D-56: Some observations on eutrophic changes associated with natural phenomena in Kotmale reservoir

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Kotmale reservoir which was constructed under the Mahaweli development project, provides water for the generation of electricity. A major part of its catchment contains agricultural land and agro-chemicals get leached into the reservoir from numerous non point sources. In addition, there are 4 streams which feed the reservoir throughout the year, whereas point sources get increased during the monsoon periods.

The reservoir contained low nutrients in the early years but was steadily enriched with nutrients and gave rise to a blue-green algal bloom in late 1991. Fish mortalities and associated problems were anticipated and a study was conducted for monitoring and ascertaining the information required to develop a strategy to overcome eutrophication in the reservoir. A number of physico-chemical and biological parameters were studied at monthly intervals over a period of 2 years.

The study revealed that drought conditions in the area not only reduced the level of water but also increased the population density of blue green algae in the reservoir. However, evaporation of water to dryness resulted in the destruction of algal blooms in isolated patches of water and in the periphery. Release of water from the bottom outlet helped in the removal of some nutrient and toxic gases such as hydrogen sulphide. The heavy rains during the monsoon period resulted in reducing the algal population density to a level which controlled the appearance of blooms after the rains.