

An Initial Assessment of the Use of Wetland Plants as Substrates for Periphyton Production in Seasonal Wetland Fishponds in Uganda

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ABSTRACT

The use of periphyton in seasonal wetland fish ponds (fingerponds) is considered in this study. As an initial step in determining the viability of such systems, the development of periphyton on frames made from wetland plant materials (1 x 1 m) was assessed. Frames made from *Phragmites mauritianus* Kunth. (*Phragmites*), *Raphia farinifera* (*Raphia*), bamboo and *Cyperus papyrus* L. (papyrus) were introduced into a fingerpond (8 x 24 m). The frames had a surface area of 33 % of the pond surface. The periphyton population and pigment concentration were determined and pond water hydrobiological characteristics monitored over a six-week period. Mean periphyton biomass as ash –free dry matter (AFDM, mg cm⁻²) were 0.54 for bamboo, 0.36 for *Phragmites*, and 0.22 for *Raphia* and papyrus. Maximum periphyton productivity 0.38 g AFDM m⁻²d⁻¹ was attained on bamboo. Periphytic blue green algae developed in the first three weeks on papyrus but were overtaken by green algae. *Raphia*, though quick to develop periphyton, was more prone to early decomposition while *Phragmites* and bamboo were more resistant. All the plant frames exhibited potential for periphyton development though the apparent clay turbidity in the pond affected its development. With the enhancement of nutrients in the ponds through the application of manure and increased substrate coverage, periphyton production is an option to be considered in fish production in these seasonal fishponds.

Key Words: Fingerponds, Periphyton, Plant Frames, Water Quality

For more details please refer to the Journal.