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Ability of Water Lilies to Purify Water Polluted by Soap and Their Application in Domestic Sewage Disposal Facilities

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Aquatic plants have the capability to decrease water pollution level. This capability was examined using water lilies in pots. The pots were placed in 50-l aquariums. Soap was adopted as the pollutant. It is a main water pollutant from households. Purification capability was evaluated by measuring chemical oxygen demand (COD) and dissolved oxygen (DO) concentration. An evaluation index was derived using the half-width (t_w) at half maximum of a characteristic COD peak. The influences of water temperature and soap concentration on the index were examined. t_w decreased as water temperature increased, and the purification capability improved; t_w, therefore, is a measure of purification capability. It decreased as soap concentration increased and t_w became larger. An average person uses about 3 g of soap and 50–100 l of water when he showers. This amount of soap (3 g) was added to the aquariums and a predictive curve for the purification of water at 25°C was introduced. The main polluting element in a household is phosphorus. The application of water lilies to domestic sewage disposal facilities for decreasing water pollution level was considered.

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