidity and organic turbidity were identified as key factors. Total fish yield of culture-based fishery was positively correlated to scores of the first principal component axis. This study reveals that there is a possibility to classify non-perennial reservoirs of Sri Lanka based on limnological parameters such as Secchi disc depth, total phosphorous, chlorophyll-a, inorganic turbidity and organic turbidity in order to develop culture-based fisheries.