Summery

Title: A study to determine the distribution and the abundance of toxigenic cyanobacteria and toxicity of cyanobacterial blooms in Sri Lankan freshwaters (NSF/RG/98/B/4).

Research Institute: Department of Botany University of Ruhuna, Matara.

Chief scientific investigator: Dr. L. P. Jayatissa

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A pioneering study into toxic cyanobacteria in freshwaters of Sri Lanka revealed that three of the four water bodies tested, contained toxic cyanobacteria. As the country has a long history of well planned water management and agricultural economy and drinking water supply are still dependent on thousands of man made tanks, the results of the initial study triggered a more detailed investigation.

Seventeen reservoirs from different user categories and different climatic zones were selected to study variations of phytoplankton communities, with particular emphasis on cyanobacteria, in relation to major nutrients. The study was carried out during a two year period. Heavy growths or blooms of cyanobacteria recorded during the study period were tested for microcystins.

The results clearly categorised the 17 reservoirs into four groups parallel to the classification based on the user categories of water bodies. Biomass of total phytoplankton, its fraction of cyanobacteria, the dominance of *Microcystis* spp. and concentration of nitrate-N and total phosphorous in the water were lowest in drinking water bodies and highest in aesthetic water bodies. Irrigation water bodies

and hydropower reservoirs showed respectively the second lowest and second highest values in phytoplankton biomass, and concentrations of the two major nutrients. The fraction of cyanobacteria in irrigation waters was higher than that in hydropower reservoirs, but surprisingly the dominance of *Microcystis* spp was in opposite order. Possible reasons for these variations are discussed. Total phosphorous, total nitrogen and the ratio between N and P in water showed significant positive correlations with the biovolume of cyanobacteria in water bodies studied.

More than half of the bloom and scum materials tested contained microcystins. These results, in conjunction with hydrological and catchment characteristics, indicate high-risk situations for toxigenic cyanobacterial blooms in freshwaters of Sri Lanka. As getting rid of cyanobacterial blooms after their setting up is not easy, early precautions to prevent blooms is the wise measure to be practiced.